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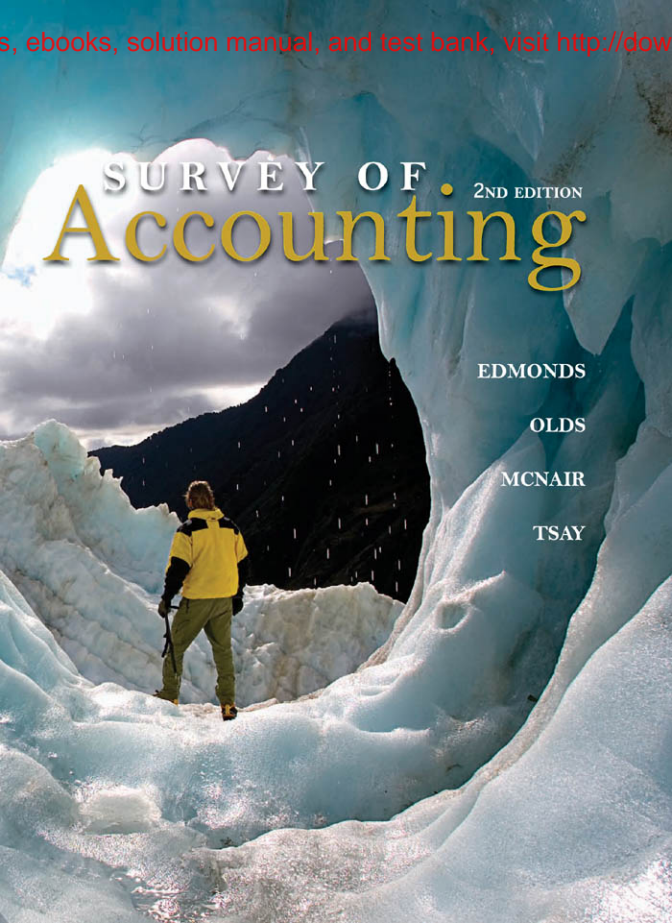
# SURVEY OF 2ND EDITION Accounting

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Second Edition

# Survey *of* Accounting

**Thomas P. Edmonds**  
**University of Alabama—Birmingham**

**Philip R. Olds**  
**Virginia Commonwealth University**

**Frances M. McNair**  
**Mississippi State University**

**Bor-Yi Tsay**  
**University of Alabama—Birmingham**



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## SURVEY OF ACCOUNTING

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This book is dedicated to our students, whose questions have so frequently caused us to reevaluate our method of presentation that they have, in fact, become major contributors to the development of this text.





## NOTE FROM AUTHORS

Over the past 17 years, major changes in accounting education have impacted the way most college and university professors teach introductory accounting. We are gratified that our concepts approach has been so effective that it has become a market leader in the change movement.

### **How have we become market leaders?**

We look at ourselves as innovative traditionalists. We don't aim to radically transform accounting education, but to make it more effective. With the concepts approach, students follow a different path toward the accomplishment of a conventional set of learning objectives. However, the path is easier to walk and students complete the journey with a far greater understanding of accounting.

In contrast to traditional textbooks, this is a **concepts-based approach** that **focuses on the big picture**. Details are presented after a conceptual foundation has been established. This approach enables students to understand rather than memorize. What do we mean by a concepts-based textbook? We mean the text stresses the relationships between business events and financial statements. The primary objective is to develop students who can explain how business events affect the income statement, balance sheet, and statement of cash flows. Do assets increase, decrease or remain unchanged? What effect does each event have on liabilities, equity, revenue, expense, gains, losses, net income, and dividends? Furthermore, how does the event affect cash flows? **The focus is on learning how business events affect financial statements.**

### **Implementing the concepts approach is surprisingly simple.**

Instead of teaching students to record transactions in journals or T-accounts, teach them to record transactions directly into financial statements. While this shift is easy for instructors, it represents a dramatic improvement in how students have traditionally studied accounting. Making a direct connection between business events and financial statements encourages students to analyze conceptual relationships rather than memorize procedures.

This text helps teachers move from the traditional educational paradigm more easily than you might imagine. The content focuses on essential concepts, reducing the amount of material you must cover, and giving you more time to work on skill development. The Instructor's Resource Manual provides step-by-step instructions for implementing innovative teaching methods such as active learning and group dynamics. It offers enticing short discovery learning cases which provide class-opening experiences that effectively stimulate student interest and help develop critical thinking skills.

### **But don't take our word for it.**

With over 200 colleges and universities successfully making the change to the concepts approach, we feel confident you will experience the same success as many of your colleagues. We would like to thank all of those who have been supportive of our teaching philosophy, and we highly encourage you to contact the author team or your local McGraw-Hill/Irwin representative to learn more about our texts.

Tom Edmonds • Phil Olds • Frances McNair • Bor-Yi Tsay

**"I would say it is a positive, new approach to teaching an old subject."**

**Frank Bagan, County College of Morris**

**"I couldn't recommend this text too highly to any of my colleagues. It literally puts the 'sizzle' back into the teaching process!"**

**Michael R. Dodge, Coastal Carolina Community College**

**"I heartily applaud the authors' goal of providing students with a concepts-based approach rather than a strictly procedure-based approach to be an important contribution to improving accounting education, one that appeals to both users and preparers and that enables students to 'read between the lines.'"**

**Michael R. Dodge,  
Coastal Carolina  
Community College**

**"Clear and concise. The best book I have seen for use by non-accounting majors!"**

**Thomas Casey, DeVry  
University**

**"This book is very well written, comprehensive, student-friendly, and provides relevant instruction to students."**

**J. Gay Mills, Amarillo  
College**

**"Very clear, concise, yet sophisticated treatment of topics."**

**Nicholas P. Marudas,  
Auburn University at  
Montgomery**

## ABOUT THE AUTHORS



### **Thomas P. Edmonds**

Thomas P. Edmonds, Ph.D., is the Friends and Alumni Professor of Accounting at the University of Alabama at Birmingham (UAB). Dr. Edmonds has taught in the introductory area throughout his career. He has coordinated the accounting principles courses at the University of Houston and UAB. He currently teaches introductory accounting in mass sections and in UAB's distance learning program. He is actively involved in the accounting education change movement. He has conducted more than 50 workshops related to teaching introductory accounting during the last decade. Dr. Edmonds has received numerous prestigious teaching awards including the Alabama Society of CPAs Outstanding Educator Award and the UAB President's Excellence in Teaching Award. Dr. Edmonds's current research is education based. He has written articles that have appeared in many publications including the *Accounting Review*, *Issues in Accounting*, *Journal of Accounting Education*, and *Advances in Accounting Education*. Dr. Edmonds has been a successful entrepreneur. He has worked as a management accountant for a transportation company and as a commercial lending officer for the Federal Home Loan Bank. Dr. Edmonds began his academic training at Young Harris Community College. His Ph.D. degree was awarded by Georgia State University. Dr. Edmonds's work experience and academic training have enabled him to bring a unique perspective to the classroom.



### **Philip R. Olds**

Professor Olds is Associate Professor of Accounting at Virginia Commonwealth University (VCU). He serves as the coordinator of the introduction to accounting courses at VCU. Professor Olds received his A.S. degree from Brunswick Junior College in Brunswick, Georgia (now Coastal Georgia Community College). He received a B.B.A. in accounting from Georgia Southern College (now Georgia Southern University) and his M.P.A. and Ph.D. degrees are from Georgia State University. After graduating from Georgia Southern, he worked as an auditor with the U.S. Department of Labor in Atlanta, Georgia. A CPA in Virginia, Professor Olds has published articles in various professional journals and presented papers at national and regional conferences. He also served as the faculty adviser to the VCU chapter of Beta Alpha Psi for five years. In 1989, he was recognized with an Outstanding Faculty Vice-President Award by the national Beta Alpha Psi organization.



### **Frances M. McNair**

Frances M. McNair holds the KPMG Peat Marwick Professorship in Accounting at Mississippi State University (MSU). She has been involved in teaching principles of accounting for the past 12 years and currently serves as the coordinator for the principles of accounting courses at MSU. She joined the MSU faculty in 1987 after receiving her Ph.D. from the University of Mississippi. The author of various articles that have appeared in the *Journal of Accountancy*, *Management Accounting*, *Business and Professional Ethics Journal*, *The Practical Accountant*, *Taxes*, and other publications, she also coauthored the book *The Tax Practitioner* with Dr. Denzil Causey. Dr. McNair is currently serving on committees of the American Taxation Association, the American Accounting Association, and the Institute of Management Accountants as well as numerous School of Accountancy and MSU committees.



### **Bor-Yi Tsay**

Bor-Yi Tsay, Ph.D., CPA is Professor of Accounting at the University of Alabama at Birmingham (UAB) where he has taught since 1986. He has taught principles of accounting courses at the University of Houston and UAB. Currently, he teaches an undergraduate cost accounting course and an MBA accounting analysis course. Dr. Tsay received the 1996 Loudell Ellis Robinson Excellence in Teaching Award.

He has also received numerous awards for his writing and publications including the John L. Rhoads Manuscripts Award, John Pugsley Manuscripts Award, Van Pelt Manuscripts Award, and three certificates of merits from the Institute of Management Accountants. His articles have appeared in *Journal of Accounting Education*, *Management Accounting*, *Journal of Managerial Issues*, *CPA Journal*, *CMA Magazine*, *Journal of Systems Management*, and *Journal of Medical Systems*. He currently serves as a member of the board of the Birmingham Chapter, Institute of Management Accountants. He is also a member of the American Institute of Certified Public Accountants and Alabama Society of Certified Public Accountants. Dr. Tsay received a B.S. in agricultural economics from National Taiwan University, an M.B.A. with a concentration in accounting from Eastern Washington University, and a Ph.D. in accounting from the University of Houston.

## HOW DOES THIS BOOK HELP

# SURVEY OF Accounting

2ND EDITION

EDMONDS

## STUDENTS SEE THE BIG PICTURE?

**"[The Horizontal Financial Statements Model is] well organized and a straightforward way to show the effects of transactions."**

**Andy Williams, Edmonds Community College**

**"I think the authors have an original and understandable approach to financial accounting."**

**Ed Doty, East Carolina University**

**"I really like this approach of bringing the conceptual framework up front, helping students see the big picture before they find themselves bogged down in details. I find that students who have the clearest appreciation of the conceptual framework early have the greatest chance of mastering the details later on."**

**Michael R. Dodge, Coastal Carolina Community College**

### Horizontal Financial Statements Model

A horizontal financial statements model replaces the accounting equation as the predominant teaching platform in this text. The model arranges the balance sheet, income statement, and statement of cash flows horizontally across a single line of text as shown below.

Assets	=	Liabilities	+	Stockholders' Equity	Rev.	-	Exp.	=	Net Inc.	Cash Flow
--------	---	-------------	---	----------------------	------	---	------	---	----------	-----------

The statements model approach enables students to see how accounting relates to real-world decision making. The traditional approach teaches students to journalize a series of events and to present summarized information in financial statements. They never see how individual transactions affect financial statements. In contrast, when students record transactions into a statements model, they see a direct connection between business events and financial statements. Most business people think "if I take this particular action, how will it affect my financials," not "if I do these fifteen things, how will they be journalized." Accordingly, the statements model approach provides a learning experience that is more intuitive and relevant than the one provided by traditional teaching methodology.

### Establishing The Conceptual Framework

**Chapter 1** introduces the key components of the conceptual framework for financial accounting. We expect students to master not only the definitions of financial statement elements but also the relationships between those elements. For example, the term "asset" is defined and then the term "revenue" is defined as an increase in assets. The definitions are expanded in a logical stepwise fashion. Once students have learned the elements, the text explains how to organize those elements into a set of financial statements. The financial statements model is introduced toward the end of the first chapter.

Accruals and deferrals are introduced in **Chapter 2** and it not only introduces new concepts but reinforces the core concepts introduced in Chapter 1. The basic conceptual components of the income statement are reinforced through repetition. By the time students have completed the first two chapters, they have a strong conceptual foundation.

## The Effects of Cash Flows Are Shown Through the Entire Text.

The statement of cash flows is introduced in the first chapter and included throughout the text. Students learn to prepare a statement of cash flows by learning to analyze each increase and decrease in the cash account and by classifying each entry in the cash account as an operating, investing, or financing activity. This logical approach helps students understand the essential differences between cash flows and accrual-based income.

## Managerial Accounting Concepts

Traditional texts have emphasized accounting practices for manufacturing companies, while the business environment has shifted toward service companies. This text recognizes this critical shift by emphasizing decision-making concepts applicable to both service and manufacturing companies.

## A Consistent Point of Reference

Why do good students sometimes have so much trouble grasping the simplest concepts? A recent introductory accounting workshop participant supplied the answer. Most accounting events are described from the perspective of the business entity. For example, we say the business borrowed money, purchased assets, earned revenue, or incurred expenses. However, we usually shift the point of reference when describing equity transactions. We say the owners contributed capital, provided cash, or invested assets in the business. This reference shift confuses an entry-level accounting student. Your students will appreciate the fact that this text uses the business entity as a consistent point of reference in describing all accounting events. This text makes a conscious effort to minimize the road blocks that are frequently raised by the inconsistent use of technical terminology.

## Focus on Corporate Form of Organization

We want students to learn that businesses acquire assets from three primary sources: from creditors, from investors, and from earnings. The corporate organization structure highlights these three asset sources by using separate account categories for liabilities, contributed capital, and retained earnings. We have found the corporate form to be pedagogically superior to the proprietorship form in the educational setting.

## Less Is More

Many educators recognize the detrimental effect of information overload. Research suggests that students resort to memorization when faced with too much content, and are unable to comprehend basic concepts. We make a conscious choice to reduce the breadth of content coverage in order to enhance student comprehension of concepts. For example, you don't need to teach both the net and gross methods to explain how cash discounts affect financial statements. Demonstrating just one method is sufficient to demonstrate the critical interrelationships.

## Excel Spreadsheets

Spreadsheet applications are essential to contemporary accounting practice. Students must recognize the power of spreadsheets and know how accounting data are presented in spreadsheets. We discuss Excel applications where appropriate throughout the text. In most instances, the text illustrates actual spreadsheets. End-of-chapter materials include problems students can complete using spreadsheet software.

**Required**

Show the effects of the events on the financial statements using a horizontal statements model like the following one. In the Cash Flows column, use the letters OA to designate operating activity, IA for investing activity, FA for financing activity, and NC for net change in cash. Use NA to indicate accounts not affected by the event. The first event is recorded as an example.

Event No.	Assets			=	Liabilities			+	Stockholders' Equity			Rev. - Exp. = Net Inc.			Cash Flows					
	Cash	Accts. Rec.	Supp.	=	Accts. Pay.	Unearn. Rev.	Com. Stk.	Ret. Earn.												
1	15,000	+	NA	+	NA	+	NA	+	15,000	+	NA		NA	-	NA	=	NA		15,000	FA

**Problem 2-28** Effect of deferrals on financial statements: three separate single-cycle examples

**Required**

a. On February 1, 2010, Moore, Inc., was formed when it received \$70,000 cash from the issue of common stock. On May 1, 2010, the company paid \$42,000 cash in advance to

**CHECK FIGURES**  
a. Net Income: \$52,000

**excel**

**"I wish I had learned it (cash flows) this way. This helps our accounting students tremendously as they have a smoother transition into intermediate accounting. You make a difficult topic much easier to understand!"**

**Sondra Smith, University of West Georgia**



# HOW DOES THE BOOK

## Real-World Examples

The text provides a variety of thought-provoking, real-world examples of financial and managerial accounting as an essential part of the management process. There are descriptions of accounting practices from Coca-Cola, Chevron, Zales, Albertsons, and CBS Corporation. These companies are highlighted in blue in the text.

### The *Curious* Accountant

Suppose the U.S. government purchases \$10 million of fuel from **Chevron**. Assume the government offers to pay for the fuel on the day it receives it from Chevron (a cash purchase) or 30 days later (a purchase on account).

Assume that Chevron is absolutely sure the government will pay its account when due. Do you think Chevron should care whether the government pays for the goods upon delivery or 30 days later? Why? (Answers on page 173.)



## The Curious Accountant

Each chapter opens with a short vignette that sets the stage and helps pique student interest. These pose a question about a real-world accounting issue related to the topic of the chapter. The answer to the question appears in a separate sidebar a few pages further into the chapter.

### Answers to The *Curious* Accountant

**Chevron** would definitely prefer to make the sale to the government in cash rather than on account. Even though it may be certain to collect its

accounts receivable, the sooner Chevron gets its cash, the sooner the cash can be reinvested.

The interest cost related to a small account receivable of \$50 that takes 30 days to collect may seem immaterial; at 4 percent, the lost interest amounts to less than \$.20. However, when one considers that Chevron had approximately \$17.2 billion of accounts receivable, the cost of financing receivables for a real-world company becomes apparent. At 4 percent, the cost of waiting 30 days to collect \$17.2 billion of cash is \$56.5 million ( $\$17.2 \text{ billion} \times .04 \times [30 \div 365]$ ). For one full year, the cost to Chevron would be more than \$688 million ( $\$17.2 \text{ billion} \times 0.04$ ). In 2005, it took Chevron approximately 32 days to collect its accounts receivable, and the weighted-average interest rate on its debt was approximately 4.2 percent.

## Focus on International Issues

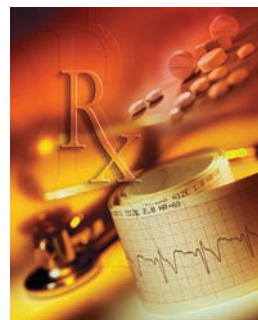
These boxed inserts expose students to international issues in accounting.

### *Focus On* INTERNATIONAL ISSUES

#### U.S. GAAP: A COMPETITIVE DISADVANTAGE?

As discussed earlier in this textbook, the diversity of accounting rules is decreasing among industrialized nations. This is due in large part to the fact that so many countries require their publicly listed companies to follow the accounting rules of the International Accounting Standards Board (IASB) and the efforts between the FASB and the IASB to bring their rules into closer agreement. However, there continue to be areas where significant differences exist between the accounting rules for companies in the United States and companies in other countries. Furthermore, in the opinion of the managers of some companies involved in global competition, these differences put U.S. companies at a competitive disadvantage. Accounting for research and development costs (R&D) is a good example of this situation.

Suppose that Microbiotech, Inc., is a pharmaceutical company that spent \$10 million in 2011 on R&D of a new drug. If Microbiotech is a U.S. company, it is required to expense the \$10 million immediately under U.S. GAAP. However, if Microbiotech is a Japanese company, using Japanese GAAP, it is allowed to capitalize the costs in an asset account and then expense it gradually, through amortization, over the useful life of the asset. As a result, in the year the R&D costs are incurred a U.S. company reports more expense, and less earnings, than its Japanese counterpart.



# MOTIVATE STUDENTS?

## CHECK Yourself 2.1

During 2010, Anwar Company earned \$345,000 of revenue on account and collected \$320,000 cash from accounts receivable. Anwar paid cash expenses of \$300,000 and cash dividends of \$12,000. Determine the amount of net income Anwar should report on the 2010 income statement and the amount of cash flow from operating activities Anwar should report on the 2010 statement of cash flows.

**Answer** Net income is \$45,000 (\$345,000 revenue – \$300,000 expenses). The cash flow from operating activities is \$20,000, the amount of revenue collected in cash from customers (accounts receivable) minus the cash paid for expenses (\$320,000 – \$300,000). Dividend payments are classified as financing activities and do not affect the determination of either net income or cash flow from operating activities.

## Check Yourself

These short question/answer features occur at the end of each main topic and ask students to stop and think about the material just covered. The answer follows to provide immediate feedback before students go on to a new topic.

## Reality BYTES

“Closed for Inventory Count” is a sign you frequently see on retail stores sometime during the month of January. Even if companies use a perpetual inventory system, the amount of inventory on hand may be unknown because of lost, damaged, or stolen goods. The only way to determine the amount of inventory on hand is to count it. Why count it in January? Christmas shoppers and many after-Christmas sales shoppers are satiated by mid-January, leaving the stores low on both merchandise and customers. Accordingly, stores have less merchandise to count and “lost sales” are minimized during January. Companies that do not depend on seasonal sales (e.g., a plumbing supplies wholesale business) may choose to count inventory at some other time during the year. Counting inventory is not a revenue-generating activity; it is a necessary evil that should be conducted when it least disrupts operations.



## Reality Bytes

This feature provides examples or expansions of the topics presented by highlighting companies and showing how they use the accounting concepts discussed in the chapter to make business decisions.

## THE FINANCIAL

## ANALYST

This section of each chapter introduces topics related to analyzing real world financial reports. We focus first on the types of businesses that operate in the real world. We also discuss the annual report that is used to communicate information to stakeholders.

### Real-World Financial Reports

As previously indicated, organizations exist in many different forms, including *business* entities and *not-for-profit* entities. Business entities are typically service, merchandising,

## The Financial Analyst

Financial statement analysis is highlighted in each chapter under this heading.

## A Look Forward >>

Chapters 1 and 2 focused on businesses that generate revenue by providing services to their customers. Examples of these types of businesses include consulting, real estate sales, medical services, and legal services. The next chapter introduces accounting practices for businesses that generate revenue by selling goods. Examples of these companies include [Wal-Mart](#), [Circuit City](#), [Office Depot](#), and [Lowe's](#).

## A Look Back/A Look Forward

Students need a roadmap to make sense of where the chapter topics fit into the whole picture. A Look Back reviews the chapter material and a Look Forward introduces new material to come in the next chapter.



# HOW ARE CHAPTER

Regardless of the instructional approach, there is no shortcut to learning accounting. Students must practice to master basic accounting concepts. The text includes a prodigious supply of practice materials and exercises and problems.

## Self-Study Review Problem

These sections offer problems and solutions of major chapter concepts.



### SELF-STUDY REVIEW PROBLEM

Gifford Company experienced the following accounting events during 2010.

1. Started operations on January 1 when it acquired \$20,000 cash by issuing common stock.
2. Earned \$18,000 of revenue on account.
3. On March 1 collected \$36,000 cash as an advance for services to be performed in the future.
4. Paid cash operating expenses of \$17,000.
5. Paid a \$2,700 cash dividend to stockholders.
6. On December 31, 2010, adjusted the books to recognize the revenue earned by providing services related to the advance described in Event 3. The contract required Gifford to provide services for a one-year period starting March 1.
7. Collected \$15,000 cash from accounts receivable.

## Exercise and Problem Sets

### • Check figures

The figures provide a quick reference for students to check on their progress in solving the problem.

### • Excel

Many exercises and problems can be solved using the Excel™ spreadsheet templates contained on the text's Online Learning Center. A logo appears in the margins next to these exercises and problems for easy identification.

Event No.	Assets			=	Liabilities			+	Stockholders' Equity		Rev.	Exp.	=	Net Inc.	Cash Flows
	Cash	Accts. Rec.	Supp.	=	Accts. Pay.	Unearn. Rev.		Com. Stk.	Ret. Earn.						
1	15,000	+	NA	+	NA	=	NA	+	NA	+	15,000	+	NA	NA	15,000 FA

### Problem 2-28 Effect of deferrals on financial statements: three separate single-cycle examples



#### Required

- On February 1, 2010, Moore, Inc., was formed when it received \$70,000 cash from the issue of common stock. On May 1, 2010, the company paid \$42,000 cash in advance to rent office space for the coming year. The office space was used as a place to consult with clients. The consulting activity generated \$80,000 of cash revenue during 2010. Based on this information alone, record the events and related adjusting entry in the general ledger accounts under the accounting equation. Determine the amount of net income and cash flows from operating activities for 2010.
- On January 1, 2010, the accounting firm of Wayne & Associates was formed. On August 1, 2010, the company received a retainer fee (was paid in advance) of \$36,000 for services to be performed monthly during the next 12 months. Assuming that this was the only transaction completed in 2010, prepare an income statement, statement of changes in stockholders' equity, balance sheet, and statement of cash flows for 2010.
- Hal Company had \$1,250 of supplies on hand on January 1, 2011. Hal purchased \$6,500 of supplies on account during 2011. A physical count of supplies revealed that \$1,500 of supplies was on hand as of December 31, 2011. Determine the amount of supplies expense that should be recognized in the December 31, 2011 adjusting entry. Use a financial statements model to show how the adjusting entry would affect the balance sheet, income statement, and statement of cash flows.

#### CHECK FIGURES

- Net Income: \$52,000
- Net Income: \$15,000

### Problem 2-29 Effect of adjusting entries on the accounting equation

LO 2

#### Required

Each of the following independent events requires a year-end adjusting entry. Show how each event and its related adjusting entry affect the accounting equation. Assume a December 31 closing date. The first event is recorded as an example.

#### CHECK FIGURE

- adjustment amount: \$1,500

# CONCEPTS REINFORCED?

## ANALYZE, THINK, COMMUNICATE

The Topps Company, Inc.

### ATC 2-1 Business Applications Case Understanding real-world annual reports

#### Required

Use the **Topps Company** annual report in Appendix B to answer the following questions.

- Which accounts on Topps' balance sheet are accrual type accounts?
- Which accounts on Topps' balance sheet are deferral type accounts?
- Compare Topps' 2006 net income to its 2006 cash provided by operating activities. Which is larger?
- First, compare Topps' 2005 net income to its 2006 net income. Next, compare Topps' 2005 cash provided by operating activities to its 2006 cash provided by operating activities. Which changed the most from 2005 to 2006, net income or cash provided by operating activities?

### ATC 2-2 Group Assignment Missing information

**Verizon Communications, Inc.**, is one of the country's largest providers of communication services. The following information for 2004 through 2007 was taken from its annual reports. All amounts are in millions.

	2007	2006	2005	2004
Revenue	\$93,469	\$88,182	\$69,518	\$65,751
Operating expense	77,891	74,809	56,937	54,881

#### Required

- Divide the class into groups of four or five students. Organize the groups into three sections. Assign each section of groups the financial data for one of the preceding accounting periods.

#### Group Tasks

- Determine the amount of net income for the year assigned.
- How does the result in item 1 above affect the retained earnings of the company?
- Compute the percentage growth rate in net income for each year.
- Speculate as to what may have caused Verizon's revenue growth from 2005 to 2006 to be so much greater than its revenue growth from 2004 to 2005 and 2006 to 2007.
- Have representatives from each section put the income statement for their respective year on the board.

#### Class Discussion

- Have the class discuss the trend in revenue and net income.

### ATC 2-3 Real-World Case Identifying accruals and deferrals

The following information was drawn from the 2007 annual reports of five real-world companies.

**Adidas Group**, the company that makes athletic apparel, reported *trademarks* of €1,291 million. [Adidas has its headquarters in Germany and reports results in euros (€).] Trademarks is the name given to the category of assets that includes such things as the company logo.

**Laboratory Corporation of America** (usually called LabCorp) claims to be "the second largest independent clinical laboratory in the United States." It reported *supplies inventories* of \$80.4 million.

**Media General, Inc.**, owns, among other things, 25 daily newspapers and 23 television stations. It reported *unearned revenue* of \$21,244 thousand.

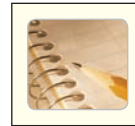
**Motorola, Inc.**, which makes cell phones and other communication equipment, reported *accounts receivables* of \$5,324 million.

**Palm, Inc.**, the company that makes the Palm Pilot personal digital assistant, reported *prepaids and others* of \$10,222 thousand.

## Analyze, Think, Communicate (ATC)

Each chapter includes an innovative section entitled Analyze, Think, Communicate (ATC). This section contains:

- Business application cases related to the annual report for Topps Company



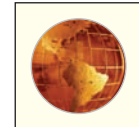
- Writing assignments



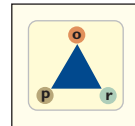
- Excel spreadsheet applications



- Group exercises



- Real company examples



- Ethics cases



- Internet assignments

# WHAT WE DID

## Chapter 1 An Introduction to Accounting

- Changed chapter title to “An Introduction to Accounting.”
- Revised The Curious Accountant opening with new high-profile companies and products.
- Added a section covering careers in accounting.
- Added new exercises and changed requirements to several of the exercises and problems to provide coverage of careers in accounting.
- Defined the term *accounts* and clearly distinguished revenue, expense, and dividend accounts from the retained earnings account.
- Enhanced coverage of the closing process.
- Added a new Check Yourself problem to highlight account classification and the closing process.
- Added new exercises and changed requirements to several of the exercises and problems to provide coverage of the closing process.
- Added a new Reality Bytes.
- Redesigned formulas and graphics to promote clarity.
- Moved coverage of corporate governance from Chapter 1 to Chapter 2.
- Updated exercises, problems, and cases.

## Chapter 2 Understanding the Accounting Cycle

- Revised The Curious Accountant opening with new high-profile companies.
- Moved coverage of ethics from Chapter 1 to Chapter 2. Expanded the coverage to include other features of corporate governance. Broadened coverage of Sarbanes-Oxley and replaced coverage of common features of ethical misconduct (Cressey) with coverage of the fraud triangle. Titled the revised section Corporate Governance.
- Deleted the coverage of the price-earnings ratio and the material on measuring growth through percentage analysis. These topics are now covered later in the text.
- Updated exercises, problems, and cases.

## Chapter 3 Accounting for Merchandising Businesses

- Extensive chapter rewrite to enhance organizational structure and readability.
- Replaced coverage of the *net method* of accounting for cash discounts with coverage of the *gross method*.
- Revised The Curious Accountant opening with new high-profile companies and products.
- Added coverage of gains and losses.
- Expanded coverage of multistep versus single-step income statements.
- Expanded the end-of-chapter materials by adding new exercises.
- Updated exercises, problems, and cases.

## Chapter 4 Accounting for Inventories

- Streamlined exhibits to highlight the key elements affecting the financial statements.
- Revised The Curious Accountant opening with new high-profile companies and products.
- Expanded the end-of-chapter materials by adding 12 new exercises.
- Updated exercises, problems, and cases.

## Chapter 5 Accounting for Receivables

- Removed coverage of direct write-off method.
- Reorganization of learning objectives.
- Revised The Curious Accountant opening with new high-profile companies and products.
- Updated exercises, problems, and cases.

## Chapter 6 Accounting for Long-Term Operational Assets

- Removed coverage of MARCS depreciation for tax purposes.
- Replaced Reality Bytes sidebar with new scenario.
- Updated exercises, problems, and cases.

# TO MAKE IT BETTER!

## **Chapter 7 Accounting for Liabilities**

- Revised The Curious Accountant opening with new high-profile companies and products.
- Updated exercises, problems, and cases.

## **Chapter 8 Proprietorships, Partnerships, and Corporations**

- Revised The Curious Accountant opening with new high-profile companies and products.
- Updated exercises, problems, and cases.

## **Chapter 9 Financial Statement Analysis**

- Revised The Curious Accountant opening with new high-profile companies and products.
- Updated exercises, problems, and cases.

## **Chapter 10 An Introduction to Managerial Accounting**

- New The Curious Accountant opening.
- Revised coverage of ethics material to include the Institute of Managerial Accountants' Statement of Ethical Professional Practice.
- Updated exercises, problems, and cases.

## **Chapter 11 Cost Behavior, Operating Leverage, and Profitability Analysis**

- Added material relating to the coverage of mixed cost, including formulas for computing total mixed cost and an exhibit containing examples of mixed costs.
- Added coverage of the equation method of determining the break-even point. Introduced the contribution margin per unit method as a derivation of the equation method, thereby allowing an instructor the freedom to choose either as the predominate approach to CVP analysis.
- New The Curious Accountant.
- New Focus on International Issues.
- New Reality Bytes.
- Updated exercises, problems, and cases.

## **Chapter 12 Cost Accumulation, Tracing, and Allocation**

- Added coverage of common cost and the controllability concept.
- Added coverage explaining the use of cost pools.
- Updated The Curious Accountant.
- Updated Reality Bytes.
- Updated exercises, problems, and cases.

## **Chapter 13 Relevant Information for Special Decisions**

- Updated The Curious Accountant.
- Updated Focus on International Issues.
- New Reality Bytes.
- Updated exercises, problems, and cases.

## **Chapter 14 Planning for Profit and Cost Control**

- Updated The Curious Accountant.
- Updated exercises, problems, and cases.

## **Chapter 15 Performance Evaluation**

- The section of material covering static versus flexible budgets has been rewritten to demonstrate the computational procedures used to calculate the budgets.
- Redesigned Exhibit 15.1 to facilitate understanding.
- Updated The Curious Accountant.
- Updated exercises, problems, and cases.

## **Chapter 16 Planning for Capital Investments**

- Updated The Curious Accountant.
- Updated Reality Bytes.
- Updated exercises, problems, and cases.

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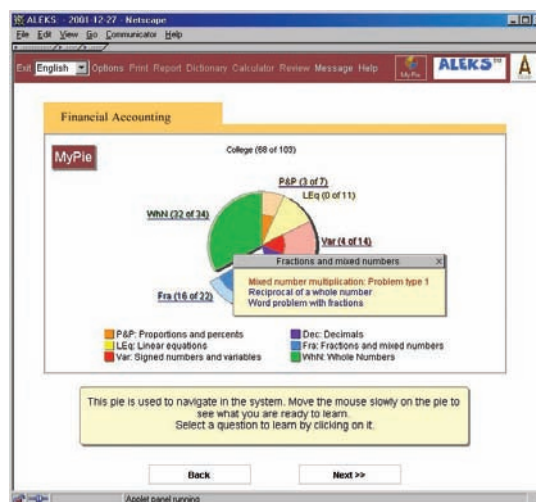
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## Survey of Accounting, 2/e

**Thomas P. Edmonds, University of Alabama - Birmingham**  
**Frances M. McNair, Mississippi State University**  
**Philip R. Olds, Virginia Commonwealth University**  
**Bor-Yi Tsay, University of Alabama - Birmingham**

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*Survey of Accounting* is designed to cover both financial and managerial accounting in a single 16-week course, presenting the material in a style easy for non-accounting majors to grasp. It incorporates the same pedagogical innovations that have made Edmonds' financial and managerial titles such fast-growing successes in the marketplace, including his unique Horizontal Financial Statements Model and a multiple accounting cycle approach that demonstrates the impact of related events over a series of accounting cycles.

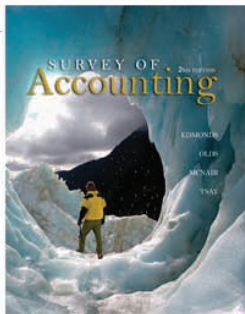
*Over the past 17 years, major changes in accounting education have impacted the way most college and university professors teach introductory accounting. We are gratified that our concepts approach has been so effective that it has become a market leader in the change movement.*


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## **Instructor's Manual**

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## Reviewers

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Thomas Casey, *DeVry University—Tinley Park*  
Suzanne Cercone, *Keystone College*  
Harry Davis, *Bernard M. Baruch College*  
Julie Dilling, *Fox Valley Technical College*  
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Thomas P. Edmonds • Philip R. Olds • Frances M. McNair • Bor-Yi Tsay

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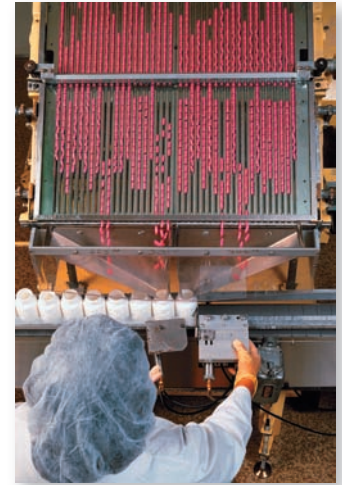
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## CHAPTER



# An Introduction *to* Accounting

## LEARNING OBJECTIVES

**After you have mastered the material in this chapter you will be able to:**

- 1** Identify career opportunities in the accounting profession.
- 2** Distinguish among the different accounting entities involved in business events.
- 3** Name and define the major elements of financial statements.
- 4** Describe the relationships expressed in the accounting equation.
- 5** Record business events in general ledger accounts organized under an accounting equation.
- 6** Explain how the historical cost and reliability concepts affect amounts reported in financial statements.
- 7** Classify business events as asset source, use, or exchange transactions.
- 8** Use general ledger account information to prepare four financial statements.
- 9** Record business events using a horizontal financial statements model.

## CHAPTER OPENING

Why should you study accounting? You should study accounting because it can help you succeed in business. Businesses use accounting to keep score. Imagine trying to play football without knowing how many points a touchdown is worth. Like sports, business is competitive. If you do not know how to keep score, you are not likely to succeed.

**Accounting** is an information system that reports on the economic activities and financial condition of a business or other organization. Do not underestimate the importance of accounting information. If you had information that enabled you to predict business success, you could become a very wealthy Wall Street investor. Communicating economic information is so important that accounting is frequently called the language of business.

## The *Curious* Accountant

Who owns **Coca-Cola**? Who owns the **American Heart Association** (AHA)? In addition to owners, many people and organizations are interested in the operations of Coke and the AHA. These parties are called *stakeholders*. Among others, they include lenders, employees, suppliers, customers, benefactors, research institutions, hospitals, doctors, patients, lawyers, bankers, financial analysts, and government agencies such as the Internal Revenue Service and the Securities and Exchange Commission. Organizations communicate information to stakeholders through *financial reports*.

How do you think the financial reports of Coke differ from those of the AHA? (Answer on page 8.)



**LO 1**

Identify career opportunities in the accounting profession.

## CAREERS IN ACCOUNTING

An accounting career can take you to the top of the business world. *BusinessWeek* studied the backgrounds of the chief executive officers (CEOs) of the 1,000 largest public corporations. More CEOs had backgrounds in finance and accounting than any other field. Exhibit 1.1 provides additional detail regarding the career paths followed by these executives.

What do accountants do? Accountants identify, record, analyze, and communicate information about the economic events that affect organizations. They may work in either public accounting or private accounting.

### Public Accounting

You are probably familiar with the acronym CPA. CPA stands for certified *public* accountant. Public accountants provide services to various clients. They are usually paid a fee that varies depending on the service provided. Services typically offered by public accountants include (1) audit services, (2) tax services, and (3) consulting services.

- *Audit services* involve examining a company's accounting records in order to issue an opinion about whether the company's financial statements conform to generally accepted accounting principles. The auditor's opinion adds credibility to the statements, which are prepared by the company's management.
- *Tax services* include both determining the amount of tax due and tax planning to help companies minimize tax expense.
- *Consulting services* cover a wide range of activities that include everything from installing sophisticated computerized accounting systems to providing personal financial advice.

All public accountants are not certified. Each state government establishes certification requirements applicable in that state. Although the requirements vary from state to state, CPA candidates normally must have a college education, pass a demanding technical examination, and obtain work experience relevant to practicing public accounting.

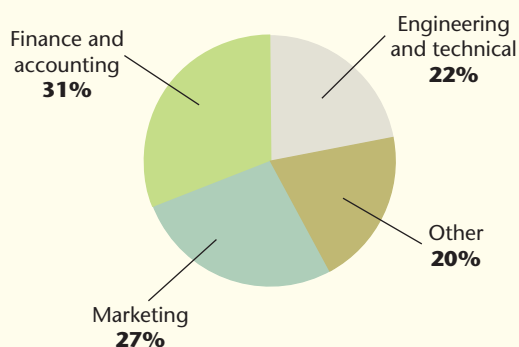
### Private Accounting

Accountants employed in the private sector usually work for a specific company or nonprofit organization. Private sector accountants perform a wide variety of functions for their employers. Their duties include classifying and recording transactions, billing customers and collecting amounts due, ordering merchandise, paying suppliers, preparing and analyzing financial statements, developing budgets, measuring costs, assessing performance, and making decisions.

Private accountants may earn any of several professional certifications. For example, the Institute of Certified Management Accountants issues the *Certified Management Accounting (CMA)* designation. The Institute of Internal Auditors issues the *Certified Internal Auditor (CIA)* designation. These designations are widely recognized indicators of technical competence and integrity on the part of individuals who hold them. All professional accounting certifications call for meeting education requirements, passing a technical examination, and obtaining relevant work experience.

#### EXHIBIT 1.1

##### Career Paths of Chief Executive Officers



## MEASUREMENT RULES

Suppose a store sells an MP3 player in December to a customer who agrees to pay for it in January. Should the business *recognize* (report) the sale as a December transaction or as a January transaction? It really does not matter as long as the storeowner discloses the rule the decision is based on and applies it consistently to other transactions. Because businesses may use different reporting rules, however, clear communication also requires full and fair disclosure of the accounting rules chosen.

Communicating business results would be simpler if each type of business activity were reported using only one measurement method. World economies and financial reporting practices, however, have not evolved uniformly. Even in highly sophisticated countries such as the United States, companies exhibit significant diversity in reporting methods. Providers of accounting reports assume that users are educated about accounting practices.

The **Financial Accounting Standards Board (FASB)**<sup>1</sup> is a privately funded organization with the primary authority for establishing accounting standards in the United States. The measurement rules established by the FASB are called **generally accepted accounting principles (GAAP)**. Financial reports issued to the public must follow GAAP. This textbook introduces these principles so you will be able to understand business activity reported by companies in the USA.

Companies are not required to follow GAAP when preparing *management accounting* reports. Although there is considerable overlap between financial and managerial accounting, managers are free to construct internal reports in whatever fashion best suits the effective operation of their companies.

## Focus On INTERNATIONAL ISSUES

### IS THERE GLOBAL GAAP?

As explained in this chapter, financial reporting is a measurement and communication discipline based on rules referred to as *generally accepted accounting principles*. The accounting rules described in this text are based on GAAP used in the United States. Not all economies throughout the world use the same accounting rules. Although there are many similarities among the accounting principles used in different countries, there also are major differences. In recent years, however, there has been a concerted effort to bring the accounting standards of the major industrialized nations into uniformity, or at least, to have less diversity. This process is usually referred to as *harmonization*, but simply put, there is no “global GAAP.” Examples of how financial reporting in other countries differs from that in the United States are presented throughout this book.



Accounting rules differ among countries for a variety of reasons, including the economic and legal environments in each country and how the GAAP in that country is established. Generally accepted accounting principles in the United States are primarily established by the Financial Accounting Standards Board (FASB). The FASB is a nongovernment rule-making body established by the accounting profession. In some countries, such as Japan for example, the GAAP is established by government bodies. In these countries GAAP is established more like the way federal laws and regulations are established in the United States.

Furthermore, in the United States any connection between GAAP established by the FASB and tax accounting rules established by Congress and the Internal Revenue Service (IRS) is coincidental, not deliberate. In some countries there is a close connection between tax accounting rules and GAAP.

<sup>1</sup>The FASB consists of seven full-time members appointed by the supporting organization, the Financial Accounting Foundation (FAF). The FAF membership is intended to represent the broad spectrum of individuals and institutions that have an interest in accounting and financial reporting. FAF members include representatives of the accounting profession, industry, financial institutions, the government, and the investing public.

**LO 2**

Distinguish among the different accounting entities involved in business events.

## REPORTING ENTITIES

Financial accounting reports disclose the financial activities of particular individuals or organizations described as **reporting entities**. Each entity is a separate reporting unit. For example, a business, the person who owns the business, and a bank that loans money to the business are viewed as three separate reporting entities. Accountants would prepare three separate sets of financial reports to describe the economic activities of each of the three entities.

This text describes accounting from the perspective of a business entity. This point of view may require that you mentally adjust the way you look at business transactions. You likely think from a customer perspective. For example, as a customer you consider a sales discount a great bargain. The view is different, however, from the perspective of the business granting the discount. A sales discount means an item did not sell at the expected price. To move the item, the business had to accept less money than it originally planned to accept. From this perspective, a sales discount is not a good thing. To understand accounting, train yourself to interpret transactions from the perspective of a business rather than a consumer.

### CHECK Yourself 1.1

In a recent business transaction, land was exchanged for cash. Did the amount of cash increase or decrease?

**Answer** The answer depends on the reporting entity to which the question pertains. One entity sold land. The other entity bought land. For the entity that sold land, cash increased. For the entity that bought land, cash decreased.

**LO 3**

Name and define the major elements of financial statements.

## ELEMENTS OF FINANCIAL STATEMENTS

The individuals and organizations that need information about a business are called **stakeholders**. Stakeholders include owners, lenders, government agencies, employees, news reporters, and others. Businesses communicate information to stakeholders through four financial statements:<sup>2</sup> (1) an income statement, (2) a statement of changes in equity, (3) a balance sheet, and (4) a statement of cash flows.

The information reported in **financial statements** is organized into ten categories known as **elements**. Eight financial statement elements are discussed in this chapter: assets, liabilities, equity, contributed capital, revenue, expenses, distributions, and net income. The other two elements, gains and losses, are discussed in a later chapter. In practice, the business world uses various titles to identify several of the financial statement elements. For example, business people use net income, net *earnings*, and net *profit* interchangeably to describe the same element. Contributed capital may be called *common stock* and equity may be called *stockholders' equity*, *owner's capital*, and *partners' equity*. Furthermore, the transfer of assets from a business to its owners may be called *distributions*, *withdrawals*, or *dividends*. Think of accounting as a language. Different

<sup>2</sup>In practice these statements have alternate names. For example, the income statement may be called *results of operations* or *statement of earnings*. The balance sheet is sometimes called the *statement of financial position*. The statement of changes in equity might be called *statement of capital* or *statement of stockholders' equity*. Since the Financial Accounting Standards Board (FASB) called for the title *statement of cash flows*, companies do not use alternate names for that statement.



terms can describe the same business event. Detailed definitions of the elements and their placement on financial statements will be discussed in the following sections of the chapter.

## Using Accounts to Gather Information

Detailed information about the elements is maintained in records commonly called **accounts**. For example, information regarding the element *assets* may be organized in separate accounts for cash, equipment, buildings, land, and so forth. The types and number of accounts used by a business depends on the information needs of its stakeholders. Some businesses provide very detailed information; others report highly summarized information. The more detail desired, the greater number of accounts needed. Think of accounts like the notebooks students keep for their classes. Some students keep detailed notes about every class they take in a separate notebook. Other students keep only the key points for all of their classes in a single notebook. Similarly, some businesses use more accounts than other businesses.

Diversity also exists regarding the names used for various accounts. For example, employee pay may be called salaries, wages, commissions, and so forth. Do not become frustrated with the diversity of terms used in accounting. Remember, accounting is a language. The same word can have different meanings. Similarly, different words can be used to describe the same phenomenon. The more you study and use accounting, the more familiar it will become to you.

## Assets, Income, and Claims on Assets

You may have heard “you have to have money to make money.” In fact, you will need more than just money to start and operate a business. You will likely need such resources as materials, equipment, buildings, and land. The resources used to operate a business are called **assets**. A business uses its assets in order to produce greater quantities of other assets. The difference between the assets used and the assets produced is called **income**. For example, suppose a law firm pays one of its employees \$400 to create a will for one of its clients. The firm then charges its client \$700 for the will. In this case the law firm earned \$300 ( $\$700 - \$400$ ) of income.

The assets of a business belong to its creditors and investors.

- **Creditors** lend financial resources to businesses. Instead of a share of business income, creditors expect businesses to repay borrowed resources at a future date.
- **Investors** provide financial resources in exchange for ownership interests in businesses. Owners expect businesses to return to them a share of the business income earned.

If a business ceases to operate, its remaining assets are sold and the sale proceeds are returned to the creditors and investors through a process called business **liquidation**. Creditors have a priority claim on assets in business liquidations. After creditor claims are satisfied, any remaining assets are distributed to investors (owners).

To illustrate, suppose a business acquired \$100 cash from investors and \$200 cash from creditors. Assume the business lost \$75 and returned the remaining \$225 ( $\$300 - \$75$ ) to the resource providers. The creditors would receive \$200; the investors (owners) would receive only \$25. If the business lost \$120, the creditors would receive only \$180 ( $\$300 - \$120$ ); the investors would receive nothing.

As this illustration suggests, both creditors and investors can lose resources when businesses fail. Creditors, however, are in a more secure position because of their priority claim on resources. In exchange for their more secure position, creditors normally do not share business profits. Instead, they receive a fixed amount of money called **interest**.



## Answers to The *Curious* Accountant

Anyone who owns stock in **Coke** owns a part of the company. Coke has many owners. In contrast, nobody actually owns the **American Heart Association**

(AHA). The AHA has a board of directors that is responsible for overseeing its operations, but the board is not its owner.

Ultimately, the purpose of a business entity is to increase the wealth of its owners. To this end, it “spends money to make money.” The expense that Coke incurs for advertising is a cost incurred in the hope that it will generate revenues when it sells soft drinks. The financial statements of a business show, among other things, whether and how the company made a profit during the current year.

The AHA is a not-for-profit entity. It operates to provide services to society at large, not to make a profit. It cannot increase the wealth of its owners, because it has no owners. When the AHA spends money to reduce heart disease, it does not spend this money in the expectation that it will generate revenues. The revenues of the AHA come from contributors who wish to support efforts related to reducing heart disease. Because the AHA does not spend money to make money, it has no reason to prepare an *income statement* like that of Coke.

Not-for-profit entities do prepare financial statements that are similar in appearance to those of commercial enterprises. The financial statements of not-for-profit entities are called the *statement of financial position*, the *statement of activities*, and the *cash flow statement*.

## THE ACCOUNTING EQUATION

### LO 4

Describe the relationships expressed in the accounting equation.

The assets of a business and the creditor and investor claims on those assets can be expressed through the **accounting equation**.

$$\text{Assets} = \text{Claims}$$

Creditor **claims** are called **liabilities** and investor claims are called **equity**. Substituting these terms into the accounting equation produces the following expanded form.

$$\text{Assets} = \overbrace{\text{Liabilities} + \text{Equity}}^{\text{Claims}}$$

*Liabilities* can also be viewed as future *obligations of the enterprise*. To settle the obligations, the business will probably either relinquish some of its assets (e.g., pay off its debts with cash), provide services to its creditors (e.g., work off its debts), or accept other obligations (e.g., trade short-term debt for long-term debt).

As indicated by the accounting equation, the amount of total assets is equal to the total of the liabilities plus the equity. To illustrate, assume that Hagan Company has assets of \$500, liabilities of \$200, and equity of \$300. These amounts appear in the accounting equation as follows.

$$\begin{array}{rcccl} & & \overbrace{\text{Liabilities} + \text{Equity}}^{\text{Claims}} & & \\ \text{Assets} & = & & + & \\ \$500 & = & \$200 & + & \$300 \end{array}$$

The claims side of the accounting equation (liabilities plus equity) may also be viewed as listing the sources of the assets. For example, when a bank loans assets (money) to a business, it establishes a claim to have those assets returned at some future date. Liabilities can therefore be viewed as sources of assets.

Equity can also be viewed as a source of assets. In fact, equity represents two distinct sources of assets. First, businesses typically acquire assets from their owners (investors). Many businesses issue **common stock** certificates as receipts to acknowledge assets received from owners. The owners of such businesses are often called **stockholders**, and the ownership interest in the business is called **stockholders' equity**.

Second, businesses usually obtain assets through their earnings activities (the business acquires assets by working for them). Assets a business has earned can either be distributed to the owners or kept in the business. The portion of the earned assets that is kept in the business is called **retained earnings**. Since stockholders own the business, they are entitled to assets acquired through its earnings activities. Retained earnings is therefore a component of stockholders' equity. Further expansion of the accounting equation can show the three sources of assets (liabilities, common stock, and retained earnings).

$$\text{Assets} = \text{Liabilities} + \overbrace{\text{Common stock} + \text{Retained earnings}}^{\text{Stockholders' equity}}$$

## CHECK Yourself 1.2

Gupta Company has \$250,000 of assets, \$60,000 of liabilities, and \$90,000 of common stock. What percentage of the assets was provided by retained earnings?

**Answer** First, use algebra to determine the dollar amount of retained earnings:

Assets = Liabilities + Common stock + Retained earnings

Retained earnings = Assets – Liabilities – Common stock

Retained earnings = \$250,000 – \$60,000 – \$90,000

Retained earnings = \$100,000

Second, determine the percentage:

Percentage of assets provided by retained earnings = Retained earnings/Total assets

Percentage of assets provided by retained earnings = \$100,000/\$250,000 = 40%

## RECORDING BUSINESS EVENTS UNDER THE ACCOUNTING EQUATION

An **accounting event** is an economic occurrence that changes an enterprise's assets, liabilities, or stockholders' equity. A **transaction** is a particular kind of event that involves transferring something of value between two entities. Examples of transactions include acquiring assets from owners, borrowing money from creditors, and purchasing or selling goods and services. The following section of the text explains how several different types of accounting events affect a company's accounting equation.

### LO 5

Record business events in general ledger accounts organized under an accounting equation.

### Asset Source Transactions

As previously mentioned, businesses obtain assets (resources) from three sources. They acquire assets from owners (stockholders); they borrow assets from creditors; and they earn assets through profitable operations. Asset source transactions increase



total assets and total claims. A more detailed discussion of the effects of asset source transactions is provided below:

**EVENT 1** Rustic Camp Sites (RCS) was formed on January 1, 2010, when it acquired \$120,000 cash from issuing common stock.

When RCS issued stock, it received cash and gave each investor (owner) a stock certificate as a receipt. Since this transaction provided \$120,000 of assets (cash) to the business, it is an **asset source transaction**. It increases the business's assets (cash) and its stockholders' equity (common stock).

	Assets		=	Liab.	+	Stockholders' Equity	
	Cash	+	Land	=	N. Pay.	+	Com. Stk. + Ret. Earn.
Acquired cash through stock issue	120,000	+	NA	=	NA	+	120,000 + NA

Notice the elements have been divided into accounts. For example, the element *assets* is divided into a Cash account and a Land account. Do not be concerned if some of these account titles are unfamiliar. They will be explained as new transactions are presented. Recall that the number of accounts a company uses depends on the nature of its business and the level of detail management needs to operate the business. For example, **Sears** would have an account called Cost of Goods Sold although **GEICO Insurance** would not. Why? Because Sears sells goods (merchandise) but GEICO does not.

Also, notice that a stock issue transaction affects the accounting equation in two places, both under an asset (cash) and also under the source of that asset (common stock). All transactions affect the accounting equation in at least two places. It is from this practice that the **double-entry bookkeeping** system derives its name.

**EVENT 2** RCS acquired an additional \$400,000 of cash by borrowing from a creditor.

This transaction is also an asset source transaction. It increases assets (cash) and liability claims (notes payable). The account title Notes Payable is used because the borrower (RCS) is required to issue a promissory note to the creditor (a bank). A promissory note describes, among other things, the amount of interest RCS will pay and for how long it will borrow the money.<sup>3</sup> The effect of the borrowing transaction on the accounting equation is indicated below.

	Assets		=	Liab.	+	Stockholders' Equity	
	Cash	+	Land	=	N. Pay.	+	Com. Stk. + Ret. Earn.
Beginning balances	120,000	+	NA	=	NA	+	120,000 + NA
Acquired cash by issuing note	400,000	+	NA	=	400,000	+	NA + NA
Ending balances	520,000	+	NA	=	400,000	+	120,000 + NA

The beginning balances above came from the ending balances produced by the prior transaction. This practice is followed throughout the illustration.

## Asset Exchange Transactions

Businesses frequently trade one asset for another asset. In such cases, the amount of one asset decreases and the amount of the other asset increases. Total assets are unaffected by asset exchange transactions. Event 3 is an asset exchange transaction.

<sup>3</sup>For simplicity, the effects of interest are ignored in this chapter. We discuss accounting for interest in future chapters.

### EVENT 3 RCS paid \$500,000 cash to purchase land.

This asset exchange transaction reduces the asset account Cash and increases the asset account Land. The amount of total assets is not affected. An **asset exchange transaction** simply reflects changes in the composition of assets. In this case, the company traded cash for land. The amount of cash decreased by \$500,000 and the amount of land increased by the same amount.

	Assets			=	Liab.	+	Stockholders' Equity		
	Cash	+	Land	=	N. Pay.	+	Com. Stk.	+	Ret. Earn.
Beginning balances	520,000	+	NA	=	400,000	+	120,000	+	NA
Paid cash to buy land	(500,000)	+	500,000	=	NA	+	NA	+	NA
Ending balances	20,000	+	500,000	=	400,000	+	120,000	+	NA

### Another Asset Source Transaction

#### EVENT 4 RCS obtained \$85,000 cash by leasing camp sites to customers.

**Revenue** represents an economic benefit a company obtains by providing customers with goods and services. In this example the economic benefit is an increase in the asset cash. Revenue transactions can therefore be viewed as *asset source transactions*. The asset increase is balanced by an increase in the retained earnings section of stockholders' equity because producing revenue increases the amount of earnings that can be retained in the business.

	Assets			=	Liab.	+	Stockholders' Equity			
	Cash	+	Land	=	N. Pay.	+	Com. Stk.	+	Ret. Earn.	Acct. Title
Beginning balances	20,000	+	500,000	=	400,000	+	120,000	+	NA	
Acquired cash by earning revenue	85,000	+	NA	=	NA	+	NA	+	85,000	Revenue
Ending balances	105,000	+	500,000	=	400,000	+	120,000	+	85,000	

Note carefully that the \$85,000 ending balance in the retained earnings column is *not* in the Retained Earnings account. It is in the Revenue account. It will be transferred to the Retained Earnings account at the end of the accounting period. Transferring the Revenue account balance to the Retained Earnings account is part of a process called *closing the accounts*.

### Asset Use Transactions

Businesses use assets for a variety of purposes. For example, assets may be used to pay off liabilities or they may be transferred to owners. Assets may also be used in the process of generating earnings. All **asset use transactions** decrease the total amount of assets and the total amount of claims on assets (liabilities or stockholders' equity).

**EVENT 5 RCS paid \$50,000 cash for operating expenses such as salaries, rent, and interest. (RCS could establish a separate account for each type of expense. However, the management team does not currently desire this level of detail. Remember, the number of accounts a business uses depends on the level of information managers need to make decisions.)**

In the normal course of generating revenue, a business consumes various assets and services. The assets and services consumed to generate revenue are called **expenses**.

Revenue results from providing goods and services to customers. In exchange, the business acquires assets from its customers. Since the owners bear the ultimate risk and reap the rewards of operating the business, revenues increase stockholders' equity (retained earnings), and expenses decrease retained earnings. In this case, the asset account, Cash, decreased. This decrease is balanced by a decrease in the retained earnings section of stockholders' equity because expenses decrease the amount of earnings retained in the business.

	Assets			=	Liab.	+	Stockholders' Equity		
	Cash	+	Land	=	N. Pay.	+	Com. Stk.	+	Ret. Earn. Acct. Title
Beginning balances	105,000	+	500,000	=	400,000	+	120,000	+	85,000
Used cash to pay expenses	(50,000)	+	NA	=	NA	+	NA	+	(50,000) Expense
Ending balances	55,000	+	500,000	=	400,000	+	120,000	+	35,000

Like revenues, expenses are not recorded directly into the Retained Earnings account. The \$50,000 of expense is recorded in the Expense account. It will be transferred to the Retained Earnings account at the end of the accounting period as part of the closing process. The \$35,000 ending balance in the retained earnings column shows what would be in the Retained Earnings account after the balances in the Revenue and Expense accounts have been closed. The current balance in the Retained Earnings account is zero.

#### **EVENT 6** RCS paid \$4,000 in cash dividends to its owners.

To this point the enterprise's total assets and equity have increased by \$35,000 (\$85,000 of revenue – \$50,000 of expense) as a result of its earnings activities. RCS can keep the additional assets in the business or transfer them to the owners. If a business transfers some or all of its earned assets to owners, the transfer is frequently called a **dividend**. Since assets distributed to stockholders are not used for the purpose of generating revenue, *dividends are not expenses*. Furthermore, dividends are a transfer of *earnings*, not a return of the assets acquired from the issue of common stock.

	Assets			=	Liab.	+	Stockholders' Equity		
	Cash	+	Land	=	N. Pay.	+	Com. Stk.	+	Ret. Earn. Acct. Title
Beginning balances	55,000	+	500,000	=	400,000	+	120,000	+	35,000
Used cash to pay dividends	(4,000)	+	NA	=	NA	+	NA	+	(4,000) Dividends
Ending balances	51,000	+	500,000	=	400,000	+	120,000	+	31,000

Like revenues and expenses, dividends are not recorded directly into the Retained Earnings account. The \$4,000 dividend is recorded in the Dividends account. It will be transferred to retained earnings at the end of the accounting period as part of the closing process. The \$31,000 ending balance in the retained earnings column shows what would be in the Retained Earnings account after the balances in the Revenue, Expense, and Dividend accounts have been closed. The current balance in the Retained Earnings account is zero.

## HISTORICAL COST AND RELIABILITY CONCEPTS

**EVENT 7** The land that RCS paid \$500,000 to purchase had an appraised market value of \$525,000 on December 31, 2010.

Although the appraised value of the land is higher than the original cost, RCS will not increase the amount recorded in its accounting records above the land's \$500,000 historical cost. In general, accountants do not recognize changes in market value. The **historical cost concept** requires that most assets be reported at the amount paid for them (their historical cost) regardless of increases in market value.

Surely investors would rather know what an asset is worth instead of how much it originally cost. So why do accountants maintain records and report financial information based on historical cost? Accountants rely heavily on the **reliability concept**. Information is reliable if it can be independently verified. For example, two people looking at the legal documents associated with RCS's land purchase will both conclude that RCS paid \$500,000 for the land. That historical cost is a verifiable fact. The appraised value, in contrast, is an opinion. Even two persons who are experienced appraisers are not likely to come up with the same amount for the land's market value. Accountants do not report market values in financial statements because such values are not reliable.

### LO 6

Explain how the historical cost and reliability concepts affect amounts reported in financial statements.

## RECAP: TYPES OF TRANSACTIONS

The transactions described above have each been classified into one of three categories: (1) asset source transactions; (2) asset exchange transactions; and (3) asset use transactions. A fourth category, claims exchange transactions, is introduced in a later chapter. In summary

- **Asset source transactions** increase the total amount of assets and increase the total amount of claims. In its first year of operation, RCS acquired assets from three sources: first, from owners (Event 1); next, by borrowing (Event 2); and finally, through earnings activities (Event 4).
- **Asset exchange transactions** decrease one asset and increase another asset. The total amount of assets is unchanged by asset exchange transactions. RCS experienced one asset exchange transaction; it used cash to purchase land (Event 3).
- **Asset use transactions** decrease the total amount of assets and the total amount of claims. RCS used assets to pay expenses (Event 5) and to pay dividends (Event 6).

As you proceed through this text, practice classifying transactions into one of the four categories. Businesses engage in thousands of transactions every day. It is far more effective to learn how to classify the transactions into meaningful categories than to attempt to memorize the effects of thousands of transactions.

### LO 7

Classify business events as asset source, use, or exchange transactions.

## SUMMARY OF TRANSACTIONS

The complete collection of a company's accounts is called the **general ledger**. The general ledger account information for RCS's 2010 accounting period is shown in Exhibit 1.2. The revenue, expense, and dividend account data appear in the retained earnings column. These account titles are shown immediately to the right of the dollar amounts listed in the retained earnings column. To help you review RCS's general ledger, the business events that the company experienced during 2010 are summarized below.

1. RCS issued common stock, acquiring \$120,000 cash from its owners.
2. RCS borrowed \$400,000 cash.
3. RCS paid \$500,000 cash to purchase land.



**EXHIBIT 1.2****General Ledger Accounts Organized Under the Accounting Equation**

Event No.	Assets			=	Liabilities	+	Stockholders' Equity		Other Account Titles
	Cash	+	Land	=	Notes Payable	+	Common Stock	+ Retained Earnings	
Beg. bal.	0		0		0		0	0	
1.	120,000						120,000		
2.	400,000				400,000				
3.	(500,000)		500,000						
4.	85,000							85,000	Revenue
5.	(50,000)							(50,000)	Expense
6.	(4,000)							(4,000)	Dividend
7.	NA		NA		NA		NA	NA	
	<u>51,000</u>	+	<u>500,000</u>	=	<u>400,000</u>	+	<u>120,000</u>	+	<u>31,000</u>

- RCS received \$85,000 cash from earning revenue.
- RCS paid \$50,000 cash for expenses.
- RCS paid dividends of \$4,000 cash to the owners.
- The land that RCS paid \$500,000 to purchase had an appraised market value of \$525,000 on December 31, 2010.

As indicated earlier, accounting information is normally presented to external users in four general-purpose financial statements. The information in the ledger accounts is used to prepare these financial statements. The data in the above ledger accounts are color coded to help you understand the source of information in the financial statements. The numbers in *green* are used in the *statement of cash flows*. The numbers in *red* are used to prepare the *balance sheet*. Finally, the numbers in *blue* are used to prepare the *income statement*. The numbers reported in the statement of changes in stockholders' equity have not been color coded because they appear in more than one statement. The next section explains how the information in the accounts is presented in financial statements.

## PREPARING FINANCIAL STATEMENTS

### LO 8

Use general ledger account information to prepare four financial statements.

The financial statements for RCS are shown in Exhibit 1.3. The information used to prepare these statements was drawn from the ledger accounts. Information in one statement may relate to information in another statement. For example, the amount of net income reported on the income statement also appears on the statement of changes in stockholders' equity. Accountants use the term **articulation** to describe the interrelationships among the various elements of the financial statements. The key articulated relationships in RCS's financial statements are highlighted with arrows (Exhibit 1.3). A description of each statement follows.

### Income Statement and the Matching Concept

Businesses consume assets and services in order to generate revenues, thereby creating greater quantities of other assets. For example, RCS may pay cash (asset use) to an employee who maintains the camp sites. Maintaining the sites is necessary in order to collect cash (obtain assets) from customers. The **income statement matches** asset

**EXHIBIT 1.3**

**Financial Statements**

**RUSTIC CAMP SITES**

**Income Statement**

For the Year Ended December 31, 2010

Rental revenue ( <i>asset increases</i> )	\$85,000
Operating expenses ( <i>asset decreases</i> )	<u>(50,000)</u>
Net income	<u>\$35,000</u>

**RUSTIC CAMP SITES**

**Statement of Changes in Stockholders' Equity**

For the Year Ended December 31, 2010

Beginning common stock	\$ 0	
Plus: common stock issued	<u>120,000</u>	
Ending common stock		\$120,000
Beginning retained earnings	0	
Plus: Net income	<u>35,000</u>	
Less: Dividends	<u>(4,000)</u>	
Ending retained earnings		<u>31,000</u>
Total stockholders' equity		<u>\$151,000</u>

**RUSTIC CAMP SITES**

**Balance Sheet**

As of December 31, 2010

<b>Assets</b>		
Cash	\$ 51,000	
Land	<u>500,000</u>	
Total assets		<u>\$551,000</u>
<b>Liabilities</b>		
Notes payable		\$400,000
<b>Stockholders' equity</b>		
Common stock	<u>\$120,000</u>	
Retained earnings	<u>31,000</u>	
Total stockholders' equity		<u>151,000</u>
Total liabilities and stockholders' equity		<u>\$551,000</u>

**RUSTIC CAMP SITES**

**Statement of Cash Flows**

For the Year Ended December 31, 2010

<b>Cash flows from operating activities:</b>		
Cash receipts from revenue	\$ 85,000	
Cash payments for expenses	<u>(50,000)</u>	
Net cash flow from operating activities		\$ 35,000
<b>Cash flows for investing activities:</b>		
Cash payments to purchase land		(500,000)
<b>Cash flows from financing activities:</b>		
Cash receipts from borrowing funds	400,000	
Cash receipts from issuing common stock	<u>120,000</u>	
Cash payments for dividends	<u>(4,000)</u>	
Net cash flow from financing activities		<u>516,000</u>
Net increase in cash		<u>51,000</u>
Plus: beginning cash balance		<u>0</u>
Ending cash balance		<u>\$ 51,000</u>

increases from operating a business with asset decreases from operating the business.<sup>4</sup> Asset increases resulting from providing goods and services to customers in the course of normal operations are called *revenues*. Asset decreases resulting from consuming assets and services for the purpose of generating revenues are called *expenses*. If revenues are greater than expenses, the difference is called **net income**. If expenses exceed revenues, the difference is a **net loss**.

The income statement in Exhibit 1.3 indicates that RCS has earned more assets than it has used. The statement shows that RCS has increased its assets by \$35,000 (net income) as a result of operating its business. Observe the phrase *For the Year Ended December 31, 2010* in the heading of the income statement. Income is measured for a span of time called the **accounting period**. While accounting periods of one year are normal for external financial reporting, income can be measured weekly, monthly, quarterly, semiannually, or over any other desired time period. Notice that the cash RCS paid to its stockholders (dividends) is not reported as expense. The decrease in assets for dividend payments is not incurred for the purpose of generating revenue. Instead, dividends are transfers of wealth to the owners of the business. Dividend payments are not reported on the income statement.

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### CHECK Yourself 1.3

Mahoney, Inc., was started when it issued common stock to its owners for \$300,000. During its first year of operation Mahoney received \$523,000 cash for services provided to customers. Mahoney paid employees \$233,000 cash. Advertising costs paid in cash amounted to \$102,000. Other cash operating expenses amounted to \$124,000. Finally, Mahoney paid a \$25,000 cash dividend to its stockholders. What amount of net income would Mahoney report on its earnings statement?

**Answer** The amount of net income is \$64,000 (\$523,000 Revenue — \$233,000 Salary Expense — \$102,000 Advertising Expense — \$124,000 Other Operating Expenses). The cash received from issuing stock is not revenue because it was not acquired from earnings activities. In other words, Mahoney did not work (perform services) for this money; it was contributed by owners of the business. The dividends are not expenses because the decrease in cash was not incurred for the purpose of generating revenue. Instead, the dividends represent a transfer of wealth to the owners.

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## Statement of Changes in Stockholders' Equity

The **statement of changes in stockholders' equity** explains the effects of transactions on stockholders' equity during the accounting period. It starts with the beginning balance in the common stock account. In the case of RCS, the beginning balance in the common stock account is zero because the company did not exist before the 2010 accounting period. The \$120,000 of stock issued during the accounting period is added to the beginning balance to determine the ending balance in the common stock account.

In addition to reporting the changes in common stock, the statement describes the changes in retained earnings for the accounting period. RCS had no beginning balance in retained earnings. During the period, the company earned \$35,000 and paid \$4,000 in dividends to the stockholders, producing an ending retained earning balance of \$31,000 (\$0 + \$35,000 — \$4,000). Since equity consists of common stock and retained earnings, the ending total equity balance is \$151,000 (\$120,000 + \$31,000).

<sup>4</sup>This description of the income statement is expanded in subsequent chapters as additional relationships among the elements of financial statements are introduced.

This statement is also dated with the phrase *For the Year Ended December 31, 2010*, because it describes what happened to stockholders' equity during 2010.

## Balance Sheet

The **balance sheet** draws its name from the accounting equation. Total assets balances with (equals) claims (liabilities and stockholders' equity) on those assets. The balance sheet for RCS is shown in Exhibit 1.3. Note that total claims (liabilities plus stockholders' equity) are equal to total assets (\$551,000 = \$551,000).

Note the order of the assets in the balance sheet. Cash appears first, followed by land. Assets are displayed in the balance sheet based on their level of **liquidity**. This means that assets are listed in order of how rapidly they will be converted to cash. Finally, note that the balance sheet is dated with the phrase *As of December 31, 2010*, indicating that it describes the company's financial condition on the last day of the accounting period.

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### CHECK Yourself 1.4

To gain a clear understanding of the balance sheet, try to create one that describes your personal financial condition. First list your assets, then your liabilities. Determine the amount of your equity by subtracting your liabilities from your assets.

**Answer** Answers for this exercise will vary depending on the particular assets and liabilities each student identifies. Common student assets include automobiles, computers, stereos, TVs, phones, CD players, clothes, and textbooks. Common student liabilities include car loans, mortgages, student loans, and credit card debt. The difference between the assets and the liabilities is the equity.

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## Statement of Cash Flows

The **statement of cash flows** explains how a company obtained and used *cash* during the accounting period. Receipts of cash are called *cash inflows*, and payments are *cash outflows*. The statement classifies cash receipts (inflows) and payments (outflows) into three categories: financing activities, investing activities, and operating activities.

Businesses normally start with an idea. Implementing the idea usually requires cash. For example, suppose you decide to start an apartment rental business. First, you would need cash to finance acquiring the apartments. Acquiring cash to start a business is a financing activity. **Financing activities** include obtaining cash (inflow) from owners or paying cash (outflow) to owners (dividends). Financing activities also include borrowing cash (inflow) from creditors and repaying the principal (outflow) to creditors. Because interest on borrowed money is an expense, however, cash paid to creditors for interest is reported in the operating activities section of the statement of cash flows.

After obtaining cash from financing activities, you would invest the money by building or buying apartments. **Investing activities** involve paying cash (outflow) to purchase productive assets or receiving cash (inflow) from selling productive assets. **Productive assets** are sometimes called long-term assets because businesses normally use them for more than one year. Cash outflows to purchase land or cash inflows from selling a building are examples of investing activities.

After investing in the productive assets (apartments), you would engage in operating activities. **Operating activities** involve receiving cash (inflow) from revenue and paying cash (outflow) for expenses. Note that cash spent to purchase short-term assets such as office supplies is reported in the operating activities section because the office supplies would likely be used (expensed) within a single accounting period.

**EXHIBIT 1.4****Classification Scheme for Statement of Cash Flows****Cash flows from operating activities:**

- Cash receipts (inflows) from revenue (including interest)
- Cash payments (outflows) for expenses (including interest)

**Cash flows from investing activities:**

- Cash receipts (inflows) from the sale of long-term assets
- Cash payments (outflows) for the purchase of long-term assets

**Cash flows from financing activities:**

- Cash receipts (inflows) from borrowing funds
- Cash receipts (inflows) from issuing common stock
- Cash payments (outflows) to repay borrowed funds
- Cash payments (outflows) for dividends

The primary cash inflows and outflows related to the types of business activity introduced in this chapter are summarized in Exhibit 1.4. The exhibit will be expanded as additional types of events are introduced in subsequent chapters.

The statement of cash flows for Rustic Camp Sites in Exhibit 1.3 shows that the amount of cash increased by \$51,000 during the year. The beginning balance in the Cash account was zero; adding the \$51,000 increase to the beginning balance results in a \$51,000 ending balance. Notice that the \$51,000 ending cash balance on the statement of cash flows is the same as the amount of cash reported in the asset section on the December 31 year-end balance sheet. Also, note that the statement of cash flows is dated with the phrase *For the Year Ended December 31, 2010*, because it describes what happened to cash over the span of the year.

### CHECK *Yourself* 1.5

Classify each of the following cash flows as an operating activity, investing activity, or financing activity.

1. Acquired cash from owners.
2. Borrowed cash from creditors.
3. Paid cash to purchase land.
4. Earned cash revenue.
5. Paid cash for salary expenses.
6. Paid cash dividend.
7. Paid cash for interest.

**Answer** (1) financing activity; (2) financing activity; (3) investing activity; (4) operating activity; (5) operating activity; (6) financing activity; (7) operating activity.

## The Closing Process

As previously indicated, transaction data are recorded in the Revenue, Expense, and Dividend accounts during the accounting period. At the end of the accounting period the balances in these accounts are transferred to the Retained Earnings account. The process of transferring the balances is called **closing**. Since the Revenue, Expense, and Dividend accounts are closed each period, they are called **temporary accounts**. At the

beginning of each new accounting period, the temporary accounts have zero balances. The Retained Earnings account carries forward from one accounting period to the next. Since this account is not closed, it is called a **permanent account**.

## CHECK Yourself 1.6

After closing on December 31, 2009, Walston Company had \$4,600 of assets, \$2,000 of liabilities, and \$700 of common stock. During January of 2010, Walston earned \$750 of revenue and incurred \$300 of expense. Walston closes its books each year on December 31.

1. Determine the balance in the Retained Earnings account as of December 31, 2009.
2. Determine the balance in the Retained Earnings account as of January 1, 2010.
3. Determine the balance in the Retained Earnings account as of January 31, 2010.

### Answer

1. Assets = Liabilities + Common Stock + Retained Earnings  

$$\$4,600 = \$2,000 + \$700 + \text{Retained Earnings}$$

$$\text{Retained Earnings} = \$1,900$$
2. The balance in the Retained Earnings account on January 1, 2010, is the same as it was on December 31, 2009. This year's ending balance becomes next year's beginning balance. Therefore, the balance in the Retained Earnings account on January 1, 2010, is \$1,900.
3. The balance in the Retained Earnings account on January 31, 2010, is still \$1,900. The revenue earned and expenses incurred during January are not recorded in the Retained Earnings account. Revenue is recorded in a Revenue account and expenses are recorded in an Expense account during the accounting period. The balances in the Revenue and Expense accounts are transferred to the Retained Earnings account during the closing process at the end of the accounting period (December 31, 2010).

## THE HORIZONTAL FINANCIAL STATEMENTS MODEL

Financial statements are the scorecard for business activity. If you want to succeed in business, you must know how your business decisions affect your company's financial statements. This text uses a **horizontal statements model** to help you understand how business events affect financial statements. This model shows a set of financial statements horizontally across a single page of paper. The balance sheet is displayed first, adjacent to the income statement, and then the statement of cash flows. Because the effects of equity transactions can be analyzed by referring to certain balance sheet columns, and because of limited space, the statement of changes in stockholders' equity is not shown in the horizontal statements model.

The model frequently uses abbreviations. For example, activity classifications in the statement of cash flows are identified using OA for operating activities, IA for investing activities, and FA for financing activities. NC designates the net change in cash. The statements model uses "NA" when an account is not affected by an event. The background of the *balance sheet* is red, that of the *income statement* is blue, and that of the *statement of cash flows* is green. To demonstrate the usefulness of the horizontal statements model, we use it to display the seven accounting events that RCS experienced during its first year of operation (2010).

1. RCS acquired \$120,000 cash from the owners.
2. RCS borrowed \$400,000 cash.
3. RCS paid \$500,000 cash to purchase land.

### LO 9

Record business events using a horizontal financial statements model.



4. RCS received \$85,000 cash from earning revenue.
5. RCS paid \$50,000 cash for expenses.
6. RCS paid \$4,000 of cash dividends to the owners.
7. The market value of the land owned by RCS was appraised at \$525,000 on December 31, 2010.

Event No.	Balance Sheet									Income Statement					Statement of Cash Flows	
	Assets			=	Liab.		+	Stockholders' Equity								
	Cash	+	Land	=	N. Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	-	Exp.	=	Net Inc.		
Beg. bal.	0	+	0	=	0	+	0	+	0	0	-	0	=	0	NA	
1.	120,000	+	NA	=	NA	+	120,000	+	NA	NA	-	NA	=	NA	120,000	FA
2.	400,000	+	NA	=	400,000	+	NA	+	NA	NA	-	NA	=	NA	400,000	FA
3.	(500,000)	+	500,000	=	NA	+	NA	+	NA	NA	-	NA	=	NA	(500,000)	IA
4.	85,000	+	NA	=	NA	+	NA	+	85,000	85,000	-	NA	=	85,000	85,000	OA
5.	(50,000)	+	NA	=	NA	+	NA	+	(50,000)	NA	-	50,000	=	(50,000)	(50,000)	OA
6.	(4,000)	+	NA	=	NA	+	NA	+	(4,000)	NA	-	NA	=	NA	(4,000)	FA
7.	NA	+	NA	=	NA	+	NA	+	NA	NA	-	NA	=	NA	NA	
Totals	51,000	+	500,000	=	400,000	+	120,000	+	31,000	85,000	-	50,000	=	35,000	51,000	NC

Recognize that statements models are learning tools. Because they are helpful in understanding how accounting events affect financial statements, they are used extensively in this book. However, the models omit many of the details used in published financial statements. For example, the horizontal model shows only a partial set of statements. Also, since the statements are presented in aggregate, the description of dates (e.g., “as of” versus “for the period ended”) does not distinguish periodic from cumulative data.



This section of each chapter introduces topics related to analyzing real world financial reports. We focus first on the types of businesses that operate in the real world. We also discuss the annual report that is used to communicate information to stakeholders.

## Real-World Financial Reports

As previously indicated, organizations exist in many different forms, including *business* entities and *not-for-profit* entities. Business entities are typically service, merchandising,

or manufacturing companies. **Service businesses**, which include doctors, attorneys, accountants, dry cleaners, and maids, provide services to their customers. **Merchandising businesses**, sometimes called *retail* or *wholesale companies*, sell goods to customers that other entities make. **Manufacturing businesses** make the goods that they sell to their customers.

Some business operations include combinations of these three categories. For example, an automotive repair shop might change oil (service function), sell parts such as oil filters (retail function), and rebuild engines (manufacturing function). The nature of the reporting entity affects the form and content of the information reported in an entity's financial statements. For example, not-for-profit entities provide statements of revenues, expenditures, and changes in fund equity while business entities provide income statements. Similarly, income statements of retail companies show an expense item called *cost of goods sold*, but service companies that do not sell goods have no such item in their income statements. You should expect some diversity when reviewing real-world financial statements.

## Annual Report for The Topps Company, Inc.

Organizations normally provide information, including financial statements, to *stakeholders* yearly in a document known as an **annual report**. The annual report for **Topps** is reproduced in Appendix B of this text. This report includes the company's financial statements (see pages 15–19 of the report). Immediately following the statements are footnotes that provide additional details about the items described in the statements (see pages 20–47). The annual report contains the *auditors' report*, which is discussed in Chapter 2. Annual reports also include written commentary describing management's assessment of significant events that affected the company during the reporting period. This commentary is called *management's discussion and analysis* (MD&A).

The U.S. Securities and Exchange Commission (SEC) requires public companies to file an annual report on a document known as a 10-K. The SEC is discussed in more detail later. Even though the annual report is usually flashier (contains more color and pictures) than the 10-K, the 10-K is normally more comprehensive with respect to content. As a result, the 10-K report can substitute for the annual report, but the annual report cannot substitute for the 10-K. In an effort to reduce costs, some companies use the 10-K report as their annual report.

## Special Terms in Real-World Reports

The financial statements of real-world companies include numerous items relating to advanced topics that are not covered in introductory accounting textbooks, especially the first chapter of an introductory accounting textbook. Do not, however, be discouraged from browsing through real-world annual reports. You will significantly enhance your learning if you look at many annual reports and attempt to identify as many items as you can. As your accounting knowledge grows, you will likely experience increased interest in real-world financial reports and the businesses they describe.

One thing you will notice about real-world companies' financial statements is that dollar amounts are usually stated in thousands or millions of dollars. This rounding is permitted under the concept of materiality. Financial reporting considers an item to be material only if knowing, versus not knowing, about the item would affect the decision of an average investor. Consider that in 2007 Wal-Mart's revenues were \$374,526 million. One million dollars to Wal-Mart is the equivalent of 27 cents to an individual who earned \$100,000 in 2007. The fact that Wal-Mart rounded its revenues to the nearest million dollars should not affect investors' decisions.

## Reality **BYTES**

How did Kevin Rose make 60 million dollars in just 18 months? He built a company investors wanted to buy. So how, in just 18 months, did he build a company so big that only a portion of it was worth \$60 million? When investors buy a company they are really buying a right to share in the *future* earnings of that company. The existing company does not have to be so large. It is the potential for future earnings that has to be big.

Kevin risked everything to start his business—"all his time, all his cash, and even his girlfriend, who fought with him after he poured his savings into his company instead of a down payment on a house." Kevin's idea was to use information that others would "dig up" on the Web. Kevin's Web site would allow his users to post links to other Web sites they had found containing interesting stories. The "diggers" would then vote for the best links to be placed onto the front page of Digg.com. As more and more users came to the site to find the most interesting stories, they would also become contributors by listing their favorite links. A snowball effect would make Digg.com a very popular Web site, thereby enabling the company to earn mega revenues from advertising.

Kevin and a small cadre of friends and supporters worked feverishly to establish the hardware and software that would enable the realization of Kevin's dream. The big question was "if we build it, will they come?" Roughly 18 months later they had their answer—a resounding yes. By 4 P.M. on launch day Digg.com had signed up more than 13,000 registered users. Growth continued to soar. Shortly thereafter Digg.com was ranked the 24th most popular Web site in the United States.

At this point Digg.com was just breaking even with advertising revenues and operating expenses of approximately \$3 million. While net income was virtually zero, investors established a price based on the potential for future profits. Indeed, financial analysts estimated that, given the opportunity, investors would be willing to pay approximately \$200 million to buy the company. Kevin's share of the company was worth roughly \$60 million.

As this story illustrates, investors frequently use information that is not reported in a company's annual report. The annual report focuses on historical data. This information is important because the past is frequently a strong predictor of what will happen in the future. However, innovative ideas may generate companies that have little or no history but that nevertheless have very promising futures. Also, investors and creditors may be motivated by nonfinancial considerations such as social consciousness, humanitarian ideals, or personal preferences. While accounting information is critically important, it is only one dimension of the information pool that investors and creditors use to make decisions.

We encourage you to look for annual reports in the library or ask your employer for a copy of your company's report. The Internet is another excellent source for obtaining annual reports. Most companies provide links to their annual reports on their home pages. Look for links labeled "about the company" or "investor relations" or other phrases that logically lead to the company's financial reports. The best way to learn accounting is to use it. Accounting is the language of business. Learning the language will serve you well in almost any area of business that you pursue.



## A Look Back

This chapter introduced the role of accounting in society and business: to provide information helpful to operating and evaluating the performance of organizations. Accounting is a measurement discipline. To communicate effectively, users of accounting must agree on the rules of measurement. *Generally accepted accounting principles (GAAP)* constitute the rules used by the accounting profession in the United States to govern financial reporting. GAAP is a work in progress that continues to evolve.

This chapter has discussed eight elements of financial statements: *assets*, *liabilities*, *equity*, *common stock (contributed capital)*, *revenue*, *expenses*, *dividends (distributions)*, and *net income*. The elements represent broad classifications reported on financial statements. Four basic financial statements appear in the reports of public companies: the *balance sheet*, the *income statement*, the *statement of changes in stockholders' equity*, and

the *statement of cash flows*. The chapter discussed the form and content of each statement as well as the interrelationships among the statements.

This chapter introduced a *horizontal financial statements model* as a tool to help you understand how business events affect a set of financial statements. This model is used throughout the text. You should carefully study this model before proceeding to Chapter 2.

## A Look Forward



To keep matters as simple as possible and to focus on the interrelationships among financial statements, this chapter considered only cash events. Obviously, many real-world events do not involve an immediate exchange of cash. For example, customers use telephone service throughout the month without paying for it until the next month. Such phone usage represents an expense in one month with a cash exchange in the following month. Events such as this are called *accruals*. Understanding the effects that accrual events have on the financial statements is included in Chapter 2.



### SELF-STUDY REVIEW PROBLEM

During 2011 Rustic Camp Sites experienced the following transactions.

1. RCS acquired \$32,000 cash by issuing common stock.
2. RCS received \$116,000 cash for providing services to customers (leasing camp sites).
3. RCS paid \$13,000 cash for salaries expense.
4. RCS paid a \$9,000 cash dividend to the owners.
5. RCS sold land that had cost \$100,000 for \$100,000 cash.
6. RCS paid \$47,000 cash for other operating expenses.

#### Required

- a. Record the transaction data in a horizontal financial statements model like the following one. In the Cash Flow column, classify the cash flows as operating activities (OA), investing activities (IA), or financing activities (FA). The beginning balances have been recorded as an example. They are the ending balances shown on RCS's December 31, 2010, financial statements illustrated in the chapter. Note that the revenue and expense accounts have a zero beginning balance. Amounts in these accounts apply only to a single accounting period. Revenue and expense account balances are not carried forward from one accounting period to the next.

Event No.	Balance Sheet								Income Statement				Statement of Cash Flows		
	Assets			=	Liab.	+	Stockholders' Equity								
	Cash	+	Land	=	N. Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.		=	Net Inc.
Beg. bal.	51,000	+	500,000	=	400,000	+	120,000	+	31,000	NA	−	NA	=	NA	NA

- b. Explain why there are no beginning balances in the Income Statement columns.
- c. What amount of net income will RCS report on the 2011 income statement?
- d. What amount of total assets will RCS report on the December 31, 2011, balance sheet?
- e. What amount of retained earnings will RCS report on the December 31, 2011, balance sheet?
- f. What amount of net cash flow from operating activities will RCS report on the 2011 statement of cash flows?

**Solution**

a.

Event No.	Balance Sheet								Income Statement				Statement of Cash Flows		
	Assets			=	Liab.	+	Stockholders' Equity								
	Cash	+	Land	=	N. Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.		=	Net Inc.
Beg. bal.	51,000	+	500,000	=	400,000	+	120,000	+	31,000	NA	−	NA	=	NA	NA
1.	32,000	+	NA	=	NA	+	32,000	+	NA	NA	−	NA	=	NA	32,000 FA
2.	116,000	+	NA	=	NA	+	NA	+	116,000	116,000	−	NA	=	116,000	116,000 OA
3.	(13,000)	+	NA	=	NA	+	NA	+	(13,000)	NA	−	13,000	=	(13,000)	(13,000) OA
4.	(9,000)	+	NA	=	NA	+	NA	+	(9,000)	NA	−	NA	=	NA	(9,000) FA
5.	100,000	+	(100,000)	=	NA	+	NA	+	NA	NA	−	NA	=	NA	100,000 IA
6.	(47,000)	+	NA	=	NA	+	NA	+	(47,000)	NA	−	47,000	=	(47,000)	(47,000) OA
Totals	230,000	+	400,000	=	400,000	+	152,000	+	78,000	116,000	−	60,000	=	56,000	179,000 NC*

\*The letters NC on the last line of the column designate the net change in cash.

- b. The revenue and expense accounts are temporary accounts used to capture data for a single accounting period. They are closed (amounts removed from the accounts) to retained earnings at the end of the accounting period and therefore always have zero balances at the beginning of the accounting cycle.
- c. RCS will report net income of \$56,000 on the 2011 income statement. Compute this amount by subtracting the expenses from the revenue (\$116,000 Revenue – \$13,000 Salaries expense – \$47,000 Other operating expense).
- d. RCS will report total assets of \$630,000 on the December 31, 2011, balance sheet. Compute total assets by adding the cash amount to the land amount (\$230,000 Cash + \$400,000 Land).
- e. RCS will report retained earnings of \$78,000 on the December 31, 2011, balance sheet. Compute this amount using the following formula: Beginning retained earnings + Net income – Dividends = Ending retained earnings. In this case, \$31,000 + \$56,000 – \$9,000 = \$78,000.
- f. Net cash flow from operating activities is the difference between the amount of cash collected from revenue and the amount of cash spent for expenses. In this case, \$116,000 cash inflow from revenue – \$13,000 cash outflow for salaries expense – \$47,000 cash outflow for other operating expenses = \$56,000 net cash inflow from operating activities.

**KEY TERMS**

Accounts 7  
Accounting 2  
Accounting equation 8  
Accounting event 9  
Accounting period 16  
Annual report 21  
Articulation 14  
Assets 7  
Asset exchange transaction 11  
Asset source transaction 10

Asset use transaction 11  
Balance sheet 17  
Claims 8  
Closing 18  
Common stock 9  
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Double-entry bookkeeping 10  
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Permanent accounts 19	Revenue 11	stockholders' equity 16	Transaction 9
Productive assets 17	Service businesses 21	Stockholders 9	
Reliability concept 13	Stakeholders 6		

## QUESTIONS

- Compare and contrast public accounting with private accounting.
- Explain the term *stakeholder*.
- What type of compensation does an investor expect to receive in exchange for providing financial resources to a business? What type of compensation does a creditor expect from providing financial resources to an organization or business?
- How do financial and managerial accounting differ?
- What are the U.S. rules of accounting measurement called?
- Is there a global GAAP (generally accepted accounting principles)? Explain your answer.
- What body has the primary responsibility for establishing GAAP in the United States?
- Distinguish between elements of financial statements and accounts.
- What is the most basic form of the accounting equation?
- What role do assets play in business profitability?
- To whom do the assets of a business belong?
- Explain the order of priority for asset distributions in a business liquidation.
- Name the element used to describe the ownership interest in a business.
- Name the element used to describe creditors' claims on the assets of a business.
- What is the accounting equation? Describe each of its three components.
- Who ultimately bears the risk and collects the rewards associated with operating a business?
- What does *double-entry bookkeeping* mean?
- Identify the three types of accounting transactions discussed in this chapter. Provide an example of each type of transaction, and explain how it affects the accounting equation.
- How does acquiring resources from owners affect the accounting equation?
- Name the two primary components of stockholders' equity.
- How does earning revenue affect the accounting equation?
- What are the three primary sources of assets?
- What is included in retained earnings?
- How does distributing assets (paying dividends) to owners affect the accounting equation?
- What are the similarities and differences between dividends and expenses?
- What four general-purpose financial statements do business enterprises use to communicate information to stakeholders?
- Which of the general-purpose financial statements provides information about the enterprise at a specific designated date?
- What causes a net loss?
- What three categories of cash receipts and cash payments do businesses report on the statement of cash flows? Explain the types of cash flows reported in each category.
- How are asset accounts usually arranged in the balance sheet?
- What type of information does a business typically include in its annual report?

## EXERCISES

All applicable Exercises are available with McGraw-Hill  
*Connect Accounting*.

connect  
ACCOUNTING

### Exercise 1-1 Careers in accounting

LO 1

Accountants establish careers in either the public or private sectors of the economy.

#### Required

- Explain how a career in public accounting differs from a career in private accounting.
- Name and describe three areas of service provided by public accountants.
- Identify four typical duties performed by accountants working in the private sector.



**LO 2****Exercise 1-2 Distributions in a business liquidation**

Assume that Brandy Company acquires \$1,400 cash from creditors and \$1,800 cash from investors (stockholders). The company then has an operating loss of \$2,000 cash and goes out of business.

**Required**

- Define the term *business liquidation*.
- What amount of cash will Brandy's creditors receive?
- What amount of cash will Brandy's investors (stockholders) receive?

**LO 2****Exercise 1-3 Identifying the reporting entities**

Carlos Bueso recently started a business. During the first few days of operation, Mr. Bueso transferred \$30,000 from his personal account into a business account for a company he named Bueso Enterprises. Bueso Enterprises borrowed \$40,000 from the State Bank of Texas. Mr. Bueso's father-in-law, James Bright, invested \$64,000 into the business for which he received a 25 percent ownership interest. Bueso Enterprises purchased a building from Leigh Realty Company. The building cost \$120,000 cash. Bueso Enterprises earned \$28,000 in revenue from the company's customers and paid its employees \$25,000 for salaries expense.

**Required**

Identify the entities that were mentioned in the scenario and explain what happened to the cash accounts of each entity that you identify.

**LO 3, 8****Exercise 1-4 Titles and accounts appearing on financial statements**

Annual reports normally include an income statement, statement of changes in equity, balance sheet, and statement of cash flows.

**Required**

Identify the financial statements on which each of the following titles or accounts would appear. If a title or an account appears on more than one statement, list all statements that would include it.

- Retained Earnings
- Revenue
- Common Stock
- Financing Activities
- Salaries Expense
- Land
- Ending Cash Balance
- Beginning Cash Balance
- Notes Payable
- Dividends

**LO 4****Exercise 1-5 Components of the accounting equation****Required**

The following three requirements are independent of each other.

- Michael's Motors has assets of \$4,550 and net assets of \$3,200. What is the amount of liabilities? What is the amount of claims?
- Sweet Tooth Bakery has liabilities of \$4,800 and equity of \$5,400. What is the amount of assets? What is the amount of net assets?
- Pam's Candy Co. has assets of \$49,200 and liabilities of \$28,200. What is the amount of equity? What is the amount of net assets?

### Exercise 1-6 *Effect of events on the accounting equation and careers in accounting*

LO 1, 4

Olive Enterprises experienced the following events during 2010.

1. Acquired cash from the issue of common stock.
2. Paid cash to reduce the principal on a bank note.
3. Sold land for cash at an amount equal to its cost.
4. Provided services to clients for cash.
5. Paid utilities expenses with cash.
6. Paid a cash dividend to the stockholders.



#### Required

- a. Explain how each of the events would affect the accounting equation by writing the letter I for increase, the letter D for decrease, and NA for does not affect under each of the components of the accounting equation. The first event is shown as an example.

Event Number	Stockholders' Equity			
	Assets	=	Liabilities + Common Stock	+ Retained Earnings
1	I		NA	I

- b. Sarah Culver audited Olive Enterprise's financial statements and provided assurances that the statements were prepared in accordance with GAAP. Sarah holds only one professional certification. Which certification do you expect Sarah holds? Explain why you chose this certification.

### Exercise 1-7 *Effects of issuing stock*

LO 3, 8

Joseph Company was started in 2009 when it acquired \$15,000 cash by issuing common stock. The cash acquisition was the only event that affected the business in 2009.

#### Required

- a. Write an accounting equation, and record the effects of the stock issue under the appropriate general ledger account headings.
- b. What is the amount of net income appearing on the income statement?
- c. Where would the stock issue be reported on the statement of cash flows?

### Exercise 1-8 *Effects of borrowing*

LO 3, 8

East Asia Company was started in 2011 when it issued a note to borrow \$6,200 cash.

#### Required

- a. Write an accounting equation, and record the effects of the borrowing transaction under the appropriate general ledger account headings.
- b. What is the amount of net income reported on the income statement? (Ignore any effects of interest.)
- c. Where would the note issue appear on the statement of cash flows?

### Exercise 1-9 *Effects of revenue, expense, and dividend events*

LO 5, 8

Ruff Company was started on January 1, 2009. During 2009, the company experienced the following three accounting events: (1) earned cash revenues of \$13,500, (2) paid cash expenses of \$9,200, and (3) paid a \$500 cash dividend to its stockholders. These were the only events that affected the company during 2009.

**Required**

- a. Write an accounting equation, and record the effects of each accounting event under the appropriate general ledger account headings.
- b. Prepare an income statement for the 2009 accounting period and a balance sheet at the end of 2009 for Ruff Company.

**LO 3, 8****Exercise 1-10** *Classifying items for the statement of cash flows***Required**

Indicate how each of the following would be classified on the statement of cash flows as operating activities (OA), investing activities (IA), financing activities (FA), or not applicable (NA).

- a. Borrowed \$8,000 cash from State Bank.
- b. Paid \$5,000 cash for salary expense.
- c. Signed a contract to provide services in the future.
- d. Performed services for \$25,000 cash.
- e. Paid \$9,000 cash to purchase land.
- f. Paid \$1,500 cash for utilities expense.
- g. Sold land for \$5,000 cash.
- h. Paid \$4,000 cash on the principal of a bank loan.
- i. Paid a \$2,000 cash dividend to the stockholders.
- j. Received \$30,000 cash from the issue of common stock.

**LO 5, 8****Exercise 1-11** *Effect of transactions on general ledger accounts*

At the beginning of 2011, T & M Corp.'s accounting records had the following general ledger accounts and balances.

T & M CORP. Accounting Equation								
Event	Assets		=	Liabilities	+	Stockholders' Equity		Acct. Titles for RE
	Cash	Land		Notes Payable		Common Stock	Retained Earnings	
Balance 1/1/2011	10,000	20,000		12,000		7,000	11,000	

T & M Corp. completed the following transactions during 2011.

1. Purchased land for \$5,000 cash.
2. Acquired \$25,000 cash from the issue of common stock.
3. Received \$75,000 cash for providing services to customers.
4. Paid cash operating expenses of \$42,000.
5. Borrowed \$10,000 cash from the bank.
6. Paid a \$5,000 cash dividend to the stockholders.
7. Determined that the market value of the land is \$35,000.

**Required**

- a. Record the transactions in the appropriate general ledger accounts. Record the amounts of revenue, expense, and dividends in the Retained Earnings column. Provide the appropriate titles for these accounts in the last column of the table.
- b. Determine the amount of net income for the 2011 period.

- c. What is the amount of total assets at the end of 2011? What is the amount of stockholders' equity at the end of 2011?
- d. What is the balance in the retained earnings account immediately after Transaction 3 is recorded?

### Exercise 1-12 *Preparing financial statements*

LO 5, 8

Dakota Company experienced the following events during 2010.

1. Acquired \$30,000 cash from the issue of common stock.
2. Paid \$12,000 cash to purchase land.
3. Borrowed \$10,000 cash.
4. Provided services for \$20,000 cash.
5. Paid \$1,000 cash for rent expense.
6. Paid \$15,000 cash for other operating expenses.
7. Paid a \$2,000 cash dividend to the stockholders.
8. Determined that the market value of the land purchased in Event 2 is now \$12,700.

#### Required

- a. The January 1, 2010, general ledger account balances are shown in the following accounting equation. Record the eight events in the appropriate general ledger accounts. Record the amounts of revenue, expense, and dividends in the Retained Earnings column. Provide the appropriate titles for these accounts in the last column of the table. The first event is shown as an example.

DAKOTA COMPANY								
Accounting Equation								
Event	Assets		=	Liabilities	+	Stockholders' Equity		Acct. Titles for RE
	Cash	Land		Notes Payable		Common Stock	Retained Earnings	
Balance 1/1/2010	2,000	12,000		0		6,000	8,000	
1.	30,000					30,000		

- b. Prepare an income statement, statement of changes in equity, year-end balance sheet, and statement of cash flows for the 2010 accounting period.
- c. Determine the percentage of assets that were provided by retained earnings. How much cash is in the retained earnings account?
- d. What is the balance in the Service Revenue account on January 1, 2011?

### Exercise 1-13 *Classifying events as asset source, use, or exchange*

LO 7

Vera Company experienced the following events during its first year of operations.

1. Acquired \$16,000 cash from the issue of common stock.
2. Paid \$3,500 cash for salary expenses.
3. Borrowed \$10,000 cash from New South Bank.
4. Paid \$6,000 cash to purchase land.
5. Provided boarding services for \$10,500 cash.
6. Acquired an additional \$1,000 cash from the issue of common stock.
7. Paid \$2,400 cash for utilities expense.
8. Paid a \$1,500 cash dividend to the stockholders.
9. Provided additional services for \$6,000 cash.

10. Purchased additional land for \$2,500 cash.
11. The market value of the land was determined to be \$24,000 at the end of the accounting period.

#### Required

Classify each event as an asset source, use, or exchange transaction.

### LO 3, 4

#### Exercise 1-14 *Relationship between assets and retained earnings*

West Company was organized when it acquired \$2,000 cash from the issue of common stock. During its first accounting period the company earned \$800 of cash revenue and incurred \$500 of cash expenses. Also, during the accounting period the company paid its owners a \$200 cash dividend.

#### Required

- a. Determine the ending amount of the retained earnings account.
- b. As of the end of the accounting period, determine what percentage of total assets were provided by earnings.

### LO 6



#### Exercise 1-15 *Historical cost versus market value*

JMD, Inc., purchased land in January 2009 at a cost of \$270,000. The estimated market value of the land is \$350,000 as of December 31, 2011.

#### Required

- a. Name the December 31, 2011, financial statement(s) on which the land will be shown.
- b. At what dollar amount will the land be shown in the financial statement(s)?
- c. Name the key concept that will be used in determining the dollar amount that will be reported for land that is shown in the financial statement(s).

### LO 2

#### Exercise 1-16 *Relating accounting events to entities*

Sharp Company was started in 2009 when it acquired \$25,000 cash by issuing common stock to Katie Sharp.

#### Required

- a. Was this event an asset source, use, or exchange transaction for Sharp Company?
- b. Was this event an asset source, use, or exchange transaction for Katie Sharp?
- c. Was the cash flow an operating, investing, or financing activity on Sharp Company's 2009 statement of cash flows?
- d. Was the cash flow an operating, investing, or financing activity on Katie Sharp's 2009 statement of cash flows?

### LO 4

#### Exercise 1-17 *Retained earnings and the closing process*

Firwood Company was started on January 1, 2010. During the month of January, Firwood earned \$4,600 of revenue and incurred \$3,000 of expense. Firwood closes its books on December 31 of each year.

#### Required

- a. Determine the balance in the Retained Earnings account as of January 31, 2010.
- b. Comment on whether retained earnings is an element of financial statements or an account.
- c. What happens to the Retained Earnings account at the time expenses are recognized?

### LO 4

#### Exercise 1-18 *Missing information in the accounting equation*

As of December 31, 2010, Thomas Company had total assets of \$156,000, total liabilities of \$85,600, and common stock of \$52,400. During 2011 Thomas earned \$36,000 of cash revenue, paid \$20,000 for cash expenses, and paid a \$2,000 cash dividend to the stockholders.

#### Required

- a. Determine the amount of retained earnings as of December 31, 2010, after closing.
- b. Determine the amount of net income earned in 2011.

- c. Determine the amount of retained earnings as of December 31, 2011, after closing.
- d. Determine the amount of cash that is in the retained earnings account as of December 31, 2011.

### Exercise 1-19 Missing information for determining net income

LO 4, 8

The December 31, 2009, balance sheet for Crow Company showed total stockholders' equity of \$82,500. Total stockholders' equity increased by \$53,400 between December 31, 2009, and December 31, 2010. During 2010 Crow Company acquired \$13,000 cash from the issue of common stock. Crow Company paid an \$8,000 cash dividend to the stockholders during 2010.

#### Required

Determine the amount of net income or loss Crow reported on its 2010 income statement. (*Hint:* Remember that stock issues, net income, and dividends all change total stockholders' equity.)

### Exercise 1-20 Effect of events on a horizontal financial statements model

LO 9

Tim's Auto Service experienced the following events during 2011.

1. Purchased land for cash.
2. Issued common stock for cash.
3. Collected cash for providing auto repair services to customers.
4. Paid a cash dividend to the stockholders.
5. Paid cash for operating expenses.
6. Paid cash to reduce the principal balance on a liability.
7. Determined that the market value of the land is higher than its historical cost.

#### Required

Use a horizontal statements model to show how each event affects the balance sheet, income statement, and statement of cash flows. Indicate whether the event increases (I), decreases (D), or does not affect (NA) each element of the financial statements. Also, in the Cash Flows column, classify the cash flows as operating activities (OA), investing activities (IA), or financing activities (FA). The first transaction is shown as an example.

Event No.	Balance Sheet									Income Statement					Statement of Cash Flows	
	Cash	+	Land	=	N. Pay	+	C. Stock.	+	Ret. Ear.	Rev.	−	Exp.	=	Net Inc.		
1.	D	+	I	=	NA	+	NA	+	NA	NA	−	NA	=	NA	D	IA

### Exercise 1-21 Record events in the horizontal statements model

LO 8, 9

Arnett Co. was started in 2011. During 2011, the company (1) acquired \$11,000 cash from the issue of common stock, (2) earned cash revenue of \$18,000, (3) paid cash expenses of \$10,500, and (4) paid a \$1,000 cash dividend to the stockholders.

#### Required

- a. Record these four events in a horizontal statements model. Also, in the Cash Flows column, classify the cash flows as operating activities (OA), investing activities (IA), or financing activities (FA). The first event is shown as an example.

Event No.	Balance Sheet							Income Statement					Statement of Cash Flows
	Cash	=	N. Pay	+	C. Stock.	+	Ret. Ear.	Rev.	−	Exp.	=	Net Inc.	
1.	11,000	=	NA	+	11,000	+	NA	NA	−	NA	=	NA	11,000 FA

- b. What does the income statement tell you about the assets of this business?



## LO 8, 9

**Exercise 1-22** *Effect of events on a horizontal statements model*

Holiday, Inc., was started on January 1, 2009. The company experienced the following events during its first year of operation.

1. Acquired \$50,000 cash from the issue of common stock.
2. Paid \$12,000 cash to purchase land.
3. Received \$50,000 cash for providing tax services to customers.
4. Paid \$9,500 cash for salary expenses.
5. Acquired \$5,000 cash from the issue of additional common stock.
6. Borrowed \$10,000 cash from the bank.
7. Purchased additional land for \$10,000 cash.
8. Paid \$8,000 cash for other operating expenses.
9. Paid a \$2,800 cash dividend to the stockholders.
10. Determined that the market value of the land is \$25,000.

**Required**

- a. Record these events in a horizontal statements model. Also, in the Cash Flows column, classify the cash flows as operating activities (OA), investing activities (IA), or financing activities (FA). The first event is shown as an example.

Event No.	Balance Sheet									Income Statement					Statement of Cash Flows
	Cash	+	Land	=	N. Pay	+	C. Stock.	+	Ret. Ear.	Rev.	−	Exp.	=	Net Inc.	
1.	50,000	+	NA	=	NA	+	50,000	+	NA	NA	−	NA	=	NA	50,000 FA

- b. What is the balance in the Retained Earnings account immediately after Event 3 is recorded?
- c. What is the net income earned in 2009?
- d. What is the amount of total assets at the end of 2009?
- e. What is the net cash flow from operating activities for 2009?
- f. What is the net cash flow from investing activities for 2009?
- g. What is the net cash flow from financing activities for 2009?
- h. What is the cash balance at the end of 2009?
- i. As of the end of the year 2009, what percentage of total assets were provided by creditors, investors, and earnings?

## LO 7, 9

**Exercise 1-23** *Types of transactions and the horizontal statements model*

Jodi's Pet Store experienced the following events during its first year of operations, 2009.

1. Acquired cash by issuing common stock.
2. Purchased land with cash.
3. Borrowed cash from a bank.
4. Signed a contract to provide services in the future.
5. Paid a cash dividend to the stockholders.
6. Paid cash for operating expenses.
7. Determined that the market value of the land is higher than the historical cost.

**Required**

- a. Indicate whether each event is an asset source, use, or exchange transaction.
- b. Use a horizontal statements model to show how each event affects the balance sheet, income statement, and statement of cash flows. Indicate whether the event increases (I), decreases (D), or does not affect (NA) each element of the financial statements. Also, in

the Cash Flows column, classify the cash flows as operating activities (OA), investing activities (IA), or financing activities (FA). The first transaction is shown as an example.

Event No.	Balance Sheet									Income Statement				Statement of Cash Flows	
	Cash	+	Land	=	N. Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=		Net Inc.
1.	I	+	NA	=	NA	+	I	+	NA	NA	−	NA	=	NA	I FA

### Exercise 1-24 *Types of business entities*

LO 9

#### Required

Give an example of each of the following types of business entities.

- Service business
- Merchandising business
- Manufacturing business

## PROBLEMS

All applicable Problems are available with McGraw-Hill Connect Accounting.

connect  
ACCOUNTING

### Problem 1-25 *Accounting entities*

LO 2

The following business scenarios are independent from one another.

- Mary Poort purchased an automobile from Hayney Bros. Auto Sales for \$9,000.
- John Rodman loaned \$15,000 to the business in which he is a stockholder.
- First State Bank paid interest to Caleb Co. on a certificate of deposit that Caleb Co. has invested at First State Bank.
- Parkside Restaurant paid the current utility bill of \$128 to Gulf Utilities.
- Gatmore, Inc., borrowed \$50,000 from City National Bank and used the funds to purchase land from Morgan Realty.
- Steven Wong purchased \$10,000 of common stock of International Sales Corporation from the corporation.
- Dan Dow loaned \$4,000 cash to his daughter.
- Mega Service Co. earned \$5,000 in cash revenue.
- McCloud Co. paid \$1,500 for salaries to each of its four employees.
- Shim Inc. paid a cash dividend of \$3,000 to its sole shareholder, Marcus Shim.

#### Required

- For each scenario, create a list of all of the entities that are mentioned in the description.
- Describe what happens to the cash account of each entity that you identified in Requirement *a*.

#### CHECK FIGURE

- a1. Entities mentioned: Mary Poort and Hayney Bros. Auto Sales

### Problem 1-26 *Relating titles and accounts to financial statements*

LO 3, 8

#### Required

Identify the financial statements on which each of the following items (titles, date descriptions, and accounts) appears by placing a check mark in the appropriate column. If an item appears on more than one statement, place a check mark in every applicable column. The first item is completed as an example.

Item	Income Statement	Statement of Changes in Stockholders' Equity	Balance Sheet	Statement of Cash Flows
Notes payable			✓	
Beginning common stock				
Service revenue				
Utility expense				
Cash from stock issue				
Operating activities				
For the period ended (date)				
Net income				
Investing activities				
Net loss				
Ending cash balance				
Salary expense				
Consulting revenue				
Dividends				
Financing activities				
Ending common stock				
Interest expense				
As of (date)				
Land				
Beginning cash balance				

### LO 1, 3, 4, 5, 8

### Problem 1-27 *Preparing financial statements for two complete accounting cycles and careers in accounting*

#### CHECK FIGURES

- a. Net Income 2010: \$40,000  
b. Retained Earnings 2011: \$80,000

Susan's Consulting Services experienced the following transactions for 2010, the first year of operations, and 2011. Assume that all transactions involve the receipt or payment of cash.

#### Transactions for 2010

1. Acquired \$50,000 by issuing common stock.
2. Received \$100,000 for providing services to customers.
3. Borrowed \$15,000 cash from creditors.
4. Paid expenses amounting to \$60,000.
5. Purchased land for \$40,000 cash.

#### Transactions for 2011

Beginning account balances for 2011 are

Cash	\$65,000
Land	40,000
Notes payable	15,000
Common stock	50,000
Retained earnings	40,000

1. Acquired an additional \$20,000 from the issue of common stock.
2. Received \$130,000 for providing services in 2011.
3. Paid \$10,000 to reduce notes payable.
4. Paid expenses amounting to \$75,000.
5. Paid a \$15,000 dividend to the stockholders.
6. Determined that the market value of the land is \$50,000.

### Required

- a. Write an accounting equation, and record the effects of each accounting event under the appropriate headings for each year. Record the amounts of revenue, expense, and dividends in the Retained Earnings column. Provide appropriate titles for these accounts in the last column of the table.
- b. Prepare an income statement, statement of changes in stockholders' equity, year-end balance sheet, and statement of cash flows for each year.
- c. Determine the amount of cash that is in the retained earnings account at the end of 2010 and 2011.
- d. Compare the information provided by the income statement with the information provided by the statement of cash flows. Point out similarities and differences.
- e. Determine the balance in the Retained Earnings account immediately after Event 2 in 2010 and in 2011 are recorded.
- f. Would the financial statements for Susan's Consulting Services be prepared by a public or a private accountant? Explain your answer.

### Problem 1-28 *Interrelationships among financial statements*

Crawford Enterprises started the 2009 accounting period with \$50,000 of assets (all cash), \$18,000 of liabilities, and \$4,000 of common stock. During the year, Crawford earned cash revenues of \$38,000, paid cash expenses of \$32,000, and paid a cash dividend to stockholders of \$2,000. Crawford also acquired \$15,000 of additional cash from the sale of common stock and paid \$10,000 cash to reduce the liability owed to a bank.

### Required

- a. Prepare an income statement, statement of changes in stockholders' equity, period-end balance sheet, and statement of cash flows for the 2009 accounting period. (*Hint: Determine the amount of beginning retained earnings before considering the effects of the current period events. It also might help to record all events under an accounting equation before preparing the statements.*)
- b. Determine the percentage of total assets that were provided by creditors, investors, and earnings.

### Problem 1-29 *Classifying events as asset source, use, or exchange*

The following unrelated events are typical of those experienced by business entities.

1. Acquire cash by issuing common stock.
2. Borrow cash from the local bank.
3. Pay office supplies expense.
4. Make plans to purchase office equipment.
5. Trade a used car for a computer with the same value.
6. Pay other operating supplies expense.
7. Agree to represent a client in an IRS audit and to receive payment when the audit is complete.
8. Receive cash from customers for services rendered.
9. Pay employee salaries with cash.
10. Pay back a bank loan with cash.
11. Pay interest to a bank with cash.
12. Transfer cash from a checking account to a money market account.

### LO 8

#### CHECK FIGURE

a. Net Income: \$6,000  
Total Assets: \$59,000

### LO 6

#### CHECK FIGURE

Event 2: Asset Source

13. Sell land for cash at its original cost.
14. Pay a cash dividend to stockholders.
15. Learn that a financial analyst determined the company's price-earnings ratio to be 26.

**Required**

Identify each of the events as an asset source, asset use, or asset exchange transaction. If an event would not be recorded under generally accepted accounting principles, identify it as not applicable (NA). Also indicate for each event whether total assets would increase, decrease, or remain unchanged. Organize your answer according to the following table. The first event is shown in the table as an example.

Event No.	Type of Event	Effect on Total Assets
1	Asset source	Increase

**LO 9****Problem 1-30** *Recording the effect of events in a horizontal statements model*

Doyer Corporation experienced the following transactions during 2010.

1. Paid a cash dividend to the stockholders.
2. Acquired cash by issuing additional common stock.
3. Signed a contract to perform services in the future.
4. Performed services for cash.
5. Paid cash expenses.
6. Sold land for cash at an amount equal to its cost.
7. Borrowed cash from a bank.
8. Determined that the market value of the land is higher than its historical cost.

**Required**

Use a horizontal statements model to show how each event affects the balance sheet, income statement, and statement of cash flows. Indicate whether the event increases (I), decreases (D), or does not affect (NA) each element of the financial statements. Also, in the Cash Flows column, classify the cash flows as operating activities (OA), investing activities (IA), or financing activities (FA). The first transaction is shown as an example.

Event No.	Balance Sheet									Income Statement					Statement of Cash Flows
	Cash	+	Land	=	N. Pay	+	C. Stock.	+	Ret. Ear.	Rev.	−	Exp.	=	Net Inc.	
1.	D	+	NA	=	NA	+	NA	+	D	NA	−	NA	=	NA	D FA

**LO 8, 9****CHECK FIGURES**

- a. Net Income: \$3,000
- e. Net Cash Flow from Operating Activities: \$3,000

**Problem 1-31** *Recording events in a horizontal statements model*

Madden Company was started on January 1, 2011, and experienced the following events during its first year of operation.

1. Acquired \$30,000 cash from the issue of common stock.
2. Borrowed \$40,000 cash from National Bank.
3. Earned cash revenues of \$48,000 for performing services.
4. Paid cash expenses of \$45,000.
5. Paid a \$1,000 cash dividend to the stockholders.

6. Acquired an additional \$20,000 cash from the issue of common stock.
7. Paid \$10,000 cash to reduce the principal balance of the bank note.
8. Paid \$53,000 cash to purchase land.
9. Determined that the market value of the land is \$75,000.

### Required

- a. Record the preceding transactions in the horizontal statements model. Also, in the Cash Flows column, classify the cash flows as operating activities (OA), investing activities (IA), or financing activities (FA). The first event is shown as an example.

Event No.	Balance Sheet									Income Statement					Statement of Cash Flows	
	Cash	+	Land	=	N. Pay	+	C. Stock.	+	Ret. Ear.	Rev.	−	Exp.	=	Net Inc.		
1.	30,000	+	NA	=	NA	+	30,000	+	NA	NA	−	NA	=	NA	30,000	FA

- b. Determine the amount of total assets that Madden would report on the December 31, 2011, balance sheet.
- c. Identify the sources of the assets that Madden would report on the December 31, 2011, balance sheet. Determine the amount of each of these sources.
- d. Determine the net income that Madden would report on the 2011 income statement. Explain why dividends do not appear on the income statement.
- e. Determine the net cash flows from operating activities, financing activities, and investing activities that Madden would report on the 2011 statement of cash flows.
- f. Determine the percentage of assets that were provided by investors, creditors, and earnings.

### Problem 1-32 Distinguishing revenue from retained earnings and closing

LO 3, 8

After closing on December 31, 2010, Direct Delivery Company (DDC) had \$9,200 of assets, \$4,000 of liabilities, and \$1,400 of common stock. During January of 2011 DDC earned \$1,500 of revenue and incurred \$600 of expense. DDC closes its books each year on December 31.

### Required

- a. Determine the balance in the Retained Earnings account as of December 31, 2010.
- b. Determine the balance in the Retained Earnings account as of January 1, 2011.
- c. Determine the balance in the Retained Earnings account as of January 31, 2011.

## ANALYZE, THINK, COMMUNICATE

### ATC 1-1 Business Applications Case Understanding real world annual reports

### Required

Use the **Topps Company's** annual report in Appendix B to answer the following questions.

The Topps Company, Inc.

- a. What was Topps' net income for 2006?
- b. Did Topps' net income increase or decrease from 2005 to 2006, and by how much?
- c. What was Topps' accounting equation for 2006?
- d. Which of the following had the largest percentage increase from 2005 to 2006: net sales, cost of sales, or selling, general, and administrative expenses? Show all computations.



**ATC 1-2 Group Assignment** *Missing information*

The following selected financial information is available for ROC, Inc. Amounts are in millions of dollars.

Income Statements	2009	2008	2007	2006
Revenue	\$ 860	\$1,520	\$ (a)	\$1,200
Cost and expenses	(a)	(a)	(2,400)	(860)
Income from continuing operations	(b)	450	320	(a)
Unusual items	-0-	175	(b)	(b)
Net income	\$ 20	\$ (b)	\$ 175	\$ 300
<b>Balance Sheets</b>				
Assets				
Cash and marketable securities	\$ 350	\$1,720	\$ (c)	\$ 940
Other assets	1,900	(c)	2,500	(c)
Total assets	2,250	\$2,900	\$ (d)	\$3,500
Liabilities	\$ (c)	\$ (d)	\$1,001	\$ (d)
Stockholders' equity				
Common stock	600	720	(e)	800
Retained earnings	(d)	(e)	800	(e)
Total stockholders' equity	1,520	1,345	(f)	2,200
Total liabilities and stockholders' equity	\$2,250	\$ (f)	\$3,250	\$3,500

- a. Divide the class into groups of four or five students each. Organize the groups into four sections. Assign Task 1 to the first section of groups, Task 2 to the second section, Task 3 to the third section, and Task 4 to the fourth section.

**Group Tasks**

- (1) Fill in the missing information for 2006.
  - (2) Fill in the missing information for 2007.
  - (3) Fill in the missing information for 2008.
  - (4) Fill in the missing information for 2009.
- b. Each section should select two representatives. One representative is to put the financial statements assigned to that section on the board, underlining the missing amounts. The second representative is to explain to the class how the missing amounts were determined.

**ATC 1-3 Real-World Case** *Classifying cash flow activities at five companies*

The following events occurred at five real-world companies.

On March 17, 2008, **H&R Block, Inc.**, announced that it had signed an agreement to sell the mortgage loan servicing business that is a part of its Option One Mortgage Corporation subsidiary for approximately \$1 billion. Assume this sale was completed.

On March 19, 2008, **Visa, Inc.**, issued approximately 450 million shares of stock for almost \$20 billion.

On February 19, 2008, **Chrysler, LLC**, announced that it planned to significantly expand existing engineering operations in countries outside the United States. These plans include adding new development centers outside the country. Assume these plans were accomplished.

During 2007, **Target Corporation** borrowed \$6.75 billion using notes payable that were due to be repaid between 2013 and 2038.

During 2007, **Levi Strauss & Co.** had cash sales of approximately \$4.25 billion.

### Required

Determine if each of the transactions above should be classified as an *operating*, *investing*, or *financing* activity. Also, identify each cash flow as an *inflow* or *outflow*.

### ATC 1-4 Business Applications Case Use of real-world numbers for forecasting

The following information was drawn from the annual report of **Machine Import Company (MIC)**:



	For the Years	
	2009	2010
<b>Income Statements</b>		
Revenue	\$800,000	\$920,000
Operating Expenses	<u>720,000</u>	<u>820,000</u>
Income from Continuing Operations	80,000	100,000
Extraordinary Item—Lottery Win		<u>20,000</u>
Net Income	<u>\$ 80,000</u>	<u>\$120,000</u>
<b>Balance Sheets</b>		
Assets	\$700,000	\$720,000
Liabilities	\$300,000	\$200,000
Stockholders' Equity		
Common Stock	150,000	150,000
Retained Earnings	<u>250,000</u>	<u>370,000</u>
Total Liabilities and Stockholders' Equity	<u>\$700,000</u>	<u>\$720,000</u>

### Required

- Compute the percentage of growth in net income from 2009 to 2010. Can stockholders expect a similar increase between 2010 and 2011?
- Assuming that MIC collected \$120,000 cash from earnings (net income), explain how this money was spent in 2010.
- Assuming that MIC experiences the same percentage of growth from 2010 to 2011 as it did from 2009 to 2010, determine the amount of income from continuing operations that the owners can expect to see on the 2011 income statement.
- During 2011, MIC experienced a \$15,000 loss due to storm damage (note that this would be shown as an extraordinary loss on the income statement). Liabilities and common stock were unchanged from 2010 to 2011. Use the information that you computed in Part c plus the additional information provided in the previous two sentences to calculate net income for 2011 and prepare a balance sheet as of December 31, 2011.

### ATC 1-5 Writing Assignment Elements of financial statements defined

Bob and his sister Marsha both attend the state university. As a reward for their successful completion of the past year (Bob had a 3.2 GPA in business, and Marsha had a 3.7 GPA in art), their father gave each of them 100 shares of **The Walt Disney Company** stock. They have just received their first annual report. Marsha does not understand what the information means and has asked Bob to explain it to her. Bob is currently taking an accounting course, and she knows he will understand the financial statements.



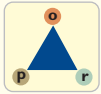
### Required

Assume that you are Bob. Write Marsha a memo explaining the following financial statement items to her. In your explanation, describe each of the two financial statements and explain the financial information each contains. Also define each of the elements listed for each financial statement and explain what it means.

Balance Sheet	
Assets	
Liabilities	
Stockholders' Equity	
Income Statement	
Revenue	
Expense	
Net Income	

**ATC 1-6 Ethical Dilemma** *Loyalty versus the bottom line*

Assume that Jones has been working for you for five years. He has had an excellent work history and has received generous pay raises in response. The raises have been so generous that Jones is quite overpaid for the job he is required to perform. Unfortunately, he is not qualified to take on other, more responsible jobs available within the company. A recent job applicant is willing to accept a salary \$5,000 per year less than the amount currently being paid to Jones. The applicant is well qualified to take over Jones's duties and has a very positive attitude. The following financial statements were reported by your company at the close of its most recent accounting period.



Financial Statements			
Income Statement			
Revenue		\$57,000	
Expense		(45,000)	
Net Income		<u>\$12,000</u>	
Statement of Changes in Stockholders' Equity			
Beginning Common Stock	\$20,000		
Plus: Stock Issued	<u>5,000</u>		
Ending Common Stock			\$25,000
Beginning Retained Earnings	50,000		
Net Income	12,000		
Dividends	<u>(2,000)</u>		
Ending Retained Earnings		<u>60,000</u>	
Total Stockholders' Equity			<u>\$85,000</u>
Balance Sheet			
Assets			
Cash		<u>\$85,000</u>	
Stockholders' Equity			
Common Stock		\$25,000	
Retained Earnings		<u>60,000</u>	
Total Stockholders' Equity			<u>\$85,000</u>
Statement of Cash Flows			
Operating Activities			
Inflow from Customers	\$57,000		
Outflow for Expenses	<u>(45,000)</u>		
Net Inflow from Operating Activities			\$12,000
Investing Activities			0
Financing Activities			
Inflow from Stock Issue	5,000		
Outflow for Dividends	<u>(2,000)</u>		
Net Inflow from Financing Activities		<u>3,000</u>	
Net Change in Cash			<u>15,000</u>
Plus: Beginning Cash Balance			<u>70,000</u>
Ending Cash Balance			<u>\$85,000</u>

### Required

- a. Reconstruct the financial statements, assuming that Jones was replaced at the beginning of the most recent accounting period. Both Jones and his replacement are paid in cash. No other changes are to be considered.
- b. Would a public or private accountant be more likely to face this type of dilemma?

### ATC 1-7 Research Assignment *Finding real-world accounting information*

The Curious Accountant story at the beginning of this chapter referred to the **Coca-Cola Company** and discussed who its stakeholders are. This chapter has introduced the basic structure of the four financial statements used by companies to annually keep their stakeholders informed as to their accomplishments and financial situation. Complete the requirements below using the most recent (20xx) financial statements available on xx Coke's website. Like many companies, Coke uses the Form 10-K that it files with the Securities and Exchange Commission (SEC) as its annual report. Obtain the statements on the Internet by following the steps below. (The formatting of the company's website may have changed since these instructions were written.)



- Go to [www.thecoca-colacompany.com](http://www.thecoca-colacompany.com).
- Click on the "Investors" link at the top of the page.
- Click on the "Financial Information" link at the left side of the page.
- Under the "Financial Information" heading, click on xx "Annual & Other Reports."
- Click on "20xx Annual Report on Form 10-K."
- Use the Table of Contents at the beginning of the Form 10-K to locate the company's "Financial Statements and Supplementary Data" section. Go to the company's financial statements and complete the requirements below.

### Required

- a. What was the company's net income in each of the last three years?
- b. What amount of total assets did the company have at the end of the most recent year?
- c. How much retained earnings did the company have at the end of the most recent year?  
*Note:* Coke uses the name *reinvested earnings* rather than retained earnings.
- d. For the most recent year, what was the company's cash flow from operating activities, cash flow from investing activities, and cash flow from financing activities?

# CHAPTER 2

## Understanding *the* Accounting Cycle

### LEARNING OBJECTIVES

**After you have mastered the material in this chapter you will be able to:**

- 1** Record basic accrual and deferral events in a horizontal financial statements model.
- 2** Organize general ledger accounts under an accounting equation.
- 3** Prepare financial statements based on accrual accounting.
- 4** Describe the closing process, the accounting cycle, and the matching concept.
- 5** Prepare a vertical financial statements model.
- 6** Explain how business events affect financial statements over multiple accounting cycles.
- 7** Identify the primary components of corporate governance.
- 8** Classify accounting events into one of four categories:
  - a.** asset source transactions.
  - b.** asset use transactions.
  - c.** asset exchange transactions.
  - d.** claims exchange transactions.

### CHAPTER OPENING

Users of financial statements must distinguish between the terms *recognition* and *realization*. **Recognition** means formally *reporting* an economic item or event in the financial statements. **Realization** refers to collecting money, generally from the sale of products or services. Companies may recognize (report) revenue in the income statement in a different accounting period from the period in which they collect the cash related to

the revenue. Furthermore, companies frequently make cash payments for expenses in accounting periods other than the periods in which the expenses are recognized in the income statement.

To illustrate, assume Johnson Company provides services to customers in 2010 but collects cash for those services in 2011. In this case, realization occurs in 2011. When should Johnson recognize the services revenue?

Users of *cash basis* accounting recognize (report) revenues and expenses in the period in which cash is collected or paid. Under cash basis accounting Johnson would recognize the revenue in 2011 when it collects the cash. In contrast, users of **accrual accounting** recognize revenues and expenses in the period in which they occur, regardless of when cash is collected or paid. Under accrual accounting Johnson would recognize the revenue in 2010 (the period in which it performed the services) even though it does not collect (realize) the cash until 2011.

Accrual accounting is required by generally accepted accounting principles. Virtually all major companies operating in the United States use it. Its two distinguishing features are called *accruals* and *deferrals*.

- The term **accrual** describes an earnings event that is recognized **before** cash is exchanged. Johnson's recognition of revenue in 2010 related to cash realized in 2011 is an example of an accrual.
- The term **deferral** describes an earnings event that is recognized **after** cash has been exchanged. Suppose Johnson pays cash in 2010 to purchase office supplies it uses in 2011. In this case the cash payment occurs in 2010 although supplies expense is recognized in 2011. This example is a deferral.

## The *Curious* Accountant

Suppose Sarah Greenwood wishes to purchase a subscription to *American Baby* for her sister who is scheduled to give birth to her first child in early September 2010. She pays \$12 for a one-year subscription to the **Meredith Corporation**, the company that publishes *American Baby*, *Better Homes and Gardens*, *The Ladies Home Journal*, and several other magazines. It also owns 13 television stations. Her sister will receive her first issue of the magazine in September.

How should Meredith Corporation account for the receipt of this cash? How would this event be reported on its December 31, 2010, financial statements? (Answer on page 59.)





**LO 1**

Record basic accrual and deferral events in a horizontal financial statements model.

## ACCRUAL ACCOUNTING

The next section of the text describes seven events experienced by Cato Consultants, a training services company that uses accrual accounting.

**EVENT 1** Cato Consultants was started on January 1, 2010, when it acquired \$5,000 cash by issuing common stock.

The issue of stock for cash is an **asset source transaction**. It increases the company's assets (cash) and its equity (common stock). The transaction does not affect the income statement. The cash inflow is classified as a financing activity (acquisition from owners). These effects are shown in the following financial statements model:

Assets = Liab. + Stockholders' Equity									
Cash	=		Com. Stk.	+ Ret. Earn.	Rev.	- Exp.	= Net Inc.		Cash Flow
5,000	=	NA	+ 5,000	+ NA	NA	- NA	= NA		5,000 FA

### Accounting for Accounts Receivable

**EVENT 2** During 2010 Cato Consultants provided \$84,000 of consulting services to its clients. The business has completed the work and sent bills to the clients, but not yet collected any cash. This type of transaction is frequently described as providing services *on account*.

Accrual accounting requires companies to recognize revenue in the period in which the work is done regardless of when cash is collected. In this case, revenue is recognized in 2010 even though cash has not been realized (collected). Recall that revenue represents the economic benefit that results in an increase in assets from providing goods and services to customers. The specific asset that increases is called **Accounts Receivable**. The balance in Accounts Receivable represents the amount of cash the company expects to collect in the future. Since the revenue recognition causes assets (accounts receivable) to increase, it is classified as an asset source transaction. Its effect on the financial statements follows.

Assets = Liab. + Stockholders' Equity									
Cash	+ Accts. Rec.	=		Com. Stk. + Ret. Earn.	Rev.	- Exp.	= Net Inc.		Cash Flow
NA	+ 84,000	=	NA	+ NA + 84,000	84,000	- NA	= 84,000		NA

Notice that the event affects the income statement but not the statement of cash flows. The statement of cash flows will be affected in the future when cash is collected.

**EVENT 3** Cato collected \$60,000 cash from customers in partial settlement of its accounts receivable.

The collection of an account receivable is an **asset exchange transaction**. One asset account (Cash) increases and another asset account (Accounts Receivable) decreases. The amount of total assets is unchanged. The effect of the \$60,000 collection of receivables on the financial statements is as follows.

Assets = Liab. + Stockholders' Equity									
Cash	+ Accts. Rec.	=		Com. Stk. + Ret. Earn.	Rev.	- Exp.	= Net Inc.		Cash Flow
60,000	+ (60,000)	=	NA	+ NA + NA	NA	- NA	= NA		60,000 OA

Notice that collecting the cash did not affect the income statement. The revenue was recognized when the work was done (see Event 2). Revenue would be double counted if it were recognized again when the cash is collected. The statement of cash flows reflects a cash inflow from operating activities.

## Other Events

### EVENT 4 Cato paid the instructor \$10,000 for teaching training courses (salary expense).

Cash payment for salary expense is an **asset use transaction**. Both the asset account Cash and the equity account Retained Earnings decrease by \$10,000. Recognizing the expense decreases net income on the income statement. Since Cato paid cash for the expense, the statement of cash flows reflects a cash outflow from operating activities. These effects on the financial statements follow.

Assets			=	Liab.	+	Stockholders' Equity								
Cash	+	Accts. Rec.	=			Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
(10,000)	+	NA	=	NA	+	NA	+	(10,000)	NA	−	10,000	=	(10,000)	(10,000) OA

### EVENT 5 Cato paid \$2,000 cash for advertising costs. The advertisements appeared in 2010.

Cash payments for advertising expenses are asset use transactions. Both the asset account Cash and the equity account Retained Earnings decrease by \$2,000. Recognizing the expense decreases net income on the income statement. Since the expense was paid with cash, the statement of cash flows reflects a cash outflow from operating activities. These effects on the financial statements follow.

Assets = Liab. + Stockholders' Equity															
Cash	+	Accts. Rec.	=			Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow	
(2,000)	+	NA	=	NA	+	NA	+	(2,000)	NA	−	2,000	=	(2,000)	(2,000)	OA

### EVENT 6 Cato signed contracts for \$42,000 of consulting services to be performed in 2011.

The \$42,000 for consulting services to be performed in 2011 is not recognized in the 2010 financial statements. Revenue is recognized for work actually completed, *not* work expected to be completed. This event does not affect any of the financial statements.

Assets = Liab. + Stockholders' Equity														
Cash	+	Accts. Rec.	=			Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
NA	+	NA	=	NA	+	NA	+	NA	NA	−	NA	=	NA	NA

## Accounting for Accrued Salary Expense (Adjusting Entry)

It is impractical to record many business events as they occur. For example, Cato incurs salary expense continually as the instructor teaches courses. Imagine the impossibility of trying to record salary expense second by second! Companies normally record transactions when it is most convenient. The most convenient time to record

many expenses is when they are paid. Often, however, a single business transaction pertains to more than one accounting period. To provide accurate financial reports in such cases, companies may need to recognize some expenses before paying cash for them. Expenses that are recognized before cash is paid are called **accrued expenses**. The accounting for Event 7 illustrates the effect of recognizing accrued salary expense.

**EVENT 7** At the end of 2010 Cato recorded accrued salary expense of \$6,000 (the salary expense is for courses the instructor taught in 2008 that Cato will pay him for in 2011).

Accrual accounting requires that companies recognize expenses in the period in which they are incurred regardless of when cash is paid. Cato must recognize all salary expense in the period in which the instructor worked (2010) even though Cato will not pay the instructor again until 2011. Cato must also recognize the obligation (liability) it has to pay the instructor. To accurately report all 2010 salary expense and year-end obligations, Cato must record the unpaid salary expense and salary liability before preparing its financial statements. The entry to recognize the accrued salary expense is called an **adjusting entry**. Like all adjusting entries, it is only to update the accounting records; it does not affect cash.

This adjusting entry decreases stockholders' equity (retained earnings) and increases a liability account called **Salaries Payable**. The balance in the Salaries Payable account represents the amount of cash the company is obligated to pay the instructor in the future. The effect of the expense recognition on the financial statements follows.

Assets			=	Liab.	+	Stockholders' Equity								
Cash	+	Accts. Rec.	=	Sal. Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
NA	+	NA	=	6,000	+	NA	+	(6,000)	NA	−	6,000	=	(6,000)	NA

This event is a **claims exchange transaction**. The claims of creditors (liabilities) increase and the claims of stockholders (retained earnings) decrease. Total claims remain unchanged. The salary expense is reported on the income statement. The statement of cash flows is not affected.

Be careful not to confuse liabilities with expenses. Although liabilities may increase when a company recognizes expenses, liabilities are not expenses. Liabilities are obligations. They can arise from acquiring assets as well as recognizing expenses. For example, when a business borrows money from a bank, it recognizes an increase in assets (cash) and liabilities (notes payable). The borrowing transaction does not affect expenses.

## CHECK Yourself 2.1

During 2010, Anwar Company earned \$345,000 of revenue on account and collected \$320,000 cash from accounts receivable. Anwar paid cash expenses of \$300,000 and cash dividends of \$12,000. Determine the amount of net income Anwar should report on the 2010 income statement and the amount of cash flow from operating activities Anwar should report on the 2010 statement of cash flows.

**Answer** Net income is \$45,000 (\$345,000 revenue − \$300,000 expenses). The cash flow from operating activities is \$20,000, the amount of revenue collected in cash from customers (accounts receivable) minus the cash paid for expenses (\$320,000 − \$300,000). Dividend payments are classified as financing activities and do not affect the determination of either net income or cash flow from operating activities.

## Summary of Events

The previous section of this chapter described seven events Cato Consultants experienced during the 2010 accounting period. These events are summarized below for your convenience.

- Event 1** Cato Consultants acquired \$5,000 cash by issuing common stock.
- Event 2** Cato provided \$84,000 of consulting services on account.
- Event 3** Cato collected \$60,000 cash from customers in partial settlement of its accounts receivable.
- Event 4** Cato paid \$10,000 cash for salary expense.
- Event 5** Cato paid \$2,000 cash for 2010 advertising costs.
- Event 6** Cato signed contracts for \$42,000 of consulting services to be performed in 2011.
- Event 7** Cato recognized \$6,000 of accrued salary expense.

## The General Ledger

Exhibit 2.1 shows the 2010 transaction data recorded in general ledger accounts. The information in these accounts is used to prepare the financial statements. The revenue and expense items appear in the Retained Earnings column with their account titles immediately to the right of the dollar amounts. The amounts are color coded to help you trace the data to the financial statements. Data in red appear on the balance sheet, data in blue on the income statement, and data in green on the statement of cash flows. Before reading further, trace each transaction in the summary of events into Exhibit 2.1.

### LO 2

Organize general ledger accounts under an accounting equation.

### EXHIBIT 2.1

### Transaction Data for 2010 Recorded in General Ledger Accounts

Assets				=	Liabilities	+	Stockholders' Equity			
Event No.	Cash	+	Accounts Receivable	=	Salaries Payable	+	Common Stock	+	Retained Earnings	Other Account Titles
Beg. bal.	0		0		0		0		0	
1	5,000						5,000			
2			84,000						84,000	Consulting revenue
3	60,000		(60,000)							
4	(10,000)								(10,000)	Salary expense
5	(2,000)								(2,000)	Advertising expense
6										
7					6,000				(6,000)	Salary Expense
End bal.	53,000	+	24,000	=	6,000	+	5,000	+	66,000	

## Vertical Statements Model

The financial statements for Cato Consultants' 2010 accounting period are represented in a vertical statements model in Exhibit 2.2. A vertical statements model arranges a set of financial statement information vertically on a single page. Like horizontal statements models, vertical statements models are learning tools. They illustrate interrelationships among financial statements. The models do not, however, portray the full, formal presentation formats companies use in published financial statements. For example, statements models may use summarized formats with abbreviated titles and dates. As you read the following explanations of each financial statement, trace the color coded financial data from Exhibit 2.1 to Exhibit 2.2.

### LO 3

Prepare financial statements based on accrual accounting.

**LO 5**

Prepare a vertical financial statements model.

**EXHIBIT 2.2****Vertical Statements Model****CATO CONSULTANTS**

Financial Statements\*

Income Statement

For the Year Ended December 31, 2010

Consulting revenue		\$84,000
Salary expense		(16,000)
Advertising expense		<u>(2,000)</u>
Net income		<u>\$66,000</u>

## Statement of Changes in Stockholders' Equity

For the Year Ended December 31, 2010

Beginning common stock	\$ 0	
Plus: Common stock issued	<u>5,000</u>	
Ending common stock		\$ 5,000
Beginning retained earnings	0	
Plus: Net income	<u>66,000</u>	
Less: Dividends	<u>0</u>	
Ending retained earnings		<u>66,000</u>
Total stockholders' equity		<u>\$71,000</u>

## Balance Sheet

As of December 31, 2010

Assets		
Cash	\$53,000	
Accounts receivable	<u>24,000</u>	
Total assets		<u>\$77,000</u>
Liabilities		
Salaries payable		\$ 6,000
Stockholders' equity		
Common stock	\$ 5,000	
Retained earnings	<u>66,000</u>	
Total stockholders' equity		<u>71,000</u>
Total liabilities and stockholders' equity		<u>\$77,000</u>

## Statement of Cash Flows

For the Year Ended December 31, 2010

Cash flows from operating activities		
Cash receipts from customers	\$60,000	
Cash payments for salary expense	(10,000)	
Cash payments for advertising expenses	<u>(2,000)</u>	
Net cash flow from operating activities		\$48,000
Cash flow from investing activities		0
Cash flows from financing activities		
Cash receipt from issuing common stock	<u>5,000</u>	
Net cash flow from financing activities		<u>5,000</u>
Net change in cash		53,000
Plus: Beginning cash balance		<u>0</u>
Ending cash balance		<u>\$53,000</u>

\*In real-world annual reports, financial statements are normally presented separately with appropriate descriptions of the date to indicate whether the statement applies to the entire accounting period or a specific point in time.

### Income Statement

The income statement reflects accrual accounting. Consulting revenue represents the price Cato charged for all the services it performed in 2010, even though Cato had not by the end of the year received cash for some of the services performed. Expenses include all costs incurred to produce revenue, whether paid for by year-end or not. We can now expand the definition of expenses introduced in Chapter 1. Expenses were previously defined as assets consumed in the process of generating revenue. Cato's adjusting entry to recognize accrued salaries expense did not reflect consuming assets. Instead of a decrease in assets, Cato recorded an increase in liabilities (salaries payable). An **expense** can therefore be more precisely defined as *a decrease in assets or an increase in liabilities resulting from operating activities undertaken to generate revenue*.

### Statement of Changes in Stockholders' Equity

The statement of changes in stockholders' equity reports the effects on equity of issuing common stock, earning net income, and paying dividends to stockholders. It identifies how an entity's equity increased and decreased during the period as a result of transactions with stockholders and operating the business. In the Cato case, the statement shows that equity increased when the business acquired \$5,000 cash by issuing common stock. The statement also reports that equity increased by \$66,000 from earning income and that none of the \$66,000 of net earnings was distributed to owners (no dividends were paid). Equity at the end of the year is \$71,000 (\$5,000 + \$66,000).

### Balance Sheet

The balance sheet discloses an entity's assets, liabilities, and stockholders' equity at a particular point in time. Cato Consultants had two assets at the end of the 2010 accounting period: cash of \$53,000 and accounts receivable of \$24,000. These assets are listed on the balance sheet in order of liquidity. Of the \$77,000 in total assets, creditors have a \$6,000 claim, leaving stockholders with a \$71,000 claim.

### Statement of Cash Flows

The statement of cash flows explains the change in cash from the beginning to the end of the accounting period. It can be prepared by analyzing the Cash account. Since Cato Consultants was established in 2010, its beginning cash balance was zero. By the end of the year, the cash balance was \$53,000. The statement of cash flows explains this increase. The Cash account increased because Cato collected \$60,000 from customers and decreased because Cato paid \$12,000 for expenses. As a result, Cato's net cash inflow from operating activities was \$48,000. Also, the business acquired \$5,000 cash through the financing activity of issuing common stock, for a cumulative cash increase of \$53,000 (\$48,000 + \$5,000) during 2010.

### Comparing Cash Flow from Operating Activities with Net Income

The amount of net income measured using accrual accounting differs from the amount of cash flow from operating activities. For Cato Consulting in 2010, the differences are summarized below.

	Accrual Accounting	Cash Flow
Consulting revenue	\$84,000	\$60,000
Salary expense	(16,000)	(10,000)
Advertising expense	(2,000)	(2,000)
Net income	<u>\$66,000</u>	<u>\$48,000</u>

Many students begin their first accounting class with the misconception that revenue and expense items are cash equivalents. The Cato illustration demonstrates that



a company may recognize a revenue or expense without a corresponding cash collection or payment in the same accounting period.

## The Closing Process

### LO 4

Describe the closing process, the accounting cycle, and the matching concept.

Recall that the temporary accounts (revenue, expense, and dividend) are closed prior to the start of the next accounting cycle. The closing process transfers the amount in each of these accounts to the Retained Earnings account, leaving each temporary account with a zero balance.

Exhibit 2.3 shows the general ledger accounts for Cato Consultants after the revenue and expense accounts have been closed to retained earnings. The closing entry labeled Cl.1 transfers the balance in the Consulting Revenue account to the Retained Earnings account. Closing entries Cl.2 and Cl.3 transfer the balances in the expense accounts to retained earnings.

### EXHIBIT 2.3

#### General Ledger Accounts for Cato Consultants

Assets		=	Liabilities	+	Stockholders' Equity	
Cash			Salaries Payable		Common Stock	
(1)	5,000		(7)	6,000	(1)	5,000
(3)	60,000		Bal.	6,000		
(4)	(10,000)					
(5)	(2,000)					
Bal.	53,000					
Accounts Receivable					Retained Earnings	
(2)	84,000				Cl.1	84,000
(3)	(60,000)				Cl.2	(16,000)
Bal.	24,000				Cl.3	(2,000)
					Bal.	66,000
					Consulting Revenue	
					(2)	84,000
					Cl.1	(84,000)
					Bal.	0
					Salary Expense	
					(4)	(10,000)
					(7)	(6,000)
					Cl.2	16,000
					Bal.	0
					Advertising Expense	
					(5)	(2,000)
					Cl.3	2,000
					Bal.	0

## Steps in an Accounting Cycle

An accounting cycle, which is represented graphically in Exhibit 2.4, involves several steps. The four steps identified to this point are (1) recording transactions; (2) adjusting the accounts; (3) preparing financial statements; and (4) closing the temporary

accounts. The first step occurs continually throughout the accounting period. Steps 2, 3, and 4 normally occur at the end of the accounting period.

## The Matching Concept

Cash basis accounting can distort reported net income because it sometimes fails to match expenses with the revenues they produce. To illustrate, consider the \$6,000 of accrued salary expense that Cato Consultants recognized at the end of 2010. The instructor's teaching produced revenue in 2010. If Cato waited until 2011 (when it paid the instructor) to recognize \$6,000 of the total \$16,000 salary expense, then \$6,000 of the expense would not be matched with the revenue it generated. By using accrual accounting, Cato recognized all the salary expense in the same accounting period in which the consulting revenue was recognized. A primary goal of accrual accounting is to appropriately match expenses with revenues, the **matching concept**.

Appropriately matching expenses with revenues can be difficult even when using accrual accounting. For example, consider Cato's advertising expense. Money spent on advertising may generate revenue in future accounting periods as well as in the current period. A prospective customer could save an advertising brochure for several years before calling Cato for training services. It is difficult to know when and to what extent advertising produces revenue. When the connection between an expense and the corresponding revenue is vague, accountants commonly match the expense with the period in which it is incurred. Cato matched (recognized) the entire \$2,000 of advertising cost with the 2010 accounting period even though some of that cost might generate revenue in future accounting periods. Expenses that are matched with the period in which they are incurred are frequently called **period costs**.

Matching is not perfect. Although it would be more accurate to match expenses with revenues than with periods, there is sometimes no obvious direct connection between expenses and revenue. Accountants must exercise judgment to select the accounting period in which to recognize revenues and expenses. The concept of conservatism influences such judgment calls.

## The Conservatism Principle

When faced with a recognition dilemma, **conservatism** guides accountants to select the alternative that produces the lowest amount of net income. In uncertain circumstances, accountants tend to delay revenue recognition and accelerate expense recognition. The conservatism principle holds that it is better to understate net income than to overstate it. If subsequent developments suggest that net income should have been higher, investors will respond more favorably than if they learn it was really lower. This practice explains why Cato recognized all of the advertising cost as expense in 2010 even though some of that cost may generate revenue in future accounting periods.

## SECOND ACCOUNTING CYCLE

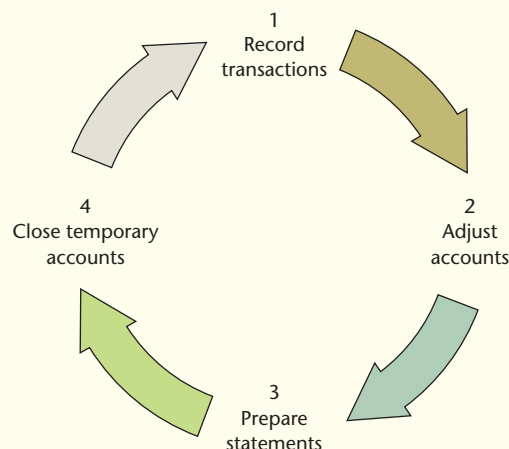
The effects of Cato Consultants' 2011 events are as follows:

### EVENT 1 Cato paid \$6,000 to the instructor to settle the salaries payable obligation.

Cash payments to creditors are **asset use transactions**. When Cato pays the instructor, both the asset account Cash and the liability account Salaries Payable decrease. The

### EXHIBIT 2.4

#### The Accounting Cycle



### LO 1

Record basic accrual and deferral events in a horizontal financial statements model.

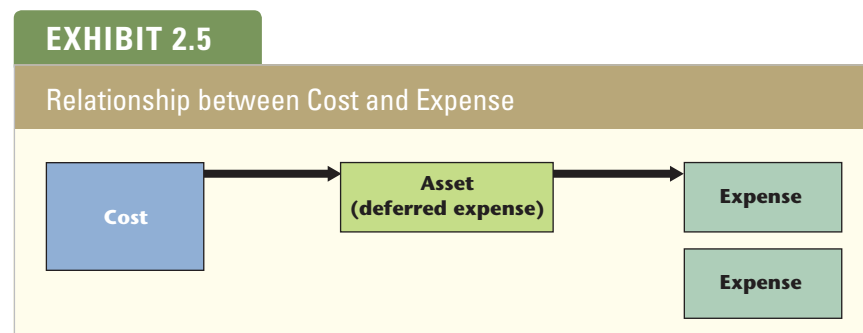
cash payment does not affect the income statement. The salary expense was recognized in 2010 when the instructor taught the classes. The statement of cash flows reflects a cash outflow from operating activities. The effects of this transaction on the financial statements are shown here.

Assets	=	Liab.	+	Stk. Equity							
Cash	=	Sal. Pay.			Rev.	−	Exp.	=	Net Inc.	Cash Flow	
(6,000)	=	(6,000)	+	NA	NA	−	NA	=	NA	(6,000)	OA

## Prepaid Items (Cost versus Expense)

**EVENT 2** On March 1, 2011, Cato signed a one-year lease agreement and paid \$12,000 cash in advance to rent office space. The one-year lease term began on March 1.

Accrual accounting draws a distinction between the terms *cost* and *expense*. A **cost** might be either an asset or an expense. If a company has already consumed a purchased resource in the process of earning revenue, the cost of the resource is an *expense*. For example, companies normally pay for electricity the month after using it. The cost of electric utilities is therefore usually recorded as an expense. In contrast, if a company purchases a resource it will use in the future to generate revenue, the cost of the resource represents an *asset*. Accountants record such a cost in an asset account and *defer* recognizing an expense until the resource is used to produce revenue. Deferring the expense recognition provides more accurate **matching** of revenues and expenses. Exhibit 2.5 illustrates the relationship between costs, assets, and expenses.



The cost of the office space Cato leased in Event 2 is an asset. It is recorded in the asset account *Prepaid Rent*. Cato expects to benefit from incurring this cost for the next twelve months. Expense recognition is deferred until Cato uses the office space to help generate revenue. Other common deferred expenses include *prepaid insurance* and *prepaid taxes*. As these titles imply, deferred expenses are frequently called **prepaid items**.

Purchasing prepaid rent is an asset exchange transaction. The asset account Cash decreases and the asset account Prepaid Rent increases. The amount of total assets is unaffected. The income statement is unaffected. Expense recognition is deferred until the office space is used. The statement of cash flows reflects a cash outflow from

operating activities. The effects of this transaction on the financial statements are shown here.

Assets		=	Liab.	+	Stk. Equity				
Cash	+ Prep. Rent					Rev.	- Exp.	= Net Inc.	Cash Flow
(12,000)	+ 12,000	=	NA	+	NA	NA	- NA	= NA	(12,000) OA

## Accounting for Receipt of Unearned Revenue

**EVENT 3** Cato received \$18,000 cash in advance from Westberry Company for consulting services Cato agreed to perform over a one-year period beginning June 1, 2011.

Cato must defer (delay) recognizing any revenue until it performs (does the work) the consulting services for Westberry. From Cato's point of view, the deferred revenue is a liability because Cato is obligated to perform services in the future. The liability is called **unearned revenue**. The cash receipt is an **asset source transaction**. The asset account Cash and the liability account Unearned Revenue both increase. Collecting the cash has no effect on the income statement. The revenue will be reported on the income statement after Cato performs the services. The statement of cash flows reflects a cash inflow from operating activities. The effects of this transaction on the financial statements are shown here.

Assets		=	Liab.	+	Stk. Equity				
Cash	=	Unearn. Rev.				Rev.	- Exp.	= Net Inc.	Cash Flow
18,000	=	18,000	+	NA		NA	- NA	= NA	18,000 OA

## Accounting for Supplies Purchase

**EVENT 4** Cato purchased \$800 of supplies on account.

The purchase of supplies on account is an **asset source transaction**. The asset account Supplies and the liability account Accounts Payable increase. The income statement is unaffected. Expense recognition is deferred until the supplies are used. The statement of cash flows is not affected. The effects of this transaction on the financial statements are shown here.

Assets		=	Liab.	+	Stk. Equity				
Supplies	=	Accts. Pay.				Rev.	- Exp.	= Net Inc.	Cash Flow
800	=	800	+	NA		NA	- NA	= NA	NA

## Other 2011 Events

**EVENT 5** Cato provided \$96,400 of consulting services on account.

Providing services on account is an **asset source transaction**. The asset account Accounts Receivable and the stockholders' equity account Retained Earnings increase.

Revenue and net income increase. The statement of cash flows is not affected. The effects of this transaction on the financial statements are shown here.

Assets	=	Liab.	+	Stk. Equity						
Accts. Rec.	=			Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
96,400	=	NA	+	96,400	96,400	−	NA	=	96,400	NA

**EVENT 6** Cato collected \$105,000 cash from customers as partial settlement of accounts receivable.

Collecting money from customers who are paying accounts receivable is an *asset exchange transaction*. One asset account (Cash) increases and another asset account (Accounts Receivable) decreases. The amount of total assets is unchanged. The income statement is not affected. The statement of cash flows reports a cash inflow from operating activities. The effects of this transaction on the financial statements are shown here.

Assets = Liab. + Stk. Equity										
Cash + Accts. Rec.					Rev. - Exp. = Net Inc.				Cash Flow	
105,000	+	(105,000)	=	NA + NA	NA	-	NA	=	NA	105,000 OA

**EVENT 7** Cato paid \$32,000 cash for salary expense.

Cash payments for salary expense are *asset use transactions*. Both the asset account Cash and the equity account Retained Earnings decrease by \$32,000. Recognizing the expense decreases net income on the income statement. The statement of cash flows reflects a cash outflow from operating activities. The effects of this transaction on the financial statements are shown here.

Assets	=	Liab.	+	Stk. Equity						
Cash	=			Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
(32,000)	=	NA	+	(32,000)	NA	−	32,000	=	(32,000)	(32,000) OA

**EVENT 8** Cato incurred \$21,000 of other operating expenses on account.

Recognizing expenses incurred on account are *claims exchange transactions*. One claims account (Accounts Payable) increases and another claims account (Retained Earnings) decreases. The amount of total claims is not affected. Recognizing the expenses decreases net income. The statement of cash flows is not affected. The effects of this transaction on the financial statements are shown here.

Assets = Liab. + Stk. Equity										
Accts. Pay. + Ret. Earn.					Rev.	−	Exp.	=	Net Inc.	Cash Flow
NA	=	21,000	+	(21,000)	NA	−	21,000	=	(21,000)	NA

**EVENT 9 Cato paid \$18,200 in partial settlement of accounts payable.**

Paying accounts payable is an *asset use transaction*. The asset account Cash and the liability account Accounts Payable decrease. The statement of cash flows reports a cash outflow for operating activities. The income statement is not affected. The effects of this transaction on the financial statements are shown here.

Assets = Liab. + Stk. Equity											
Cash = Accts. Pay.					Rev.	−	Exp.	=	Net Inc.	Cash Flow	
(18,200)	=	(18,200)	+	NA	NA	−	NA	=	NA	(18,200)	OA

**EVENT 10 Cato paid \$79,500 to purchase land it planned to use in the future as a building site for its home office.**

Purchasing land with cash is an *asset exchange transaction*. One asset account, Cash, decreases and another asset account, Land, increases. The amount of total assets is unchanged. The income statement is not affected. The statement of cash flows reports a cash outflow for investing activities. The effects of this transaction on the financial statements are shown here.

Assets = Liab. + Stk. Equity										
Cash + Land						Rev. – Exp. = Net Inc.				Cash Flow
(79,500) + 79,500 = NA + NA						NA – NA = NA				(79,500) IA

**EVENT 11 Cato paid \$21,000 in cash dividends to its stockholders.**

Cash payments for dividends are *asset use transactions*. Both the asset account Cash and the equity account Retained Earnings decrease. Recall that dividends are wealth transfers from the business to the stockholders, not expenses. They are not incurred in the process of generating revenue. They do not affect the income statement. The statement of cash flows reflects a cash outflow from financing activities. The effects of this transaction on the financial statements are shown here.

Assets	=	Liab.	+	Stk. Equity						
Cash	=			Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
(21,000)	=	NA	+	(21,000)	NA	−	NA	=	NA	(21,000) FA

**EVENT 12 Cato acquired \$2,000 cash from issuing additional shares of common stock.**

Issuing common stock is an *asset source transaction*. The asset account Cash and the stockholders' equity account Common Stock increase. The income statement is unaffected. The statement of cash flows reports a cash inflow from financing activities. The effects of this transaction on the financial statements are shown here.

Assets	=	Liab.	+	Stk. Equity						
Cash	=			Com. Stk.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
2,000	=	NA	+	2,000	NA	−	NA	=	NA	2,000 FA



## Adjusting Entries

Recall that companies make adjusting entries at the end of an accounting period to update the account balances before preparing the financial statements. Adjusting entries ensure that companies report revenues and expenses in the appropriate accounting period; adjusting entries never affect the Cash account.

## Accounting for Supplies (Adjusting Entry)

**EVENT 13** After determining through a physical count that it had \$150 of unused supplies on hand as of December 31, Cato recognized supplies expense.

Companies would find the cost of recording supplies expense each time a pencil, piece of paper, envelope, or other supply item is used to far outweigh the benefit derived from such tedious recordkeeping. Instead, accountants transfer to expense the total cost of all supplies used during the entire accounting period in a single year-end adjusting entry. The cost of supplies used is determined as follows.

$$\text{Beginning supplies balance} + \text{Supplies purchased} = \text{Supplies available for use} - \text{Ending supplies balance} = \text{Supplies used}$$

Companies determine the ending supplies balance by physically counting the supplies on hand at the end of the period. Cato used \$650 of supplies during the year (zero beginning balance + \$800 supplies purchase = \$800 available for use – \$150 ending balance). Recognizing Cato's supplies expense is an *asset use transaction*. The asset account Supplies and the stockholders' equity account Retained Earnings decrease. Recognizing supplies expense reduces net income. The statement of cash flows is not affected. The effects of this transaction on the financial statements are shown here.

Assets	=	Liab.	+	Stk. Equity						
Supplies	=			Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
(650)	=	NA	+	(650)	NA	−	650	=	(650)	NA

## Accounting for Prepaid Rent (Adjusting Entry)

**EVENT 14** Cato recognized rent expense for the office space used during the accounting period.

Recall that Cato paid \$12,000 on March 1, 2011, to rent office space for one year (see Event 2). The portion of the lease cost that represents using office space from March 1 through December 31 is computed as follows.

$$\text{Cost of annual lease} \div 12 = \text{Cost per month} \times \text{Months used} = \text{Rent expense}$$

$$\$12,000 \text{ cost of policy} \div 12 = \$1,000 \text{ per month} \times 10 \text{ months} = \$10,000 \text{ Rent expense}$$

Recognizing the rent expense decreases the asset account Prepaid Rent and the stockholders' equity account Retained Earnings. Recognizing rent expense reduces net income. The statement of cash flows is not affected. The cash flow effect was recorded in the March 1 event. These effects on the financial statements follow.

Assets	=	Liab.	+	Stk. Equity						
Prep. Rent	=			Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
(10,000)	=	NA	+	(10,000)	NA	−	10,000	=	(10,000)	NA

## CHECK Yourself 2.2

Rujoub Inc. paid \$18,000 cash for one year of insurance coverage that began on November 1, 2010. Based on this information alone, determine the cash flow from operating activities that Rujoub would report on the 2010 and 2011 statements of cash flows. Also, determine the amount of insurance expense Rujoub would report on the 2010 income statement and the amount of prepaid insurance (an asset) that Rujoub would report on the December 31, 2010, balance sheet.

**Answer** Since Rujoub paid all of the cash in 2010, the 2010 statement of cash flows would report an \$18,000 cash outflow from operating activities. The 2011 statement of cash flows would report zero cash flow from operating activities. The expense would be recognized in the periods in which the insurance is used. In this case, insurance expense is recognized at the rate of \$1,500 per month ( $\$18,000 \div 12$  months). Rujoub used two months of insurance coverage in 2010 and therefore would report \$3,000 ( $2 \text{ months} \times \$1,500$ ) of insurance expense on the 2010 income statement. Rujoub would report a \$15,000 ( $10 \text{ months} \times \$1,500$ ) asset, prepaid insurance, on the December 31, 2010, balance sheet. The \$15,000 of prepaid insurance would be recognized as insurance expense in 2011 when the insurance coverage is used.

## Accounting for Unearned Revenue (Adjusting Entry)

**EVENT 15** Cato recognized the portion of the unearned revenue it earned during the accounting period.

Recall that Cato received an \$18,000 cash advance from Westberry Company to provide consulting services from June 1, 2011, to May 31, 2012 (see Event 3). By December 31, Cato had earned 7 months (June 1 through December 31) of the revenue related to this contract. Rather than recording the revenue continuously as it performed the consulting services, Cato can simply recognize the amount earned in a single adjustment to the accounting records at the end of the accounting period. The amount of the adjustment is computed as follows.

$$\$18,000 \div 12 \text{ months} = \$1,500 \text{ revenue earned per month}$$

$$\$1,500 \times 7 \text{ months} = \$10,500 \text{ revenue to be recognized in 2011}$$

The adjusting entry moves \$10,500 from the Unearned Revenue account to the Consulting Revenue account. This entry is a **claims exchange transaction**. The liability account Unearned Revenue decreases and the equity account Retained Earnings increases. The effects of this transaction on the financial statements are shown here.

Assets	=	Liab.	+	Stk. Equity											
Unearn. Rev.					+	Ret. Earn.				Rev.	−	Exp.	=	Net Inc.	Cash Flow
NA	=	(10,500)	+	10,500					10,500	−	NA	=	10,500	NA	

Recall that revenue was previously defined as an economic benefit a company obtains by providing customers with goods and services. In this case the economic benefit is a decrease in the liability account Unearned Revenue. **Revenue** can therefore be more precisely defined as *an increase in assets or a decrease in liabilities that a company obtains by providing customers with goods or services*.

## CHECK Yourself 2.3

Sanderson & Associates received a \$24,000 cash advance as a retainer to provide legal services to a client. The contract called for Sanderson to render services during a one-year period beginning October 1, 2010. Based on this information alone, determine the cash flow from operating activities Sanderson would report on the 2010 and 2011 statements of cash flows. Also determine the amount of revenue Sanderson would report on the 2010 and 2011 income statements.

**Answer** Since Sanderson collected all of the cash in 2010, the 2010 statement of cash flows would report a \$24,000 cash inflow from operating activities. The 2011 statement of cash flows would report zero cash flow from operating activities. Revenue is recognized in the period in which it is earned. In this case revenue is earned at the rate of \$2,000 per month ( $\$24,000 \div 12 \text{ months} = \$2,000 \text{ per month}$ ). Sanderson rendered services for three months in 2010 and nine months in 2011. Sanderson would report \$6,000 ( $3 \text{ months} \times \$2,000$ ) of revenue on the 2010 income statement and \$18,000 ( $9 \text{ months} \times \$2,000$ ) of revenue on the 2011 income statement.

## Accounting for Accrued Salary Expense (Adjusting Entry)

### EVENT 16 Cato recognized \$4,000 of accrued salary expense.

The adjusting entry to recognize the accrued salary expense is a *claims exchange transaction*. One claims account, Retained Earnings, decreases and another claims account, Salaries Payable, increases. The expense recognition reduces net income. The statement of cash flows is not affected. The effects of this transaction on the financial statements are shown here.

Assets	=	Liab.	+	Stk. Equity						
		Sal. Pay.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
NA	=	4,000	+	(4,000)	NA	−	4,000	=	(4,000)	NA

## Summary of Events

The previous section of this chapter described sixteen events Cato Consultants experienced during the 2011 accounting period. These events are summarized below for your convenience.

- Event 1** Cato paid \$6,000 to the instructor to settle the salaries payable obligation.
- Event 2** On March 1, Cato paid \$12,000 cash to lease office space for one year.
- Event 3** Cato received \$18,000 cash in advance from Westberry Company for consulting services to be performed for one year beginning June 1.
- Event 4** Cato purchased \$800 of supplies on account.
- Event 5** Cato provided \$96,400 of consulting services on account.
- Event 6** Cato collected \$105,000 cash from customers as partial settlement of accounts receivable.

## Answers to The *Curious* Accountant

Because the **Meredith Corporation** receives cash from customers before actually providing any magazines to them, the company has not earned

any revenue when it receives the cash. Thus, Meredith has a liability called *unearned revenue*. If it closed its books on December 31, then \$3 of Sarah's subscription would be recognized as revenue in 2010. The remaining \$9 would appear on the balance sheet as a liability.

Meredith Corporation actually ends its accounting year on June 30 each year. A copy of a recent balance sheet for the company is presented in Exhibit 2.6. The liability for unearned subscription revenue was \$239.8 (\$127.4 + \$112.4) million—which represented about 28.5 percent of Meredith's total liabilities!

Will Meredith need cash to pay these subscription liabilities? Not exactly. The liabilities will not be paid directly with cash. Instead, they will be satisfied by providing magazines to the subscribers. However, Meredith will need cash to pay for producing and distributing the magazines supplied to the customers. Even so, the amount of cash required to provide magazines will probably differ significantly from the amount of unearned revenues. In most cases, subscription fees do not cover the cost of producing and distributing magazines. By collecting significant amounts of advertising revenue, publishers can provide magazines to customers at prices well below the cost of publication. The amount of unearned revenue is not likely to coincide with the amount of cash needed to cover the cost of satisfying the company's obligation to produce and distribute magazines. Even though the association between unearned revenues and the cost of providing magazines to customers is not direct, a knowledgeable financial analyst can use the information to make estimates of future cash flows and revenue recognition.

- Event 7** Cato paid \$32,000 cash for salary expense.
  - Event 8** Cato incurred \$21,000 of other operating expenses on account.
  - Event 9** Cato paid \$18,200 in partial settlement of accounts payable.
  - Event 10** Cato paid \$79,500 to purchase land it planned to use in the future as a building site for its home office.
  - Event 11** Cato paid \$21,000 in cash dividends to its stockholders.
  - Event 12** Cato acquired \$2,000 cash from issuing additional shares of common stock.
- The year-end adjustments are:
- Event 13** After determining through a physical count that it had \$150 of unused supplies on hand as of December 31, Cato recognized supplies expense.
  - Event 14** Cato recognized rent expense for the office space used during the accounting period.
  - Event 15** Cato recognized the portion of the unearned revenue it earned during the accounting period.
  - Event 16** Cato recognized \$4,000 of accrued salary expense.

**EXHIBIT 2.6****Balance Sheet for Meredith Corporation****CONSOLIDATED BALANCE SHEETS**

Meredith Corporation and Subsidiaries

As of June 30 (amounts in thousands)

**Assets****Current assets**

Cash and cash equivalents	\$ 29,788
Accounts receivable (net of allowances of \$15,205)	176,669
Inventories	41,562
Current portion of subscription and acquisition costs	27,777
Current portion of broadcast rights	13,539
Other current assets	15,160

**Total current assets**304,495**Property, plant and equipment**

Land	19,261
Buildings and improvements	106,112
Machinery and equipment	256,380
Leasehold improvements	8,863
Construction in progress	8,266

**Total property, plant and equipment**398,882**Less accumulated depreciation**(205,926)**Net property, plant and equipment**192,956

## Subscription acquisition costs

24,722

## Broadcast rights

7,096

## Other assets

58,589

## Intangibles, net

707,068

## Goodwill

196,382**Total assets**\$1,491,308**Liabilities and Shareholders' Equity****Current liabilities**

Current portion of long-term debt	\$ 125,000
Current portion of long-term broadcast rights payable	18,676
Accounts payable	48,462
Accrued expenses	
Compensation and benefits	42,162
Distribution expenses	17,546
Other taxes and expenses	59,818
Total accrued expenses	119,526
Current portion of unearned subscription revenues	127,416

**Total current liabilities**439,080

## Long-term debt

125,000

## Long-term broadcast rights payable

17,208

## Unearned subscription revenues

112,358

## Deferred income taxes

93,929

## Other noncurrent liabilities

51,906**Total liabilities**839,481**Shareholders' equity**

Common stock, par value \$1 per share	39,700
Class B stock, par value \$1 per share, convertible to common stock	9,596
Additional paid-in capital	55,346
Retained earnings	550,115
Accumulated other comprehensive loss	(1,025)
Unearned compensation	(1,905)

**Total shareholders' equity**651,827**Total liabilities and shareholders' equity**\$1,491,308

## The General Ledger

Exhibit 2.7 shows Cato Consultants' 2011 transaction data recorded in general ledger form. The account balances at the end of 2010, shown in Exhibit 2.3, become the beginning balances for the 2011 accounting period. The 2011 transaction data are referenced to the accounting events with numbers in parentheses. The information in the ledger accounts is the basis for the financial statements in Exhibit 2.8. Before reading further, trace each event in the summary of events into Exhibit 2.7.

**LO 2**

Organize general ledger accounts under an accounting equation.

### EXHIBIT 2.7

#### Ledger Accounts with 2011 Transaction Data

Assets		=	Liabilities	+	Stockholders' Equity	
Cash	Prepaid Rent		Accounts Payable		Common Stock	Retained Earnings
Bal. 53,000	Bal. 0		Bal. 0		Bal. 5,000	Bal. 66,000
(1) (6,000)	(2) 12,000		(4) 800		(12) 2,000	
(2) (12,000)	(14) (10,000)		(8) 21,000		Bal. 7,000	<b>Dividends</b>
(3) 18,000	Bal. 2,000		(9) (18,200)			Bal. 0
(6) 105,000			Bal. 3,600			(11) (21,000)
(7) (32,000)	<b>Land</b>					Bal. (21,000)
(9) (18,200)			<b>Unearned Revenue</b>			<b>Consulting Revenue</b>
(10) (79,500)	Bal. 0		Bal. 0			Bal. 0
(11) (21,000)	(10) 79,500		(3) 18,000			(5) 96,400
(12) 2,000	Bal. 79,500		(15) (10,500)			(15) 10,500
Bal. 9,300			Bal. 7,500			Bal. 106,900
<b>Accounts Receivable</b>			<b>Salaries Payable</b>			<b>Other Operating Expenses</b>
Bal. 24,000			Bal. 6,000			Bal. 0
(5) 96,400			(1) (6,000)			(8) (21,000)
(6) (105,000)			(16) 4,000			Bal. (21,000)
Bal. 15,400			Bal. 4,000			<b>Salary Expense</b>
<b>Supplies</b>						Bal. 0
Bal. 0						(7) (32,000)
(4) 800						(16) (4,000)
(13) (650)						Bal. (36,000)
Bal. 150						<b>Rent Expense</b>
						Bal. 0
						(14) (10,000)
						Bal. (10,000)
						<b>Supplies Expense</b>
						Bal. 0
						(13) (650)
						Bal. (650)

## Vertical Statements Model

Financial statement users obtain helpful insights by analyzing company trends over multiple accounting cycles. Exhibit 2.8 presents for Cato Consultants a multicyle **vertical statements model** of 2010 and 2011 accounting data. To conserve space, we



**LO 6**

Explain how business events affect financial statements over multiple accounting cycles.

have combined all the expenses for each year into single amounts labeled “Operating Expenses,” determined as follows.

	2010	2011
Other operating expenses	\$ 0	\$21,000
Salary expense	16,000	36,000
Rent expense	0	10,000
Advertising expense	2,000	0
Supplies expense	0	650
Total operating expenses	<u>\$18,000</u>	<u>\$67,650</u>

Similarly, we combined the cash payments for operating expenses on the statement of cash flows as follows.

	2010	2011
Supplies and other operating expenses	\$ 0	\$18,200*
Salary expense	10,000	38,000
Rent expense	0	12,000
Advertising expense	2,000	0
Total cash payments for operating expenses	<u>\$12,000</u>	<u>\$68,200</u>

\*Amount paid in partial settlement of accounts payable

Recall that the level of detail reported in financial statements depends on user information needs. Most real-world companies combine many account balances together to report highly summarized totals under each financial statement caption. Before reading further, trace the remaining financial statement items from the ledger accounts in Exhibit 2.7 to where they are reported in Exhibit 2.8.

The vertical statements model in Exhibit 2.8 shows significant interrelationships among the financial statements. For each year, trace the amount of net income from the income statement to the statement of changes in stockholders’ equity. Next, trace the ending balances of common stock and retained earnings reported on the statement of changes in stockholders’ equity to the stockholders’ equity section of the balance sheet. Also, confirm that the amount of cash reported on the balance sheet equals the ending cash balance on the statement of cash flows.

Other relationships connect the two accounting periods. For example, trace the ending retained earnings balance from the 2010 statement of stockholders’ equity to the beginning retained earnings balance on the 2011 statement of stockholders’ equity. Also, trace the ending cash balance on the 2010 statement of cash flows to the beginning cash balance on the 2011 statement of cash flows. Finally, confirm that the change in cash between the 2010 and 2011 balance sheets ( $\$53,000 - \$9,300 = \$43,700$  decrease) agrees with the net change in cash reported on the 2011 statement of cash flows.

**EXHIBIT 2.8****Vertical Statements Model**

<b>CATO CONSULTANTS</b> Financial Statements Income Statements For the Years Ended December 31		
	2010	2011
Consulting revenue	\$84,000	\$106,900
Operating expenses	(18,000)	(67,650)
Net income	<u>\$66,000</u>	<u>\$ 39,250</u>

*continued*

**EXHIBIT 2.8**

*Concluded*

**Statements of Changes in Stockholders' Equity  
For the Years Ended December 31**

	2010	2011
Beginning common stock	\$ 0	\$ 5,000
Plus: Common stock issued	5,000	2,000
Ending common stock	5,000	7,000
Beginning retained earnings	0	66,000
Plus: Net income	66,000	39,250
Less: Dividends	0	(21,000)
Ending retained earnings	66,000	84,250
Total stockholders' equity	\$71,000	\$ 91,250

**Balance Sheets  
As of December 31**

	2010	2011
<b>Assets</b>		
Cash	\$53,000	\$ 9,300
Accounts receivable	24,000	15,400
Supplies	0	150
Prepaid rent	0	2,000
Land	0	79,500
Total assets	\$77,000	\$106,350
<b>Liabilities</b>		
Accounts payable	\$ 0	\$ 3,600
Unearned revenue	0	7,500
Salaries payable	6,000	4,000
Total liabilities	6,000	15,100
<b>Stockholders' equity</b>		
Common stock	5,000	7,000
Retained earnings	66,000	84,250
Total stockholders' equity	71,000	91,250
Total liabilities and stockholders' equity	\$77,000	\$106,350

**Statements of Cash Flows  
For the Years Ended December 31**

	2010	2011
<b>Cash Flows from Operating Activities</b>		
Cash receipts from customers	\$60,000	\$123,000
Cash payments for operating expenses	(12,000)	(68,200)
Net cash flow from operating activities	48,000	54,800
<b>Cash Flows from Investing Activities</b>		
Cash payment to purchase land	0	(79,500)
<b>Cash Flows from Financing Activities</b>		
Cash receipts from issuing common stock	5,000	2,000
Cash payments for dividends	0	(21,000)
Net cash flow from financing activities	5,000	(19,000)
Net change in cash	53,000	(43,700)
Plus: Beginning cash balance	0	53,000
Ending cash balance	\$53,000	\$ 9,300

## CHECK Yourself 2.4

Treadmore Company started the 2010 accounting period with \$580 of supplies on hand. During 2010 the company paid cash to purchase \$2,200 of supplies. A physical count of supplies indicated that there was \$420 of supplies on hand at the end of 2010. Treadmore pays cash for supplies at the time they are purchased. Based on this information alone, determine the amount of supplies expense to be recognized on the income statement and the amount of cash flow to be shown in the operating activities section of the statement of cash flows.

**Answer** The amount of supplies expense recognized on the income statement is the amount of supplies that were used during the accounting period. This amount is computed below.

Beginning balance	Supplies + purchased	=	Supplies available	Ending balance	=	Supplies used
\$580	+ \$2,200	=	\$2,780	- \$420	=	\$2,360

The cash flow from operating activities is the amount of cash paid for supplies during the accounting period. In this case, Treadmore paid \$2,200 cash to purchase supplies. This amount would be shown as a cash outflow.



THE FINANCIAL

ANALYST

### LO 7

Identify the primary components of corporate governance.

## CORPORATE GOVERNANCE

Corporate governance is the set of relationships between the board of directors, management, shareholders, auditors, and other stakeholders that determines how a company is operated. Clearly, financial analysts are keenly interested in these relationships. This section discusses the key components of corporate governance.

### Importance of Ethics

The accountant's role in society requires trust and credibility. Accounting information is worthless if the accountant is not trustworthy. Similarly, tax and consulting advice is useless if it comes from an incompetent person. The high ethical standards required by the profession state "a certified public accountant assumes an obligation of self-discipline above and beyond requirements of laws and regulations." The **American Institute of Certified Public Accountants** requires its members to comply with the **Code of Professional Conduct**. Section I of the Code includes six articles that are summarized in Exhibit 2.9. The importance of ethical conduct is universally recognized across a broad spectrum of accounting organizations. The Institute of Management Accountants requires its members to follow a set of Standards of Ethical Conduct. The Institute of Internal Auditors also requires its members to subscribe to the organization's Code of Ethics.

### Sarbanes-Oxley Act of 2002

Credible financial reporting relies on a system of checks and balances. Corporate management is responsible for preparing financial reports while outside, independent accountants (CPAs) audit the reports. The massive surprise bankruptcies of **Enron** in late 2001 and **WorldCom** several months later suggested major audit failures on the part of the independent auditors. An audit failure means a company's auditor does

## EXHIBIT 2.9

### Articles of AICPA Code of Professional Conduct

#### **Article I Responsibilities**

In carrying out their responsibilities as professionals, members should exercise sensitive professional and moral judgments in all their activities.

#### **Article II The Public Interest**

Members should accept the obligation to act in a way that will serve the public interest, honor the public trust, and demonstrate commitment to professionalism.

#### **Article III Integrity**

To maintain and broaden public confidence, members should perform all professional responsibilities with the highest sense of integrity.

#### **Article IV Objectivity and Independence**

A member should maintain objectivity and be free of conflicts of interest in discharging professional responsibilities. A member in public practice should be independent in fact and appearance when providing auditing and other attestation services.

#### **Article V Due Care**

A member should observe the profession's technical and ethical standards, strive continually to improve competence and the quality of services, and discharge professional responsibility to the best of the member's ability.

#### **Article VI Scope and Nature of Services**

A member in public practice should observe the principles of the Code of Professional Conduct in determining the scope and nature of services to be provided.

not detect, or fails to report, that the company's financial reports are not in compliance with GAAP. The audit failures at Enron, WorldCom, and others prompted Congress to pass the Sarbanes-Oxley Act (SOX), which became effective on July 30, 2002.

Prior to SOX, independent auditors often provided nonaudit services, such as installing computer systems, for their audit clients. The fees they earned for these services sometimes greatly exceeded the fees charged for the audit itself. This practice had been questioned prior to the audit failures at Enron and WorldCom. Critics felt the independent audit firm was subject to pressure from the company to conduct a less rigorous audit, or risk losing lucrative nonaudit work. To strengthen the audit function SOX included the following provisions.

- Prior to the enactment of SOX, independent auditors were self-regulated by the membership of the American Institute of Certified Public Accountants and by state boards of accountancy. Beyond self-regulation, SOX establishes The Public Company Accounting Oversight Board (PCAOB) to regulate accounting professionals that audit the financial statements of public companies.
- Independent auditors must register with the PCAOB or cease all participation in public company audits and abide by the board's pronouncements.
- The PCAOB will conduct inspections of registered firms. To ensure enforcement, the board has a full range of sanctions at its disposal, including suspension or revocation of registration, censure, and significant fines.
- To reduce the likelihood of conflicts of interest, SOX prohibits all registered public accounting firms from providing audit clients, contemporaneously with the audit, certain nonaudit services, including internal audit outsourcing, financial-information-system design and implementation services, and expert services.
- SOX provides for significant corporate governance reforms regarding audit committees and their relationship to the auditor, making the audit committee responsible for the appointment, compensation, and oversight of the issuer's auditor.

## Focus On INTERNATIONAL ISSUES

Ethical conduct is shaped by the cultural climate. Indeed, a business culture that focuses narrowly on shareholder interest is frequently blamed for the excesses that led to the downfall of Enron and others. The mantra was an ever-increasing stock price. Incentive packages encourage executives to take short cuts or even engage in fraudulent behavior in order to “make the numbers.” The infamous quote of Gordon Gekko in the 1987 movie *Wall Street*—“Greed is Good”—epitomized a culture of self-indulgence. Gekko’s quote was drawn from Sun Tzu’s management treatise *The Art of War*. This treatise contained the tenets that guided corporate governance in the 1980s and 90s.

In the aftermath of the massive corporate scandals, a new view of corporate responsibility is emerging. Many leading business schools have recruited Indian educators who hold a much broader view of corporate responsibility. Their teachings are based on the Hindu text *Bhagavad Gita*, which focuses on thoughts and actions, rather than outcomes. These educators urge executives to be motivated by a broader purpose than money. They advocate a more holistic approach to business—one that takes into account the needs of shareholders, employees, customers, society, and the environment as well as the shareholders. This view has been called “Karma Capitalism.”

Karma Capitalism is a gentler, more empathetic approach to business. It advances concepts such as “emotional intelligence” and “servant leadership.” *BusinessWeek* observes manifestations such as “where once corporate philanthropy was an obligation, these days it’s fast becoming viewed as a competitive advantage for attracting and retaining top talent.” Where the rallying cry in the 1980s and 90s may have been “greed is good,” today it’s becoming “green is good.” Certainly, this new zeitgeist is more supportive of moral conduct than a culture based largely on self-interest.

The contrasting philosophies are summarized above under the heading “Dueling Playbooks.”

## Dueling Playbooks

The opposing best-practice ideas of Sun Tzu and Krishna

To Sun Tzu, author of the once-hip management treatise *The Art of War*, victory should be the “great object.” Winning the battle is all about unyielding discipline. Some of Sun Tzu’s key ideas:

The *Bhagavad Gita*, a Hindu text more in keeping with today’s zeitgeist, contains the wisdom of Lord Krishna. Focus on your thoughts and actions, rather than the outcome. Krishna’s take:

**GREED IS GOOD.** Troops have to see there is “advantage from defeating the enemy” in order to be motivated. Share the booty with the rank and file, and give them shares of conquered territory.



**ON FINANCIAL INCENTIVES**



**GREED IS BAD.** “You should never engage in action only for the desire of rewards,” Krishna says. Acting on worldly desires leads to failure. Do well, and good things will come.

**BE TOUGH.** Sun Tzu calls for “iron discipline”: If you indulge troops with too much kindness and don’t maintain your authority, they’ll be “useless for any practical purpose.”



**ON MANAGING UNDERLINGS**



**BE FAIR.** Enlightened leaders are compassionate and selfless, and they “treat everyone as their equals.” Followers will rally around them and follow their example.

**ATTACK ONLY WHEN VICTORY IS LIKELY.** Better yet, maneuver to win without a fight. If the odds are bad, retreat and wait for another opportunity. Long campaigns strain resources and make you vulnerable.



**ON INITIATIVE**



**ACT RATHER THAN REACT.** A leader’s actions today can become the “karma” that influences his status tomorrow. Leaders accomplish “excellence by taking action,” Krishna says.

**BEAT THE ENEMY.** War is a vital fact of life that “cannot be neglected by a responsible sovereign.” Winning requires clever tactics and, in some cases, deception.



**ON THE ULTIMATE GOAL**



**SEEK HIGHER CONSCIOUSNESS.** Leaders should view problems within their larger contexts. Translation: Show sensitivity to multiple stakeholders including shareholders, employees, partners, and neighbors.

Other provisions of SOX clarify the legal responsibility that company management has for a company’s financial reports. The company’s chief executive officer (CEO) and chief financial officer (CFO) must certify in writing that they have reviewed the financial reports being issued, and that the reports present fairly the company’s financial status. An executive who falsely certifies the company’s financial reports is subject to a fine up to \$5 million and imprisonment up to 20 years.

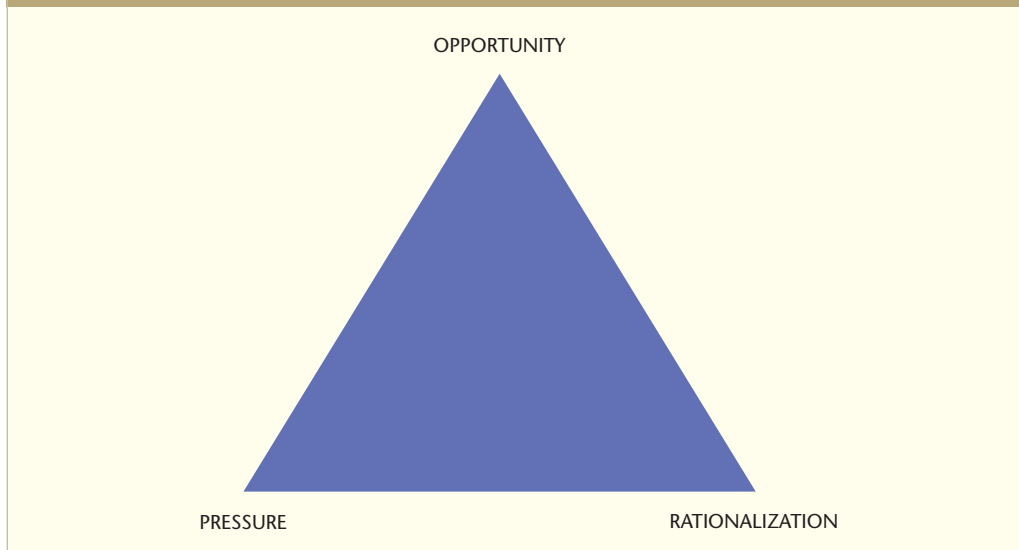
## Common Features of Criminal and Ethical Misconduct

Unfortunately, it takes more than a code of conduct to stop fraud. People frequently engage in activities that they know are unethical or even criminal. The auditing profession has identified three elements that are typically present when fraud occurs.

1. The availability of an opportunity.
2. The existence of some form of pressure leading to an incentive.
3. The capacity to rationalize.

## EXHIBIT 2.10

### The Fraud Triangle



The three elements are frequently arranged in the shape of a triangle as shown in Exhibit 2.10.

**Opportunity** is shown at the head to the triangle because without opportunity fraud could not exist. The most effective way to reduce opportunities for ethical or criminal misconduct is to implement an effective set of internal controls. **Internal controls** are policies and procedures that a business implements to reduce opportunities for fraud and to assure that its objectives will be accomplished. Specific controls are tailored to meet the individual needs of particular businesses. For example, banks use elaborate vaults to protect cash and safety deposit boxes, but universities have little use for this type of equipment. Even so, many of the same procedures are used by a wide variety of businesses. The internal control policies and procedures that have gained widespread acceptance are discussed in a subsequent chapter.

Only a few employees turn to the dark side even when internal control is weak and opportunities abound. So, what causes one person to commit fraud and another to remain honest? The second element of the fraud triangle recognizes **pressure** as a key ingredient of misconduct. A manager who is told “either make the numbers or you are fired” is more likely to cheat than one who is told to “tell it like it is.” Pressure can come from a variety of sources.

- Personal vices such as drug addiction, gambling, and promiscuity.
- Intimidation from superiors.
- Personal debt from credit cards, consumer and mortgage loans, or poor investments.
- Family expectations to provide a standard of living that is beyond one’s capabilities.
- Business failure caused by poor decision making or temporary factors such as a poor economy.
- Loyalty or trying to be agreeable.

The third and final element of the fraud triangle is **rationalization**. Few individuals think of themselves as evil. They develop rationalizations to justify their misconduct. Common rationalizations include the following.

- Everybody does it.
- They are not paying me enough. I’m only taking what I deserve.



- I'm only borrowing the money. I'll pay it back.
- The company can afford it. Look what they are paying the officers.
- I'm taking what my family needs to live like everyone else.

Most people are able to resist pressure and the tendency to rationalize ethical or legal misconduct. However, some people will yield to temptation. What can accountants do to protect themselves and their companies from unscrupulous characters? The answer lies in personal integrity. The best indicator of personal integrity is past performance. Accordingly, companies must exercise due care in performing appropriate background investigations before hiring people to fill positions of trust.

Ethical misconduct is a serious offense in the accounting profession. A single mistake can destroy an accounting career. If you commit a white-collar crime, you normally lose the opportunity to hold a white-collar job. Second chances are rarely granted; it is extremely important that you learn how to recognize and avoid the common features of ethical misconduct. To help you prepare for the real-world situations you are likely to encounter, we include ethical dilemmas in the end-of-chapter materials. When working with these dilemmas, try to identify the (1) opportunity, (2) pressure, and (3) rationalization associated with the particular ethical situation described. If you are not an ethical person, accounting is not the career for you.



## A Look Back

### LO 8

Classify accounting events into one of four categories:

- a. asset source transactions.
- b. asset use transactions.
- c. asset exchange transactions.
- d. claims exchange transactions.

Chapters 1 and 2 introduced four types of transactions. Although businesses engage in an infinite number of different transactions, all transactions fall into one of four types. By learning to identify transactions by type, you can understand how unfamiliar events affect financial statements. The four types of transactions are

1. *Asset source transactions:* An asset account increases, and a corresponding claims account increases.
2. *Asset use transactions:* An asset account decreases, and a corresponding claims account decreases.
3. *Asset exchange transactions:* One asset account increases, and another asset account decreases.
4. *Claims exchange transactions:* One claims account increases, and another claims account decreases.

Also, the definitions of revenue and expense have been expanded. The complete definitions of these two elements are as follows.

1. **Revenue:** Revenue is the *economic benefit* derived from operating the business. Its recognition is accompanied by an increase in assets or a decrease in liabilities resulting from providing products or services to customers.
2. **Expense:** An expense is an *economic sacrifice* incurred in the process of generating revenue. Its recognition is accompanied by a decrease in assets or an increase in liabilities resulting from consuming assets and services in an effort to produce revenue.

This chapter introduced accrual accounting. Accrual accounting distinguishes between *recognition* and *realization*. Recognition means reporting an economic item or event in the financial statements. In contrast, realization refers to collecting cash from the sale of assets or services. Recognition and realization can occur in different accounting periods. In addition, cash payments for expenses often occur in different accounting periods from when a company recognizes the expenses. Accrual accounting uses both *accruals* and *deferrals*.

- The term *accrual* applies to earnings events that are recognized before cash is exchanged. Recognizing revenue on account or accrued salaries expense are examples of accruals.
- The term *deferral* applies to earnings events that are recognized after cash has been exchanged. Supplies, prepaid items, and unearned revenue are examples of deferrals.

Virtually all major companies operating in the United States use accrual accounting.

## A Look Forward



Chapters 1 and 2 focused on businesses that generate revenue by providing services to their customers. Examples of these types of businesses include consulting, real estate sales, medical services, and legal services. The next chapter introduces accounting practices for businesses that generate revenue by selling goods. Examples of these companies include **Wal-Mart**, **Circuit City**, **Office Depot**, and **Lowes**.



### SELF-STUDY REVIEW PROBLEM

Gifford Company experienced the following accounting events during 2010.

1. Started operations on January 1 when it acquired \$20,000 cash by issuing common stock.
2. Earned \$18,000 of revenue on account.
3. On March 1 collected \$36,000 cash as an advance for services to be performed in the future.
4. Paid cash operating expenses of \$17,000.
5. Paid a \$2,700 cash dividend to stockholders.
6. On December 31, 2010, adjusted the books to recognize the revenue earned by providing services related to the advance described in Event 3. The contract required Gifford to provide services for a one-year period starting March 1.
7. Collected \$15,000 cash from accounts receivable.

Gifford Company experienced the following accounting events during 2011.

1. Recognized \$38,000 of cash revenue.
2. On April 1 paid \$12,000 cash for an insurance policy that provides coverage for one year beginning immediately.
3. Collected \$2,000 cash from accounts receivable.
4. Paid cash operating expenses of \$21,000.
5. Paid a \$5,000 cash dividend to stockholders.
6. On December 31, 2011, adjusted the books to recognize the remaining revenue earned by providing services related to the advance described in Event 3 of 2010.
7. On December 31, 2011, Gifford adjusted the books to recognize the amount of the insurance policy used during 2011.

#### Required

- a. Record the events in a financial statements model like the following one. The first event is recorded as an example.

Event No.	Assets = Liab. + Stockholders' Equity																
	Cash	+	Accts. Rec.	−	Prep. Ins.	=	Unearn. Rev.	+	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
1	20,000	+	NA	−	NA	=	NA	+	20,000	+	NA	NA	−	NA	=	NA	20,000 FA

- b. What amount of revenue would Gifford report on the 2010 income statement?
- c. What amount of cash flow from customers would Gifford report on the 2010 statement of cash flows?
- d. What amount of unearned revenue would Gifford report on the 2010 and 2011 year-end balance sheets?
- e. What are the 2011 opening balances for the revenue and expense accounts?
- f. What amount of total assets would Gifford report on the December 31, 2010, balance sheet?
- g. What claims on assets would Gifford report on the December 31, 2011, balance sheet?

### Solution to Requirement a

The financial statements model follows.

	Assets = Liab. + Stockholders' Equity																
Event No.	Cash	+	Accts. Rec.	+	Prep. Ins.	=	Unearn. Rev.	+	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
2010																	
1	20,000	+	NA	+	NA	=	NA	+	20,000	+	NA	NA	−	NA	=	NA	20,000 FA
2	NA	+	18,000	+	NA	=	NA	+	NA	+	18,000	18,000	−	NA	=	18,000	NA
3	36,000	+	NA	+	NA	=	36,000	+	NA	+	NA	NA	−	NA	=	NA	36,000 OA
4	(17,000)	+	NA	+	NA	=	NA	+	NA	+	(17,000)	NA	−	17,000	=	(17,000)	(17,000) OA
5	(2,700)	+	NA	+	NA	=	NA	+	NA	+	(2,700)	NA	−	NA	=	NA	(2,700) FA
6*	NA	+	NA	+	NA	=	(30,000)	+	NA	+	30,000	30,000	−	NA	=	30,000	NA
7	15,000	+	(15,000)	+	NA	=	NA	+	NA	+	NA	NA	−	NA	=	NA	15,000 OA
Bal.	51,300	+	3,000	+	NA	=	6,000	+	20,000	+	28,300	48,000	−	17,000	=	31,000	51,300 NC
	Asset, liability, and equity account balances carry forward										Rev. & exp. accts. are closed						
2011																	
Bal.	51,300	+	3,000	+	NA	=	6,000	+	20,000	+	28,300	NA	−	NA	=	NA	NA
1	38,000	+	NA	+	NA	=	NA	+	NA	+	38,000	38,000	−	NA	=	38,000	38,000 OA
2	(12,000)	+	NA	+	12,000	=	NA	+	NA	+	NA	NA	−	NA	=	NA	(12,000) OA
3	2,000	+	(2,000)	+	NA	=	NA	+	NA	+	NA	NA	−	NA	=	NA	2,000 OA
4	(21,000)	+	NA	+	NA	=	NA	+	NA	+	(21,000)	NA	−	21,000	=	(21,000)	(21,000) OA
5	(5,000)	+	NA	+	NA	=	NA	+	NA	+	(5,000)	NA	−	NA	=	NA	(5,000) FA
6*	NA	+	NA	+	NA	=	(6,000)	+	NA	+	6,000	6,000	−	NA	=	6,000	NA
7†	NA	+	NA	+	(9,000)	=	NA	+	NA	+	(9,000)	NA	−	9,000	=	(9,000)	NA
Bal.	53,300	+	1,000	+	3,000	=	0	+	20,000	+	37,300	44,000	−	30,000	=	14,000	2,000 NC

\*Revenue is earned at the rate of \$3,000 (\$36,000 ÷ 12 months) per month. Revenue recognized in 2010 is \$30,000 (\$3,000 × 10 months). Revenue recognized in 2011 is \$6,000 (\$3,000 × 2 months).

†Insurance expense is incurred at the rate of \$1,000 (\$12,000 ÷ 12 months) per month. Insurance expense recognized in 2011 is \$9,000 (\$1,000 × 9 months).

### Solutions to Requirements b–g

- b. Gifford would report \$48,000 of revenue in 2010 (\$18,000 revenue on account plus \$30,000 of the \$36,000 of unearned revenue).
- c. The cash inflow from customers is \$51,000 (\$36,000 when the unearned revenue was received plus \$15,000 collection of accounts receivable).
- d. The December 31, 2010, balance sheet will report \$6,000 of unearned revenue, which is the amount of the cash advance less the amount of revenue recognized in 2010 (\$36,000 – \$30,000). The December 31, 2011, unearned revenue balance is zero.
- e. Since revenue and expense accounts are closed at the end of each accounting period, the beginning balances in these accounts are always zero.
- f. Assets on the December 31, 2010, balance sheet are \$54,300 [Gifford's cash at year end plus the balance in accounts receivable (\$51,300 + \$3,000)].
- g. Since all unearned revenue would be recognized before the financial statements were prepared at the end of 2011, there would be no liabilities on the 2011 balance sheet. Common stock and retained earnings would be the only claims as of December 31, 2011, for a claims total of \$57,300 (\$20,000 + \$37,300).

## KEY TERMS

Accounts Receivable 44	Asset source transaction 44	Deferral 43	Rationalization 67
Accrual 43	Asset use transaction 45	Expense 49, 68	Realization 42
Accrual accounting 43	Claims exchange	Internal controls 67	Recognition 42
Accrued expenses 46	transaction 46	Matching concept 51	Revenue 68
Adjusting entry 46	Code of Professional	Opportunity 67	Salaries Payable 46
American Institute of Certified	Conduct 64	Period costs 51	Unearned revenue 53
Public Accountants 64	Conservatism 51	Prepaid items 52	Vertical statements model 61
Asset exchange transaction 44	Cost 52	Pressure 67	

## QUESTIONS

1. What does accrual accounting attempt to accomplish?
2. Define *recognition*. How is it independent of collecting or paying cash?
3. What does the term *deferral* mean?
4. If cash is collected in advance of performing services, when is the associated revenue recognized?
5. What does the term *asset source transaction* mean?
6. What effect does the issue of common stock have on the accounting equation?
7. How does the recognition of revenue on account (accounts receivable) affect the income statement compared to its effect on the statement of cash flows?
8. Give an example of an asset source transaction. What is the effect of this transaction on the accounting equation?
9. When is revenue recognized under accrual accounting?
10. Give an example of an asset exchange transaction. What is the effect of this transaction on the accounting equation?
11. What is the effect on the claims side of the accounting equation when cash is collected in advance of performing services?
12. What does the term *unearned revenue* mean?
13. What effect does expense recognition have on the accounting equation?
14. What does the term *claims exchange transaction* mean?
15. What type of transaction is a cash payment to creditors? How does this type of transaction affect the accounting equation?
16. When are expenses recognized under accrual accounting?
17. Why may net cash flow from operating activities on the cash flow statement be different from the amount of net income reported on the income statement?
18. What is the relationship between the income statement and changes in assets and liabilities?
19. How does net income affect the stockholders' claims on the business's assets?
20. What is the difference between a cost and an expense?
21. When does a cost become an expense? Do all costs become expenses?
22. How and when is the cost of the *supplies used* recognized in an accounting period?
23. What does the term *expense* mean?
24. What does the term *revenue* mean?
25. What is the purpose of the statement of changes in stockholders' equity?
26. What is the main purpose of the balance sheet?
27. Why is the balance sheet dated *as of* a specific date when the income statement, statement of changes in stockholders' equity, and statement of cash flows are dated with the phrase *for the period ended*?
28. In what order are assets listed on the balance sheet?
29. What does the statement of cash flows explain?
30. What does the term *adjusting entry* mean? Give an example.
31. What types of accounts are closed at the end of the accounting period? Why is it necessary to close these accounts?
32. Give several examples of period costs.
33. Give an example of a cost that can be directly matched with the revenue produced by an accounting firm from preparing a tax return.
34. List and describe the four stages of the accounting cycle discussed in Chapter 2.
35. Name and comment on the three elements of the fraud triangle.
36. What is the maximum penalty and prison term that can be charged to a CEO and/or CFO under the Sarbanes-Oxley Act?
37. What are the six articles of ethical conduct set out under section I of the AICPA's Code of Professional Conduct?

## EXERCISES

All applicable Exercises are available with McGraw-Hill  
**Connect Accounting.**



Where applicable in all exercises, round computations to the nearest dollar.

**LO 2, 3****Exercise 2-1** *Effect of accruals on the financial statements*

Maddox, Inc., experienced the following events in 2010, in its first year of operation.

1. Received \$20,000 cash from the issue of common stock.
2. Performed services on account for \$40,000.
3. Paid the utility expense of \$3,500.
4. Collected \$36,000 of the accounts receivable.
5. Recorded \$8,000 of accrued salaries at the end of the year.
6. Paid a \$2,000 cash dividend to the shareholders.

**Required**

- a. Record the events in general ledger accounts under an accounting equation. In the last column of the table, provide appropriate account titles for the Retained Earnings amounts. The first transaction has been recorded as an example.

MADDOX INC. General Ledger Accounts								
Event	Assets		=	Liabilities	+	Stockholders' Equity		Acct. Titles for RE
	Cash	Accounts Receivable		Notes Payable		Common Stock	Retained Earnings	
1.	20,000					20,000		

- b. Prepare the income statement, statement of changes in stockholders' equity, balance sheet, and statement of cash flows for the 2010 accounting period.
- c. Why is the amount of net income different from the amount of net cash flow from operating activities?

**LO 2, 3****Exercise 2-2** *Effect of collecting accounts receivable on the accounting equation and financial statements*

Venture Company earned \$8,000 of service revenue on account during 2010. The company collected \$5,200 cash from accounts receivable during 2010.

**Required**

Based on this information alone, determine the following. (*Hint:* Record the events in general ledger accounts under an accounting equation before satisfying the requirements.)

- a. The balance of the accounts receivable that Venture would report on the December 31, 2010, balance sheet.
- b. The amount of net income that Venture would report on the 2010 income statement.
- c. The amount of net cash flow from operating activities that Venture would report on the 2010 statement of cash flows.
- d. The amount of retained earnings that Venture would report on the 2010 balance sheet.
- e. Why are the answers to Requirements *b* and *c* different?

**LO 2, 3****Exercise 2-3** *Effect of prepaid rent on the accounting equation and financial statements*

The following events apply to 2009, the first year of operations of Howard Services.

1. Acquired \$30,000 cash from the issue of common stock.
2. Paid \$12,000 cash in advance for one-year rental contract for office space.
3. Provided services for \$23,000 cash.
4. Adjusted the records to recognize the use of the office space. The one-year contract started on May 1, 2009. The adjustment was made as of December 31, 2009.

### Required

- Write an accounting equation and record the effects of each accounting event under the appropriate general ledger account headings.
- Prepare an income statement and statement of cash flows for the 2009 accounting period.
- Explain the difference between the amount of net income and amount of net cash flow from operating activities.

### Exercise 2-4 *Effect of supplies on the financial statements*

LO 1, 3

Kim's Copy Service, Inc., started the 2009 accounting period with \$9,000 cash, \$6,000 of common stock, and \$3,000 of retained earnings. Kim's Copy Service was affected by the following accounting events during 2009.



- Purchased \$11,500 of paper and other supplies on account.
- Earned and collected \$31,000 of cash revenue.
- Paid \$9,000 cash on accounts payable.
- Adjusted the records to reflect the use of supplies. A physical count indicated that \$3,000 of supplies was still on hand on December 31, 2009.

### Required

- Show the effects of the events on the financial statements using a horizontal statements model like the following one. In the Cash Flows column, use OA to designate operating activity, IA for investing activity, FA for financing activity, and NC for net change in cash. Use NA to indicate accounts not affected by the event. The beginning balances are entered in the following example.

Event No.	Assets = Liab. + Stockholders' Equity								Rev. - Exp. = Net Inc.				Cash Flows		
	Cash	+	Supplies	=	Accts. Pay	+	C. Stock	+	Ret. Earn.						
Beg. Bal.	9,000	+	0	=	0	+	6,000	+	3,000	0	-	0	=	0	0

- Explain the difference between the amount of net income and amount of net cash flow from operating activities.

### Exercise 2-5 *Effect of unearned revenue on financial statements*

LO 1

Jordan Michael started a personal financial planning business when she accepted \$80,000 cash as advance payment for managing the financial assets of a large estate. Michael agreed to manage the estate for a one-year period, beginning April 1, 2009.

### Required

- Show the effects of the advance payment and revenue recognition on the 2009 financial statements using a horizontal statements model like the following one. In the Cash Flows column, use OA to designate operating activity, IA for investing activity, FA for financing activity, and NC for net change in cash. Use NA if the account is not affected.

Event No.	Assets		=	Liab.	+	Stockholders' Equity		Rev.	-	Exp.	=	Net Inc.	Cash Flows
	Cash	=	Unearn. Rev.	+			Ret. Earn.						

- How much revenue would Jordan recognize on the 2010 income statement?
- What is the amount of cash flow from operating activities in 2010?

### Exercise 2-6 *Unearned revenue defined as a liability*

LO 3

Martin Gantt received \$600 in advance for tutoring fees when he agreed to help Josh Smith with his introductory accounting course. Upon receiving the cash, Martin mentioned that he





would have to record the transaction as a liability on his books. Smith asked, “Why a liability? You don’t owe me any money, do you?”

### Required

Respond to Smith’s question regarding Gantt’s liability.

## LO 3

### Exercise 2-7 *Distinguishing between an expense and a cost*

Christy Byrd tells you that the accountants where she works are real hair splitters. For example, they make a big issue over the difference between a cost and an expense. She says the two terms mean the same thing to her.

### Required

- a. Explain to Christy the difference between a cost and an expense from an accountant’s perspective.
- b. Explain whether each of the following events produces an asset or an expense.
  - (1) Purchased a building for cash.
  - (2) Purchased supplies on account.
  - (3) Used supplies on hand to produce revenue.
  - (4) Paid in advance for insurance on the building.
  - (5) Recognized accrued salaries.

## LO 3

### Exercise 2-8 *Revenue and expense recognition*

### Required

- a. Describe a revenue recognition event that results in a decrease in liabilities.
- b. Describe a revenue recognition event that results in an increase in assets.
- c. Describe an expense recognition event that results in an increase in liabilities.
- d. Describe an expense recognition event that results in a decrease in assets.

## LO 3

### Exercise 2-9 *Transactions that affect the elements of financial statements*

### Required

Give an example of a transaction that will

- a. Increase an asset and decrease another asset (asset exchange event).
- b. Increase an asset and increase a liability (asset source event).
- c. Decrease an asset and decrease a liability (asset use event).
- d. Decrease an asset and decrease equity (asset use event).
- e. Increase a liability and decrease equity (claims exchange event).
- f. Increase an asset and increase equity (asset source event).
- g. Decrease a liability and increase equity (claims exchange event).

## LO 3

### Exercise 2-10 *Identifying deferral and accrual events*

### Required

Identify each of the following events as an accrual, deferral, or neither.

- a. Incurred other operating expenses on account.
- b. Recorded expense for salaries owed to employees at the end of the accounting period.
- c. Paid a cash dividend to the stockholders.
- d. Paid cash to purchase supplies to be used over the next several months.
- e. Purchased land with cash.
- f. Provided services on account.
- g. Collected accounts receivable.
- h. Paid one year’s rent in advance.
- i. Paid cash for utilities expense.
- j. Collected \$2,400 in advance for services to be performed over the next 12 months.

### Exercise 2-11 *Prepaid and unearned rent*

LO 2

On August 1, 2010, Corn Products paid Warehouse Rentals \$48,000 for a 12-month lease on warehouse space.

#### Required

- Record the deferral and the related December 31, 2010, adjustment for Corn Products in the accounting equation.
- Record the deferral and the related December 31, 2010, adjustment for Warehouse Rentals in the accounting equation.

### Exercise 2-12 *Classifying events on the statement of cash flows*

LO 3

The following transactions pertain to the operations of Traci Company for 2011.

- Acquired \$30,000 cash from the issue of common stock.
- Provided \$40,000 of services on account.
- Incurred \$25,000 of other operating expenses on account.
- Collected \$37,000 cash from accounts receivable.
- Paid a \$2,000 cash dividend to the stockholders.
- Paid \$18,000 cash on accounts payable.
- Performed services for \$9,000 cash.
- Paid \$2,000 cash for rent expense.
- Paid \$20,000 for year's rent for office space.
- Received \$24,000 cash in advance for services to be performed over the next two years.

#### Required

- Classify the cash flows from these transactions as operating activities (OA), investing activities (IA), or financing activities (FA). Use NA for transactions that do not affect the statement of cash flows.
- Prepare a statement of cash flows. (There is no beginning cash balance.)

### Exercise 2-13 *Effect of accounting events on the income statement and statement of cash flows*

LO 3

#### Required

Explain how each of the following events and the related adjusting entry will affect the amount of *net income* and the amount of *cash flow from operating activities* reported on the year-end financial statements. Identify the direction of change (increase, decrease, or NA) and the amount of the change. Organize your answers according to the following table. The first event is recorded as an example. If an event does not have a related adjusting entry, record only the effects of the event.

Event No.	Net Income		Cash Flows from Operating Activities	
	Direction of Change	Amount of Change	Direction of Change	Amount of Change
a	NA	NA	NA	NA

- Acquired \$70,000 cash from the issue of common stock.
- Earned \$15,000 of revenue on account. Collected \$12,000 cash from accounts receivable.
- Paid \$3,600 cash on October 1 to purchase a one-year insurance policy.
- Collected \$9,600 in advance for services to be performed in the future. The contract called for services to start on September 1 and to continue for one year.
- Accrued salaries amounting to \$6,000.
- Sold land that had cost \$8,000 for \$8,000.

- g. Provided services for \$9,000 cash.
- h. Purchased \$1,200 of supplies on account. Paid \$1,000 cash on accounts payable. The ending balance in the Supplies account, after adjustment, was \$400.
- i. Paid cash for other operating expenses of \$2,600.

**LO 1, 8****Exercise 2-14** *Identifying transaction type and effect on the financial statements***Required**

Identify whether each of the following transactions is an asset source (AS), asset use (AU), asset exchange (AE), or claims exchange (CE). Also show the effects of the events on the financial statements using the horizontal statements model. Indicate whether the event increases (I), decreases (D), or does not affect (NA) each element of the financial statements. In the Cash Flows column, designate the cash flows as operating activities (OA), investing activities (IA), or financing activities (FA). The first two transactions have been recorded as examples.

Event No.	Type of Event	Stockholders' Equity										Cash Flows			
		Assets	=	Liabilities	+	Common Stock	+	Retained Earnings	Rev.	−	Exp.			=	Net Inc.
a	AE	I	D			NA		NA		NA		NA		D	IA
b	AS	I				NA		I		NA		NA		I	FA

- a. Purchased land for cash.
- b. Acquired cash from the issue of common stock.
- c. Collected cash from accounts receivable.
- d. Paid cash for operating expenses.
- e. Recorded accrued salaries.
- f. Paid cash for supplies.
- g. Performed services on account.
- h. Paid cash advance for rent on office space.
- i. Performed services for cash.
- j. Purchased a building with cash *and* issued a note payable.
- k. Paid cash for salaries accrued at the end of a prior period.
- l. Paid a cash dividend to the stockholders.
- m. Adjusted books to reflect the amount of prepaid rent expired during the period.
- n. Incurred operating expenses on account.
- o. Paid cash on accounts payable.
- p. Received cash advance for services to be provided in the future.

**LO 1****Exercise 2-15** *Effect of accruals and deferrals on financial statements: the horizontal statements model*

G. Gabe, Attorney at Law, experienced the following transactions in 2009, the first year of operations.

- 1. Purchased \$1,500 of office supplies on account.
- 2. Accepted \$24,000 on February 1, 2009, as a retainer for services to be performed evenly over the next 12 months.
- 3. Performed legal services for cash of \$66,000.
- 4. Paid cash for salaries expense of \$22,500.
- 5. Paid a cash dividend to the stockholders of \$5,000.

6. Paid \$1,000 of the amount due on accounts payable.
7. Determined that at the end of the accounting period, \$125 of office supplies remained on hand.
8. On December 31, 2010, recognized the revenue that had been earned for services performed in accordance with Transaction 2.

### Required

Show the effects of the events on the financial statements using a horizontal statements model like the following one. In the Cash Flow column, use the initials OA to designate operating activity, IA for investing activity, FA for financing activity, and NC for net change in cash. Use NA to indicate accounts not affected by the event. The first event has been recorded as an example.

Event No.	Assets			=	Liabilities			+	Stk. Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
	Cash	+	Supp.	=	Accts. Pay.	+	Unearn. Rev.	+	Ret. Earn.						
1	NA	+	1,500	=	1,500	+	NA	+	NA	NA	–	NA	=	NA	NA

### Exercise 2-16 Effect of an error on financial statements

LO 2, 3

On May 1, 2009, Tennessee Corporation paid \$12,000 cash in advance for a one-year lease on an office building. Assume that Tennessee records the prepaid rent and that the books are closed on December 31.

### Required

- a. Show the payment for the one-year lease and the related adjusting entry to rent expense in the accounting equation.
- b. Assume that Tennessee Corporation failed to record the adjusting entry to reflect using the office building. How would the error affect the company's 2009 income statement and balance sheet?

### Exercise 2-17 Net income versus changes in cash

LO 2, 3

In 2010, Puckett Inc. billed its customers \$60,000 for services performed. The company collected \$42,000 of the amount billed. Puckett incurred \$38,000 of other operating expenses on account. Puckett paid \$30,000 of the accounts payable. Puckett acquired \$35,000 cash from the issue of common stock. The company invested \$15,000 cash in the purchase of land.

### Required

Use the preceding information to answer the following questions. (*Hint:* Identify the six events described in the paragraph and record them in general ledger accounts under an accounting equation before attempting to answer the questions.)

- a. What amount of revenue will Puckett report on the 2010 income statement?
- b. What amount of cash flow from revenue will Puckett report on the statement of cash flows?
- c. What is the net income for the period?
- d. What is the net cash flow from operating activities for the period?
- e. Why is the amount of net income different from the net cash flow from operating activities for the period?
- f. What is the amount of net cash flow from investing activities?
- g. What is the amount of net cash flow from financing activities?
- h. What amounts of total assets, liabilities, and equity will Puckett report on the year-end balance sheet?

**LO 3****Exercise 2-18** *Adjusting the accounts*

Morgan Associates experienced the following accounting events during its 2010 accounting period.

1. Paid cash for an insurance policy that provides coverage during the next year.
2. Collected cash from accounts receivable.
3. Paid cash for operating expenses.
4. Paid cash to settle an account payable.
5. Paid cash to purchase land.
6. Recognized revenue on account.
7. Issued common stock.
8. Paid cash to purchase supplies.
9. Collected a cash advance for services that will be provided during the coming year.
10. Paid a cash dividend to the stockholders.

**Required**

- a. Identify the events that would require a year-end adjusting entry.
- b. Explain why adjusting entries are made at the end of the accounting period.

**LO 4****Exercise 2-19** *Closing the accounts*

The following information was drawn from the accounting records of Spartan Company as of December 31, 2010, before the temporary accounts had been closed. The Cash balance was \$3,000, and Notes Payable amounted to \$1,300. The company had revenues of \$4,500 and expenses of \$2,000. The company's Land account had a \$5,000 balance. Dividends amounted to \$300. There was \$1,000 of common stock issued.

**Required**

- a. Identify which accounts would be classified as permanent and which accounts would be classified as temporary.
- b. Assuming that Spartan's beginning balance (as of January 1, 2010) in the Retained Earnings account was \$3,500, determine its balance after the nominal accounts were closed at the end of 2010.
- c. What amount of net income would Spartan Company report on its 2010 income statement?
- d. Explain why the amount of net income differs from the amount of the ending Retained Earnings balance.
- e. What are the balances in the revenue, expense, and dividend accounts on January 1, 2011?

**LO 4****Exercise 2-20** *Closing accounts and the accounting cycle***Required**

- a. Identify which of the following accounts are temporary (will be closed to Retained Earnings at the end of the year) and which are permanent.
  - (1) Common Stock
  - (2) Notes Payable
  - (3) Cash
  - (4) Service Revenue
  - (5) Dividends
  - (6) Land
  - (7) Salaries Expense
  - (8) Retained Earnings
  - (9) Prepaid Rent
  - (10) Supplies Expense
- b. List and explain the four stages of the accounting cycle. Which stage must be first? Which stage is last?

### Exercise 2-21 *Closing entries*

LO 4

#### Required

Which of the following accounts are closed at the end of the accounting period?

- a. Dividends
- b. Retained Earnings
- c. Utilities Expense
- d. Salaries Payable
- e. Salaries Expense
- f. Operating Expenses
- g. Accounts Payable
- h. Unearned Revenue
- i. Prepaid Rent
- j. Rent Expense
- k. Service Revenue
- l. Advertising Expense

### Exercise 2-22 *Matching concept*

LO 3

Companies make sacrifices known as *expenses* to obtain benefits called *revenues*. The accurate measurement of net income requires that expenses be matched with revenues. In some circumstances matching a particular expense directly with revenue is difficult or impossible. In these circumstances, the expense is matched with the period in which it is incurred.



#### Required

Distinguish the following items that could be matched directly with revenues from the items that would be classified as period expenses.

- a. Sales commissions paid to employees.
- b. Advertising expense.
- c. Rent expense.
- d. The cost of land that has been sold.

### Exercise 2-23 *Identifying source, use, and exchange transactions*

LO 8

#### Required

Indicate whether each of the following transactions is an asset source (AS), asset use (AU), asset exchange (AE), or claims exchange (CE) transaction.

- a. Performed services for cash.
- b. Performed services for clients on account.
- c. Collected cash from accounts receivable.
- d. Invested cash in a certificate of deposit.
- e. Purchased land with cash.
- f. Acquired cash from the issue of stock.
- g. Paid a cash dividend to the stockholders.
- h. Paid cash on accounts payable.
- i. Incurred other operating expenses on account.
- j. Paid cash for rent expense.

### Exercise 2-24 *Identifying asset source, use, and exchange transactions*

LO 8

#### Required

- a. Name an asset use transaction that will affect the income statement.
- b. Name an asset use transaction that will *not* affect the income statement.
- c. Name an asset exchange transaction that will *not* affect the statement of cash flows.
- d. Name an asset exchange transaction that will affect the statement of cash flows.
- e. Name an asset source transaction that will *not* affect the income statement.



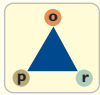
## LO 3

**Exercise 2-25** *Relation of elements to financial statements***Required**

Identify whether each of the following items would appear on the income statement (IS), statement of changes in stockholders' equity (SE), balance sheet (BS), or statement of cash flows (CF). Some items may appear on more than one statement; if so, identify all applicable statements. If an item would not appear on any financial statement, label it NA.

- a. Accounts receivable
- b. Accounts payable
- c. Unearned revenue
- d. Dividends
- e. Beginning cash balance
- f. Ending retained earnings
- g. Rent expense
- h. Ending cash balance
- i. Prepaid rent
- j. Net income
- k. Utilities expense
- l. Supplies
- m. Cash flow from operating activities
- n. Service revenue
- o. Auditor's opinion

## LO 7

**Exercise 2-26** *Sarbanes-Oxley (SOX) Act*

In February 2006, former Senator Warren Rudman of New Hampshire completed a 17-month investigation of an \$11 billion accounting scandal at Fannie Mae (a major enterprise involved in home-mortgage financing). The Rudman investigation concluded that Fannie Mae's CFO and controller used an accounting gimmick to manipulate financial statements in order to meet earnings-per-share (EPS) targets. Meeting the EPS targets triggered bonus payments for the executives.

**Required**

Comment on the provisions of SOX that pertain to intentional misrepresentation and describe the maximum penalty that the CFO could face.

**PROBLEMS**

## LO 1

**CHECK FIGURES**

Net Income: \$10,700

Ending Cash Balance: \$21,600

**All applicable Problems are available with McGraw-Hill Connect Accounting.**

**Problem 2-27** *Recording events in a horizontal statements model*

The following events pertain to The Mesa Company.

1. Acquired \$15,000 cash from the issue of common stock.
2. Provided services for \$4,000 cash.
3. Provided \$13,000 of services on account.
4. Collected \$9,000 cash from the account receivable created in Event 3.
5. Paid \$1,100 cash to purchase supplies.
6. Had \$100 of supplies on hand at the end of the accounting period.
7. Received \$2,400 cash in advance for services to be performed in the future.
8. Performed one-half of the services agreed to in Event 7.
9. Paid \$5,000 for salaries expense.
10. Incurred \$1,500 of other operating expenses on account.
11. Paid \$1,200 cash on the account payable created in Event 10.
12. Paid a \$1,500 cash dividend to the stockholders.

## Required

Show the effects of the events on the financial statements using a horizontal statements model like the following one. In the Cash Flows column, use the letters OA to designate operating activity, IA for investing activity, FA for financing activity, and NC for net change in cash. Use NA to indicate accounts not affected by the event. The first event is recorded as an example.

Event No.	Assets = Liabilities + Stockholders' Equity											Rev. — Exp. = Net Inc.				Cash Flows				
	Cash	+	Accts. Rec.	+	Supp.	=	Accts. Pay.	+	Unearn. Rev.	+	Com. Stk.	+	Ret. Earn.							
1	15,000	+	NA	+	NA	=	NA	+	NA	+	15,000	+	NA	NA	—	NA	=	NA	15,000	FA

## Problem 2-28 *Effect of deferrals on financial statements: three separate single-cycle examples*



### Required

- On February 1, 2010, Moore, Inc., was formed when it received \$70,000 cash from the issue of common stock. On May 1, 2010, the company paid \$42,000 cash in advance to rent office space for the coming year. The office space was used as a place to consult with clients. The consulting activity generated \$80,000 of cash revenue during 2010. Based on this information alone, record the events and related adjusting entry in the general ledger accounts under the accounting equation. Determine the amount of net income and cash flows from operating activities for 2010.
- On January 1, 2010, the accounting firm of Wayne & Associates was formed. On August 1, 2010, the company received a retainer fee (was paid in advance) of \$36,000 for services to be performed monthly during the next 12 months. Assuming that this was the only transaction completed in 2010, prepare an income statement, statement of changes in stockholders' equity, balance sheet, and statement of cash flows for 2010.
- Hal Company had \$1,250 of supplies on hand on January 1, 2011. Hal purchased \$6,500 of supplies on account during 2011. A physical count of supplies revealed that \$1,500 of supplies was on hand as of December 31, 2011. Determine the amount of supplies expense that should be recognized in the December 31, 2011 adjusting entry. Use a financial statements model to show how the adjusting entry would affect the balance sheet, income statement, and statement of cash flows.

### CHECK FIGURES

- Net Income: \$52,000
- Net Income: \$15,000

## Problem 2-29 *Effect of adjusting entries on the accounting equation*

### LO 2

### Required

Each of the following independent events requires a year-end adjusting entry. Show how each event and its related adjusting entry affect the accounting equation. Assume a December 31 closing date. The first event is recorded as an example.

### CHECK FIGURE

- adjustment amount: \$1,500

Event/ Adjustment	Total Assets			=	Liabilities	+	Stockholders' Equity	
	Cash	+	Other Assets				Common Stock	Retained Earnings
a	—6,000		+6,000		NA		NA	NA
Adj.	NA		—4,500		NA		NA	—4,500

- Paid \$6,000 cash in advance on April 1 for a one-year insurance policy.
- Purchased \$1,600 of supplies on account. At year's end, \$100 of supplies remained on hand.
- Paid \$6,000 cash in advance on March 1 for a one-year lease on office space.
- Received a \$15,000 cash advance for a contract to provide services in the future. The contract required a one-year commitment starting September 1.
- Paid \$12,000 cash in advance on October 1 for a one-year lease on office space.

## LO 2, 5, 6, 8



## CHECK FIGURES

- a. Net Income, 2010: \$42,500  
b. Net Income, 2011: \$53,850

**Problem 2-30** *Events for two complete accounting cycles*

Ohio Mining Company was formed on January 1, 2010.

**Events Affecting the 2010 Accounting Period**

1. Acquired cash of \$60,000 from the issue of common stock.
2. Purchased \$1,600 of supplies on account.
3. Purchased land that cost \$20,000 cash.
4. Paid \$1,600 cash to settle accounts payable created in Event 2.
5. Recognized revenue on account of \$68,000.
6. Paid \$22,000 cash for other operating expenses.
7. Collected \$46,000 cash from accounts receivable.

**Information for 2010 Adjusting Entries**

8. Recognized accrued salaries of \$2,100 on December 31, 2010.
9. Had \$200 of supplies on hand at the end of the accounting period.

**Events Affecting the 2011 Accounting Period**

1. Acquired an additional \$20,000 cash from the issue of common stock.
2. Paid \$2,100 cash to settle the salaries payable obligation.
3. Paid \$4,800 cash in advance for a lease on office facilities.
4. Sold land that had cost \$20,000 for \$20,000 cash.
5. Received \$6,600 cash in advance for services to be performed in the future.
6. Purchased \$1,200 of supplies on account during the year.
7. Provided services on account of \$56,000.
8. Collected \$61,000 cash from accounts receivable.
9. Paid a cash dividend of \$5,000 to the stockholders.

**Information for 2011 Adjusting Entries**

10. The advance payment for rental of the office facilities (see Event 3) was made on September 1 for a one-year lease term.
11. The cash advance for services to be provided in the future was collected on June 1 (see Event 5). The one-year contract started June 1.
12. Had \$200 of supplies on hand at the end of the period.
13. Recognized accrued salaries of \$3,200 at the end of the accounting period.

**Required**

- a. Identify each event affecting the 2010 and 2011 accounting periods as asset source (AS), asset use (AU), asset exchange (AE), or claims exchange (CE). Record the effects of each event under the appropriate general ledger account headings of the accounting equation.
- b. Prepare an income statement, statement of changes in stockholders' equity, balance sheet, and statement of cash flows for 2010 and 2011, using the vertical statements model.

## LO 2, 3

## CHECK FIGURES

- b. \$37,000  
h. \$(10,000)

**Problem 2-31** *Effect of events on financial statements*

Oaks Company had the following balances in its accounting records as of December 31, 2010.

Assets		Claims	
Cash	\$ 61,000	Accounts Payable	\$ 25,000
Accounts Receivable	45,000	Common Stock	90,000
Land	27,000	Retained Earnings	18,000
Totals	<u>\$133,000</u>		<u>\$133,000</u>

The following accounting events apply to Oaks's 2010 fiscal year:

- Jan. 1 Acquired an additional \$70,000 cash from the issue of common stock.  
April 1 Paid \$6,600 cash in advance for a one-year lease for office space.

- June 1 Paid a \$3,000 cash dividend to the stockholders.  
 July 1 Purchased additional land that cost \$25,000 cash.  
 Aug. 1 Made a cash payment on accounts payable of \$13,000.  
 Sept. 1 Received \$8,400 cash in advance as a retainer for services to be performed monthly during the next eight months.  
 Sept. 30 Sold land for \$15,000 cash that had originally cost \$15,000.  
 Oct. 1 Purchased \$900 of supplies on account.  
 Dec. 31 Earned \$80,000 of service revenue on account during the year.  
 31 Received \$66,000 cash collections from accounts receivable.  
 31 Incurred \$16,000 other operating expenses on account during the year.  
 31 Recognized accrued salaries expense of \$5,000.  
 31 Had \$250 of supplies on hand at the end of the period.  
 31 The land purchased on July 1 had a market value of \$28,000.

### Required

Based on the preceding information, answer the following questions. All questions pertain to the 2010 financial statements. (*Hint:* Record the events in general ledger accounts under an accounting equation before answering the questions.)

- What two additional adjusting entries need to be made at the end of the year?
- What amount would be reported for land on the balance sheet?
- What amount of net cash flow from operating activities would Oaks report on the statement of cash flows?
- What amount of rent expense would Oaks report in the income statement?
- What amount of total liabilities would Oaks report on the balance sheet?
- What amount of supplies expense would Oaks report on the income statement?
- What amount of unearned revenue would Oaks report on the balance sheet?
- What amount of net cash flow from investing activities would Oaks report on the statement of cash flows?
- What amount of total expenses would Oaks report on the income statement?
- What total amount of service revenues would Oaks report on the income statement?
- What amount of cash flows from financing activities would Oaks report on the statement of cash flows?
- What amount of net income would Oaks report on the income statement?
- What amount of retained earnings would Oaks report on the balance sheet?

### Problem 2-32 Identifying and arranging elements on financial statements

The following information was drawn from the records of Ruth & Associates at December 31, 2010.

LO 3



Supplies	\$ 3,000	Unearned revenue	\$ 8,000
Consulting revenue	100,000	Notes payable	32,000
Land	63,000	Salaries payable	7,000
Dividends	10,000	Salary expense	47,000
Cash flow from fin. activities	20,000	Common stock issued	15,000
Interest revenue	4,000	Beginning common stock	25,000
Ending retained earnings	60,000	Accounts receivable	26,000
Cash	52,000	Cash flow from inv. activities	(30,000)
Interest payable	2,000	Cash flow from oper. activities	32,000
Interest expense	5,000	Prepaid rent	5,000

### CHECK FIGURES

2010 Net Income: \$52,000  
 2010 Total Assets: \$149,000

### Required

Use the preceding information to construct an income statement, statement of changes in stockholders' equity, balance sheet, and statement of cash flows. (Show only totals for each activity on the statement of cash flows.)

## LO 3

**Problem 2-33** *Relationship of accounts to financial statements***Required**

Identify whether each of the following items would appear on the income statement (IS), statement of changes in stockholders' equity (SE), balance sheet (BS), or statement of cash flows (CF). Some items may appear on more than one statement; if so, identify all applicable statements. If an item would not appear on any financial statement, label it NA.

- |  |  |
|--|--|
| a. Depreciation expense                | t. Cash                                |
| b. Interest receivable                 | u. Supplies                            |
| c. Certificate of deposit              | v. Cash flow from financing activities |
| d. Unearned revenue                    | w. Interest revenue                    |
| e. Service revenue                     | x. Ending retained earnings            |
| f. Cash flow from investing activities | y. Net income                          |
| g. Consulting revenue                  | z. Dividends                           |
| h. Interest expense                    | aa. Office equipment                   |
| i. Ending common stock                 | bb. Debt to equity ratio               |
| j. Total liabilities                   | cc. Land                               |
| k. Debt to assets ratio                | dd. Interest payable                   |
| l. Cash flow from operating activities | ee. Rent expense                       |
| m. Operating expenses                  | ff. Notes receivable                   |
| n. Supplies expense                    | gg. Accounts payable                   |
| o. Beginning retained earnings         | hh. Total assets                       |
| p. Beginning common stock              | ii. Salaries payable                   |
| q. Prepaid insurance                   | jj. Insurance expense                  |
| r. Salary expense                      | kk. Notes payable                      |
| s. Accumulated depreciation            | ll. Accounts receivable                |

## LO 5, 6

**Problem 2-34** *Missing information in financial statements***Required**

Fill in the blanks (indicated by the alphabetic letters in parentheses) in the following financial statements. Assume the company started operations January 1, 2008, and all transactions involve cash.

	For the Years		
	2008	2009	2010
<b>Income Statements</b>			
Revenue	\$ 400	\$ 500	\$ 800
Expense	(250)	(l)	(425)
Net income	<u>\$ (a)</u>	<u>\$ 100</u>	<u>\$ 375</u>
<b>Statement of Changes in Stockholders' Equity</b>			
Beginning common stock	\$ 0	\$ (m)	\$ 9,100
Plus: Common stock issued	(b)	1,100	310
Ending common stock	<u>8,000</u>	<u>9,100</u>	<u>(s)</u>
Beginning retained earnings	0	25	75
Plus: Net income	(c)	100	375
Less: Dividends	(d)	(50)	(150)
Ending retained earnings	<u>25</u>	<u>(n)</u>	<u>300</u>
Total stockholders' equity	<u>\$ (e)</u>	<u>\$ 9,175</u>	<u>\$ (t)</u>

continued

**CHECK FIGURES**

- a. IS  
z. SE

**CHECK FIGURES**

- n. \$75  
t. \$9,710

Balance Sheets			
Assets			
Cash	\$ (f)	\$ (o)	\$ (u)
Land	0	(p)	2,500
Total assets	<u>\$11,000</u>	<u>\$11,650</u>	<u>\$10,550</u>
Liabilities	\$ (g)	\$ (q)	\$ 840
Stockholders' equity			
Common stock	(h)	(r)	9,410
Retained earnings	(i)	75	300
Total stockholders' equity	<u>8,025</u>	<u>9,175</u>	<u>9,710</u>
Total liabilities and stockholders' equity	<u>\$11,000</u>	<u>\$11,650</u>	<u>\$10,550</u>

Statements of Cash Flows			
<b>Cash flows from operating activities</b>			
Cash receipts from revenue	\$ (j)	\$ 500	\$ (v)
Cash payments for expenses	(k)	(400)	(w)
Net cash flows from operating activities	<u>150</u>	<u>100</u>	<u>375</u>
<b>Cash flows from investing activities</b>			
Cash payments for land	0	(5,000)	0
Cash receipt from sale of land	0	0	2,500
Net cash flows from investing activities	<u>0</u>	<u>(5,000)</u>	<u>2,500</u>
<b>Cash flows from financing activities</b>			
Cash receipts from borrowed funds	2,975	0	0
Cash payments to reduce debt	0	(500)	(x)
Cash receipts from stock issue	8,000	1,100	(y)
Cash payments for dividends	(125)	(50)	(z)
Net cash flows from financing activities	<u>10,850</u>	<u>550</u>	<u>(1,475)</u>
Net change in cash	11,000	(4,350)	1,400
Beginning cash balance	0	11,000	6,650
Ending cash balance	<u>\$11,000</u>	<u>\$ 6,650</u>	<u>\$ 8,050</u>

### Problem 2-35 *Fraud Triangle*

Pete Chalance is an accountant with a shady past. Suffice it to say that he owes some very unsavory characters a lot of money. Despite his past, Pete works hard at keeping up a strong professional image. He is a manager at Smith and Associates, a fast-growing CPA firm. Pete is highly regarded around the office because he is a strong producer of client revenue. Indeed, on several occasions he exceeded his authority in establishing prices with clients. This is typically a partner's job but who could criticize Pete, who is most certainly bringing in the business. Indeed, Pete is so good that he is able to pull off the following scheme. He bills clients at inflated rates and then reports the ordinary rate to his accounting firm. Say, for example, the normal charge for a job is \$2,500. Pete will smooth talk the client, then charge him \$3,000. He reports the normal charge of \$2,500 to his firm and keeps the extra \$500 for himself. He knows it isn't exactly right because his firm gets its regular charges and the client willingly pays for the services rendered. He thinks to himself, as he pockets his ill-gotten gains, who is getting hurt anyway?

#### Required

The text discusses three common features (conditions) that motivate ethical misconduct. Identify and explain each of the three features as they appear in the above scenario.

LO 7





**ANALYZE, THINK, COMMUNICATE****ATC 2-1 Business Applications Case** *Understanding real-world annual reports***Required**

Use the **Topps Company** annual report in Appendix B to answer the following questions.

- Which accounts on Topps' balance sheet are accrual type accounts?
- Which accounts on Topps' balance sheet are deferral type accounts?
- Compare Topps' 2006 *net income* to its 2006 *cash provided by operating activities*. Which is larger?
- First, compare Topps' 2005 net income to its 2006 net income. Next, compare Topps' 2005 cash provided by operating activities to its 2006 cash provided by operating activities. Which changed the most from 2005 to 2006, net income or cash provided by operating activities?

**ATC 2-2 Group Assignment** *Missing information*

**Verizon Communications, Inc.**, is one of the country's largest providers of communication services. The following information for 2004 through 2007 was taken from its annual reports. All amounts are in millions.

	2007	2006	2005	2004
Revenue	\$93,469	\$88,182	\$69,518	\$65,751
Operating expense	77,891	74,809	56,937	54,881

**Required**

- Divide the class into groups of four or five students. Organize the groups into three sections. Assign each section of groups the financial data for one of the preceding accounting periods.

**Group Tasks**

- Determine the amount of net income for the year assigned.
- How does the result in item 1 above affect the retained earnings of the company?
- Compute the percentage growth rate in net income for each year.
- Speculate as to what may have caused Verizon's revenue growth from 2005 to 2006 to be so much greater than its revenue growth from 2004 to 2005 and 2006 to 2007.
- Have representatives from each section put the income statement for their respective year on the board.

**Class Discussion**

- Have the class discuss the trend in revenue and net income.

**ATC 2-3 Real-World Case** *Identifying accruals and deferrals*

The following information was drawn from the 2007 annual reports of five real-world companies.

**Adidas Group**, the company that makes athletic apparel, reported *trademarks* of €1,291 million. [Adidas has its headquarters in Germany and reports results in euros (€).] Trademarks is the name given to the category of assets that includes such things as the company logo.

**Laboratory Corporation of America** (usually called LabCorp) claims to be "the second largest independent clinical laboratory in the United States." It reported *supplies inventories* of \$80.4 million.

**Media General, Inc.**, owns, among other things, 25 daily newspapers and 23 television stations. It reported *unearned revenue* of \$21,244 thousand.

**Motorola, Inc.**, which makes cell phones and other communication equipment, reported *accounts receivables* of \$5,324 million.

**Palm, Inc.**, the company that makes the Palm Pilot personal digital assistant, reported *prepaids and others* of \$10,222 thousand.

### Required

- Identify each of the accounts shown in italics above as being an accrual or deferral item, and whether it is an asset or liability.
- Juniper Networks, Inc.**, designs, develops, and sells high-performance network infrastructure for Internet Protocol based networks. In 2007 it reported a liability called *accrued compensation* of \$158.7 million. Write a brief explanation of what you think the company means by accrued compensation.

### ATC 2-4 Business Applications Case *Analyzing the cash flow effects of accruals and deferrals*

Make the following assumptions about Gwinn Company and Harris Company for the purpose of this problem.



- The two companies ended 2010 with the exact same balances in all of the accounts reported on their balance sheets.
- The two companies had the same amount of revenue and expenses during 2011, and neither company had any investing or financing cash flow activities.

### Required

Shown below are changes in one balance sheet account for each company from 2010 to 2011. Based on the changes in the balances for the given account, decide which company would have ended 2011 with the highest balance in its cash account. *Consider each case independently*, and explain your answer.

a.

	Gwinn Company		Harris Company	
	2010	2011	2010	2011
Accounts receivable	\$20,000	\$30,000	\$20,000	\$25,000

b.

	Gwinn Company		Harris Company	
	2010	2011	2010	2011
Accounts payable	\$10,000	\$18,000	\$10,000	\$12,000

c.

	Gwinn Company		Harris Company	
	2010	2011	2010	2011
Prepaid rent	\$12,000	\$8,000	\$12,000	\$6,000

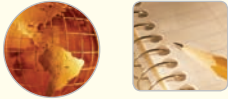
### ATC 2-5 Business Applications Case *Analyzing the cash flow effects of different types of expenses*

The following income statements are available for Hopi, Inc., and Zuni, Inc., for 2011.

	Hopi, Inc.	Zuni, Inc.
Revenue	\$100,000	\$100,000
Wages expense	70,000	55,000
Depreciation expense	10,000	25,000
Net earnings	<u>\$ 20,000</u>	<u>\$ 20,000</u>

**Required**

Assume that neither company had beginning or ending balances in its Accounts Receivable or Wages Payable accounts. Explain which company would have the lowest *net cash flows from operating activities* for 2011.

**ATC 2-6 Writing Assignment** *Effects of accruals and deferrals on real-world companies' financial statements*

The following information was drawn from the 2007 annual reports of three real-world companies.

The 2006 balance sheet of **Balder Electric Company** reported \$0.6 million of *accrued interest expense*. In 2007 it reported \$27.7 million of accrued interest expense.

The 2006 balance sheet of **The McGraw-Hill Companies, Inc.**, reported *senior long-term notes payable* of \$0.3 million. In 2007 it reported \$1.2 billion of these notes payables.

The 2006 balance sheet of **Terra Nitrogen, L. P.**, reported *customer prepayments* of \$35.3 million. In 2007 it reported \$154.6 million of customer prepayments.

**Required**

For each situation presented above, write a brief explanation of how the company's 2007 financial statements would have been affected by the item in question, and whether the item is an accrual, deferral, or neither. Be sure to discuss primary and secondary effects. For example, if a company had an increase in its salaries expense, the primary effects would be the increase in expenses and decrease in net income. The secondary effects would include a decrease in retained earnings and a decrease in cash or an increase in salaries payable. Be as specific as possible.

**ATC 2-7 Corporate Governance** *What is a little deceit among friends?*

Glenn's Cleaning Services Company is experiencing cash flow problems and needs a loan. Glenn has a friend who is willing to lend him the money he needs provided she can be convinced that he will be able to repay the debt. Glenn has assured his friend that his business is viable, but his friend has asked to see the company's financial statements. Glenn's accountant produced the following financial statements.

Income Statement		Balance Sheet	
Service Revenue	\$ 38,000	Assets	<u>\$85,000</u>
Operating Expenses	<u>(70,000)</u>	Liabilities	\$35,000
Net Loss	<u>\$(32,000)</u>	Stockholders' Equity	
		Common Stock	82,000
		Retained Earnings	<u>(32,000)</u>
		Total Liabilities and Stockholders' Equity	<u>\$85,000</u>

Glenn made the following adjustments to these statements before showing them to his friend. He recorded \$82,000 of revenue on account from Barrymore Manufacturing Company for a contract to clean its headquarters office building that was still being negotiated for the next month. Barrymore had scheduled a meeting to sign a contract the following week, so Glenn was sure that he would get the job. Barrymore was a reputable company, and Glenn was confident that he could ultimately collect the \$82,000. Also, he subtracted \$30,000 of accrued salaries expense and the corresponding liability. He reasoned that since he had not paid the employees, he had not incurred any expense.

**Required**

- Reconstruct the income statement and balance sheet as they would appear after Glenn's adjustments. Comment on the accuracy of the adjusted financial statements.
- Suppose you are Glenn and the \$30,000 you owe your employees is due next week. If you are unable to pay them, they will quit and the business will go bankrupt. You are sure you will be able to repay your friend when your employees perform the \$82,000 of services for

Barrymore and you collect the cash. However, your friend is risk averse and is not likely to make the loan based on the financial statements your accountant prepared. Would you make the changes that Glenn made to get the loan and thereby save your company? Defend your position with a rational explanation.

- c. Discuss the components of the fraud triangle as they apply to Glenn's decision to change the financial statements to reflect more favorable results.

### **ATC 2-8 Research Assignment** *Investigating nonfinancial information in Nike's annual report*

Although most of this course is concerned with the financial statements themselves, all sections of a company's annual report are important. A company must file various reports with the SEC, and one of these, Form 10-K, is essentially the company's annual report. The requirements below ask you to investigate sections of Nike's annual report that explain various nonfinancial aspects of its business operations.

To obtain the Form 10-K you can use either the EDGAR system following the instructions in Appendix A or the company's website.

#### **Required**

- a. In what year did Nike begin operations?
- b. Other than athletic shoes, what products does Nike sell?
- c. Does Nike operate businesses under names other than Nike? If so, what are they?
- d. How many employees does Nike have?
- e. In how many countries other than the United States does Nike sell its products?



# CHAPTER 3

## Accounting *for* Merchandising Businesses

### LEARNING OBJECTIVES

**After you have mastered the material in this chapter you will be able to:**

- 1** Identify and explain the primary features of the perpetual inventory system.
- 2** Show the effects of inventory transactions on financial statements.
- 3** Explain the meaning of terms used to describe transportation costs, cash discounts, returns or allowances, and financing costs.
- 4** Explain how gains and losses differ from revenues and expenses.
- 5** Compare and contrast single and multistep income statements.
- 6** Show the effect of lost, damaged, or stolen inventory on financial statements.
- 7** Use common size financial statements and ratio analysis to evaluate managerial performance.
- 8** Identify the primary features of the periodic inventory system. (Appendix)

### CHAPTER OPENING

Previous chapters have discussed accounting for service businesses. These businesses obtain revenue by providing some kind of service such as medical or legal advice to their customers. Other examples of service companies include dry cleaning companies, maid service companies, and car washes. This chapter introduces accounting practices for merchandising businesses. **Merchandising businesses** generate revenue by selling goods. They buy the merchandise they sell from companies called suppliers. The goods purchased for resale are called **merchandise inventory**. Merchandising businesses include **retail companies** (companies that sell goods to the final consumer) and **wholesale companies** (companies that sell to other businesses). **Sears, JCPenney, Target,** and **Sam's Club** are real-world merchandising businesses.



## The *Curious* Accountant

Diane recently purchased a gold necklace for \$250 from her local **Zales** jewelry store. The next day she learned that Nicole bought the same necklace on-line from **Blue Nile** for only \$200. Diane questioned how Blue Nile could sell the necklace for so much less than Zales. Nicole suggested that even though both jewelry sellers purchase their products from the same producers at about the same price, Blue Nile can charge lower prices because it does not have to operate expensive bricks-and-mortar stores, thus lowering its operating costs. Diane disagrees. She thinks the cost of operating large distribution centers and Internet server centers will offset any cost savings Blue Nile enjoys from not owning retail jewelry stores.

Exhibit 3.1 presents the income statements for Zales and Blue Nile. Based on these income statements, do you think Diane or Nicole is correct? (Answer on page 110.)





**EXHIBIT 3.1****Comparative Income Statements****BLUE NILE, INC.****Consolidated Statements of Operations**  
(dollars in thousands)

	<b>Fiscal Year Ended</b>	
	<b>Recent</b>	<b>Previous</b>
Net sales	\$203,169	\$169,242
Cost of sales	158,025	131,590
Gross profit	45,144	37,652
Operating expenses:		
Selling, general and administrative	27,095	22,795
Restructuring charges	—	—
	27,095	22,795
Operating income	18,049	14,857
Other income (expense), net:		
Interest income	2,499	709
Interest expense	—	—
Other income	5	63
	2,504	772
Income before income taxes	20,553	15,629
Income tax expense (benefit)	7,400	5,642
Net income	<u>\$ 13,153</u>	<u>\$ 9,987</u>

**ZALE CORPORATION AND SUBSIDIARIES****Consolidated Statements of Operations**  
(dollars in thousands)

	<b>Fiscal Years Ended July 31,</b>	
	<b>Recent</b>	<b>Previous</b>
Total revenue	\$2,383,066	\$2,304,440
Cost and expenses:		
Cost of sales	1,157,226	1,122,946
Selling, general and administrative expenses	982,113	942,796
Cost of insurance operations	6,084	5,963
Depreciation and amortization expense	59,840	56,381
Impairment of goodwill	—	—
Operating earnings	177,803	176,354
Interest expense, net	7,725	7,528
Cost of early retirement of debt	—	—
Earnings before income taxes	170,078	168,826
Income taxes	63,303	62,353
Net earnings (loss)	<u>\$ 106,775</u>	<u>\$ 106,473</u>

**LO 1**

Identify and explain the primary features of the perpetual inventory system.

**PRODUCT COSTS VERSUS SELLING AND ADMINISTRATIVE COSTS**

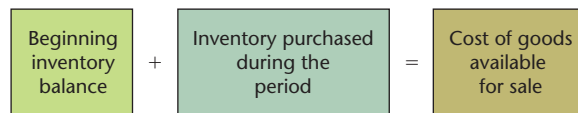
Companies report inventory costs on the balance sheet in the asset account Merchandise Inventory. All costs incurred to acquire merchandise and ready it for sale are included in the inventory account. Examples of inventory costs include the price of

goods purchased, shipping and handling costs, transit insurance, and storage costs. Since inventory items are referred to as products, inventory costs are frequently called **product costs**.

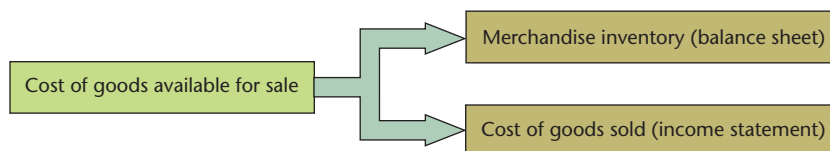
Costs that are not included in inventory are usually called **selling and administrative costs**. Examples of selling and administrative costs include advertising, administrative salaries, sales commissions, insurance, and interest. Since selling and administrative costs are usually recognized as expenses *in the period* in which they are incurred, they are sometimes called **period costs**. In contrast, product costs are expensed when inventory is sold regardless of when it was purchased. In other words, product costs are matched directly with sales revenue, while selling and administrative costs are matched with the period in which they are incurred.

## ALLOCATING INVENTORY COST BETWEEN ASSET AND EXPENSE ACCOUNTS

The cost of inventory that is available for sale during a specific accounting period is determined as follows.



The **cost of goods available for sale** is allocated between the asset account Merchandise Inventory and an expense account called **Cost of Goods Sold**. The cost of inventory items that have not been sold (Merchandise Inventory) is reported as an asset on the balance sheet, and the cost of the items sold (Cost of Goods Sold) is expensed on the income statement. This allocation is depicted graphically as follows.



The difference between the sales revenue and the cost of goods sold is called **gross margin** or **gross profit**. The selling and administrative expenses (period costs) are subtracted from gross margin to obtain the net income.

Exhibit 3.1 displays income statements from the annual reports of **Blue Nile** and **Zales**. For each company, review the most current income statement and determine the amount of gross margin. You should find a gross profit of \$45,144 for Blue Nile and a gross margin of \$1,225,840 (\$2,383,066 – \$1,157,226) for Zales.

## PERPETUAL INVENTORY SYSTEM

Most modern companies maintain their inventory records using the **perpetual inventory system**, so-called because the inventory account is adjusted perpetually (continually) throughout the accounting period. Each time merchandise is purchased, the inventory account is increased; each time it is sold, the inventory account is decreased. The following illustration demonstrates the basic features of the perpetual inventory system.

### LO 2

Show the effects of inventory transactions on financial statements.

June Gardener loved plants and grew them with such remarkable success that she decided to open a small retail plant store. She started June's Plant Shop (JPS) on January 1, 2010. The following discussion explains and illustrates the effects of the five events the company experienced during its first year of operation.



## Effects of 2010 Events on Financial Statements

### EVENT 1 JPS acquired \$15,000 cash by issuing common stock.

This event is an asset source transaction. It increases both assets (cash) and stockholders' equity (common stock). The income statement is not affected. The statement of cash flows reflects an inflow from financing activities. These effects are shown here.

Assets = Liab. + Stockholders' Equity																
Cash	+	Inventory	+	Land	=	Accts. Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
15,000	+	NA	+	NA	=	NA	+	15,000	+	NA	NA	−	NA	=	NA	15,000 FA

### EVENT 2 JPS purchased merchandise inventory for \$14,000 cash.

This event is an asset exchange transaction. One asset, cash, decreases and another asset, merchandise inventory, increases; total assets remain unchanged. Because product costs are expensed when inventory is sold, not when it is purchased, the event does not affect the income statement. The cash outflow, however, is reported in the operating activities section of the statement of cash flows. These effects are illustrated below.

Assets = Liab. + Stockholders' Equity																
Cash	+	Inventory	+	Land	=	Accts. Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	-	Exp.	=	Net Inc.	Cash Flow
(14,000)	+	14,000	+	NA	=	NA	+	NA	+	NA	NA	-	NA	=	NA	(14,000) OA

### EVENT 3A JPS recognized sales revenue from selling inventory for \$12,000 cash.

The revenue recognition is the first part of a two-part transaction. The *sales part* represents a source of assets (cash increases from earning sales revenue). Both assets (cash) and stockholders' equity (retained earnings) increase. Sales revenue on the income statement increases. The \$12,000 cash inflow is reported in the operating activities section of the statement of cash flows. These effects are shown in the following financial statements model.

Assets = Liab. + Stockholders' Equity																
Cash	+	Inventory	+	Land	=	Accts. Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
12,000	+	NA	+	NA	=	NA	+	NA	+	12,000	12,000	−	NA	=	12,000	12,000 OA

### EVENT 3B JPS recognized \$8,000 of cost of goods sold.

The expense recognition is the second part of the two-part transaction. The *expense part* represents a use of assets. Both assets (merchandise inventory) and stockholders'

equity (retained earnings) decrease. An expense account, Cost of Goods Sold, is reported on the income statement. This part of the transaction does not affect the statement of cash flows. A cash outflow occurred when the goods were bought, not when they were sold. These effects are shown here.

Assets					=	Liab.	+	Stockholders' Equity								
Cash	+	Inventory	+	Land	=	Accts. Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
NA	+	(8,000)	+	NA	=	NA	+	NA	+	(8,000)	NA	−	8,000	=	(8,000)	NA

#### EVENT 4 JPS paid \$1,000 cash for selling and administrative expenses.

This event is an asset use transaction. The payment decreases both assets (cash) and stockholders' equity (retained earnings). The increase in selling and administrative expenses decreases net income. The \$1,000 cash payment is reported in the operating activities section of the statement of cash flows. These effects are illustrated below.

Assets = Liab. + Stockholders' Equity																
Cash	+	Inventory	+	Land	=	Accts. Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	-	Exp.	=	Net Inc.	Cash Flow
(1,000)	+	NA	+	NA	=	NA	+	NA	+	(1,000)	NA	-	1,000	=	(1,000)	(1,000) OA

#### EVENT 5 JPS paid \$5,500 cash to purchase land for a place to locate a future store.

Buying the land increases the Land account and decreases the Cash account on the balance sheet. The income statement is not affected. The statement of cash flow shows a cash outflow to purchase land in the investing activities section of the statement of cash flows. These effects are shown below.

Assets = Liab. + Stockholders' Equity																
Cash	+	Inventory	+	Land	=	Accts. Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
(5,500)	+	NA	+	5,500	=	NA	+	NA	+	NA	NA	−	NA	=	NA	(5,500) IA

## Financial Statements for 2010

JPS's financial statements for 2010 are shown in Exhibit 3.2. JPS had no beginning inventory in its first year, so the cost of merchandise inventory available for sale was \$14,000 (the amount of inventory purchased during the period). Recall that JPS must allocate the *Cost of Goods (Inventory) Available for Sale* between the *Cost of Goods Sold* (\$8,000) and the ending balance (\$6,000) in the *Merchandise Inventory* account. The cost of goods sold is reported as an expense on the income statement and the ending balance of merchandise inventory is reported as an asset on the balance sheet. The difference between the sales revenue (\$12,000) and the cost of goods sold (\$8,000) is labeled *gross margin* (\$4,000) on the income statement.

**EXHIBIT 3.2****Financial Statements**

2010 Income Statement		12/31/10 Balance Sheet		2010 Statement of Cash Flows	
Sales revenue	\$12,000	Assets		Operating activities	
Cost of goods sold	(8,000)	Cash	\$ 6,500	Inflow from customers	\$12,000
Gross margin	4,000	Merchandise inventory	6,000	Outflow for inventory	(14,000)
Less: Operating exp.		Land	5,500	Outflow for selling	
Selling and		Total assets	\$18,000	& admin. exp.	(1,000)
admin. exp.	(1,000)	Liabilities	\$ 0	Net cash outflow for	
Net income	\$ 3,000	Stockholders' equity		operating activities	\$ (3,000)
		Common stock	\$15,000	Investing activities	
		Retained earnings	3,000	Outflow to purchase land	(5,500)
		Total stockholders' equity	18,000	Financing activities	
		Total liab. and stk. equity	\$18,000	Inflow from stock issue	15,000
				Net change in cash	6,500
				Plus: Beginning cash balance	0
				Ending cash balance	\$ 6,500

**CHECK *Yourself* 3.1**

Phambroom Company began 2010 with \$35,600 in its Inventory account. During the year, it purchased inventory costing \$356,800 and sold inventory that had cost \$360,000 for \$520,000. Based on this information alone, determine (1) the inventory balance as of December 31, 2010, and (2) the amount of gross margin Phambroom would report on its 2010 income statement.

**Answer**

- Beginning inventory + Purchases = Goods available – Ending inventory = Cost of goods sold  
 $\$35,600 + \$356,800 = \$392,400 - \text{Ending inventory} = \$360,000$   
Ending inventory = \$32,400
- Sales revenue – Cost of goods sold = Gross margin  
 $\$520,000 - \$360,000 = \$160,000$

**LO 3**

Explain the meaning of terms used to describe transportation costs, cash discounts, returns or allowances, and financing costs.

**Transportation Cost, Purchase Returns and Allowances, and Cash Discounts Related to Inventory Purchases**

Purchasing inventory often involves: (1) incurring transportation costs, (2) returning inventory or receiving purchase allowances (cost reductions), and (3) taking cash discounts (also cost reductions). During its second accounting cycle, JPS encountered these kinds of events. The final account balances at the end of the 2010 fiscal year become the beginning balances for 2011: Cash, \$6,500; Merchandise Inventory, \$6,000; Land, 5,500; Common Stock, \$15,000; and Retained Earnings, \$3,000.

**Effects of 2011 Events on Financial Statements**

JPS experienced the following events during its 2011 accounting period. The effects of each of these events are explained and illustrated in the following discussion.

### EVENT 1 JPS borrowed \$4,000 cash by issuing a note payable.

JPS borrowed the money to enable it to purchase a plot of land for a future site for a store it planned to build in the near future. Borrowing the money increases the Cash account and the Note Payable account on the balance sheet. The income statement is not affected. The statement of cash flow shows a cash flow from financing activities. These effects are shown below.

Assets											=	Liabilities			+	Stockholders' Equity							
Cash	+	Accts. Rec.	+	Inventory	+	Land	=	Accts. Pay.	+	Notes Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	-	Exp.	=	Net Inc.	Cash Flow			
4,000	+	NA	+	NA	+	NA	=	NA	+	4,000	+	NA	+	NA	NA	-	NA	=	NA	4,000	FA		

### EVENT 2 JPS purchased on account merchandise inventory with a list price of \$11,000.

The inventory purchase increases both assets (merchandise inventory) and liabilities (accounts payable) on the balance sheet. The income statement is not affected until later, when inventory is sold. Since the inventory was purchased on account, there was no cash outflow. These effects are shown here.

Assets											=	Liab.			+	Stockholders' Equity							
Cash	+	Accts. Rec.	+	Inventory	+	Land	=	Accts. Pay.	+	Notes Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	-	Exp.	=	Net Inc.	Cash Flow			
NA	+	NA	+	11,000	+	NA	=	11,000	+	NA	+	NA	+	NA	NA	-	NA	=	NA	NA			

## Accounting for Purchase Returns and Allowances

### EVENT 3 JPS returned some of the inventory purchased in Event 2. The list price of the returned merchandise was \$1,000.

To promote customer satisfaction, many businesses allow customers to return goods for reasons such as wrong size, wrong color, wrong design, or even simply because the purchaser changed his mind. The effect of a purchase return is the *opposite* of the original purchase. For JPS the **purchase return** decreases both assets (merchandise inventory) and liabilities (accounts payable). There is no effect on either the income statement or the statement of cash flows. These effects are shown below.

Assets = Liab. + Stockholders' Equity																				
Cash	+	Accts. Rec.	+	Inventory	+	Land	=	Accts. Pay.	+	Notes Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	-	Exp.	=	Net Inc.	Cash Flow
NA	+	NA	+	(1,000)	+	NA	=	(1,000)	+	NA	+	NA	+	NA	NA	-	NA	=	NA	NA

Sometimes dissatisfied buyers will agree to keep goods instead of returning them if the seller offers to reduce the price. Such reductions are called allowances. **Purchase allowances** affect the financial statements the same way purchase returns do.



## Purchase Discounts

**EVENT 4** JPS received a cash discount on goods purchased in Event 2. The credit terms were 2/10, n/30.

To encourage buyers to pay promptly, sellers sometimes offer **cash discounts**. To illustrate, assume JPS purchased the inventory in Event 2 under terms **2/10, n/30** (two-ten, net thirty). These terms mean the seller will allow a 2 percent cash discount if the purchaser pays cash within 10 days from the date of purchase. The amount not paid within the first 10 days is due at the end of 30 days from date of purchase. Recall that JPS returned \$1,000 of the inventory purchased in Event 1 leaving a \$10,000 balance (\$11,000 list price – \$1,000 purchase return). If JPS pays for the inventory within 10 days, the amount of the discount is \$200 (\$10,000 × .02).

When cash discounts are applied to purchases they are called **purchases discounts**. When they are applied to sales, they are called sales discounts. Sales discounts will be discussed later in the chapter. A *purchase discount* reduces the cost of the inventory and the associated account payable on the balance sheet. A purchase discount does not directly affect the income statement or the statement of cash flow. These effects are shown here.

Assets = Liab. + Stockholders' Equity																				
Cash	+	Accts. Rec.	+	Inventory	+	Land	=	Accts. Pay.	+	Notes Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
NA	+	NA	+	(200)	+	NA	=	(200)	+	NA	+	NA	+	NA	NA	−	NA	=	NA	NA

If JPS paid the account payable after 10 days, there would be no purchase discount. In this case the balances in the Inventory and Account Payable accounts would remain at \$10,000.

**EVENT 5** JPS paid the \$9,800 balance due on the account payable.

The remaining balance in the accounts payable is \$9,800 (\$10,000 list price – \$200 purchase discount). Paying cash to settle the liability reduces cash and accounts payable on the balance sheet. The income statement is not affected. The cash outflow is shown in the operating section of the statement of cash flows. These effects are shown below.


Assets											=	Liab.			+	Stockholders' Equity						
Cash	+	Accts. Rec.	+	Inventory	+	Land	=	Accts. Pay.	+	Notes Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow		
(9,800)	+	NA	+	NA	+	NA	=	(9,800)	+	NA	+	NA	+	NA	NA	−	NA	=	NA	(9,800) OA		

## The Cost of Financing Inventory

Suppose you buy inventory this month and sell it next month. Where do you get the money to pay for the inventory at the time you buy it? One way to finance the purchase is to buy it on account and withhold payment until the last day of the term for the account payable. For example, suppose you buy inventory under terms 2/10, net/30. Under these circumstances you could delay payment for 30 days after the day of purchase. This way you may be able to collect enough money from the inventory you sell

## Reality BYTES

Many real-world companies have found it more effective to impose a penalty for late payment than to use a cash discount to encourage early payment. The invoice from Arley Water Works is an example of the penalty strategy. Notice that the amount due, if paid by the due date, is \$18.14. A \$1.88 late charge is imposed if the bill is paid after the due date. The \$1.88 late charge is in fact interest. If Arley Water Works collects the payment after the due date, the utility will receive cash of \$20.02. The collection will increase cash (\$20.02), reduce accounts receivable (\$18.14), and increase interest revenue (\$1.88).


**ARLEY WATER WORKS**  
 P.O. BOX 146  
 ARLEY, ALABAMA 35541  
 (205) 387-0156

TYPE OF SERVICE	METER READING		USED	CHARGES
	PRESENT	PREVIOUS		
WAT	33030	30950	2080	17.44
Sales Tax				0.70

PLEASE CLEAN OUT AROUND YOUR METER

ACCOUNT # 2054
09-26-03

METER READING			TOTAL DUE UPON RECEIPT	LATE CHARGE AFTER DUE DATE	TOTAL DUE AMOUNT
MONTH	DAY	CLASS	18.14	1.88	20.02
9	17	1			

to pay for the inventory you purchased. Refusing the discount allows you the time needed to generate the cash necessary to pay off the liability (account payable). Unfortunately, this is usually a very expensive way to finance the purchase of inventory.

While the amount of a cash discount may appear small, the discount period is short. Consider the terms 2/10, net/30. Since you can pay on the tenth day and still receive the discount, you obtain financing for only 20 days (30-day full credit term – 10-day discount term). In other words, you must forgo a 2 percent discount to obtain a loan with a 20-day term. What is the size of the discount in annual terms? The answer is determined by the following formula.

$$\text{Annual rate} = \text{Discount rate} \times (365 \text{ days} \div \text{term of the loan})$$

$$\text{Annual rate} = 2\% \times (365 \div 20)$$

$$\text{Annual rate} = 36.5\%$$

This means that a 2 percent discount rate for 20 days is equivalent to a 36.5 percent annual rate of interest. So, if you do not have the money to pay the account payable, but can borrow money from a bank at less than 36.5 percent annual interest, you should borrow the money and pay off the account payable within the discount period.

## Accounting for Transportation Costs

**EVENT 6** The shipping terms for the inventory purchased in Event 2 were FOB shipping point. JPS paid the freight company \$300 cash for delivering the merchandise.

The terms **FOB shipping point** and **FOB destination** identify whether the buyer or the seller is responsible for transportation costs. If goods are delivered FOB shipping point, the buyer is responsible for the freight cost. If goods are delivered FOB destination, the seller is responsible. When the buyer is responsible, the freight cost is called **transportation-in**. When the seller is responsible, the cost is called **transportation-out**. The following table summarizes freight cost terms.

Responsible Party	Buyer	Seller
Freight terms	FOB shipping point	FOB destination
Account title	Merchandise inventory	Transportation-out

Event 6 indicates the inventory was delivered FOB shipping point, so JPS (the buyer) is responsible for the \$300 freight cost. Since incurring transportation-in costs is necessary to obtain inventory, these costs are added to the inventory account. The freight cost increases one asset account (Merchandise Inventory) and decreases another asset account (Cash). The income statement is not affected by this transaction because transportation-in costs are not expensed when they are incurred. Instead they are expensed as part of *cost of goods sold* when the inventory is sold. However, the cash paid for transportation-in costs is reported as an outflow in the operating activities section of the statement of cash flows. The effects of *transportation-in costs* are shown here.

Assets = Liab. + Stockholders' Equity																				
Cash	+	Accts. Rec.	+	Inventory	+	Land	=	Accts. Pay.	+	Notes Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	-	Exp.	=	Net Inc.	Cash Flow
(300)	+	NA	+	300	+	NA	=	NA	+	NA	+	NA	+	NA	NA	-	NA	=	NA	(300) OA

**EVENT 7A** JPS recognized \$24,750 of revenue on the cash sale of merchandise that cost \$11,500.

The sale increases assets (cash) and stockholders' equity (retained earnings). The revenue recognition increases net income. The \$24,750 cash inflow from the sale is reported in the operating activities section of the statement of cash flows. These effects are shown below.

Assets												=	Liab.		+	Stockholders' Equity						
Cash	+	Accts. Rec.	+	Inventory	+	Land	=	Accts. Pay.	+	Notes Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	-	Exp.	=	Net Inc.	Cash Flow		
24,750	+	NA	+	NA	+	NA	=	NA	+	NA	+	NA	+	24,750	24,750	-	NA	=	24,750	24,750    OA		

**EVENT 7B** JPS recognized \$11,500 of cost of goods sold.

When goods are sold, the product cost—including a proportionate share of *transportation-in and adjustments for purchase returns and allowances*—is transferred from the Merchandise Inventory account to the expense account, Cost of Goods Sold. Recognizing cost of goods sold decreases both assets (merchandise inventory) and stockholders' equity (retained earnings). The expense recognition for cost of goods sold decreases net income. Cash flow is not affected. These effects are shown here.

Assets = Liab. + Stockholders' Equity																				
Cash	+	Accts. Rec.	+	Inventory	+	Land	=	Accts. Pay.	+	Notes Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	-	Exp.	=	Net Inc.	Cash Flow
NA	+	NA	+	(11,500)	+	NA	=	NA	+	NA	+	NA	+	(11,500)	NA	-	11,500	=	(11,500)	NA

### EVENT 8 JPS paid \$450 cash for freight costs on inventory delivered to customers.

Assume the merchandise sold in Event 7A was shipped FOB destination. Also assume JPS paid the freight cost in cash. FOB destination means the seller is responsible for the freight cost, which is called transportation-out. Transportation-out is reported on the income statement as an operating expense in the section below gross margin. The cost of freight on goods shipped to customers is incurred *after* the goods are sold. It is not part of the costs to obtain goods or ready them for sale. Recognizing the expense of transportation-out reduces assets (cash) and stockholders' equity (retained earnings). Operating expenses increase and net income decreases. The cash outflow is reported in the operating activities section of the statement of cash flows. These effects are shown below.

Assets														=	Liab.				+	Stockholders' Equity									
Cash	+	Accts. Rec.	+	Inventory	+	Land	=	Accts. Pay.	+	Notes Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	-	Exp.	=	Net Inc.	Cash Flow									
(450)	+	NA	+	NA	+	NA	=	NA	+	NA	+	NA	+	(450)	NA	-	450	=	(450)	(450) OA									

If the terms had been FOB shipping point, the customer would have been responsible for the transportation cost and JPS would not have recorded an expense.

### EVENT 9 JPS paid \$5,000 cash for selling and administrative expenses.

The effect on the balance sheet is to decrease both assets (cash) and stockholders' equity (retained earnings). Recognizing the selling and administrative expenses decreases net income. The \$5,000 cash outflow is reported in the operating activities section of the statement of cash flows. These effects are shown below.

Assets = Liab. + Stockholders' Equity																				
Cash	+	Accts. Rec.	+	Inventory	+	Land	=	Accts. Pay.	+	Notes Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	-	Exp.	=	Net Inc.	Cash Flow
(5,000)	+	NA	+	NA	+	NA	=	NA	+	NA	+	NA	+	(5,000)	NA	-	5,000	=	(5,000)	(5,000) OA

### EVENT 10 JPS paid \$360 cash for interest expense on the note described in Event 1.

The effect on the balance sheet is to decrease both assets (cash) and stockholders' equity (retained earnings). Recognizing the interest expense decreases net income. The \$360 cash outflow is reported in the operating activities section of the statement of cash flows. These effects are shown below.

Assets = Liab. + Stockholders' Equity																				
Cash	+	Accts. Rec.	+	Inventory	+	Land	=	Accts. Pay.	+	Notes Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
(360)	+	NA	+	NA	+	NA	=	NA	+	NA	+	NA	+	(360)	NA	−	360	=	(360)	(360) OA

## RECOGNIZING GAINS AND LOSSES

### EVENT 11 JPS sold the land that had cost \$5,500 for \$6,200 cash.

#### LO 4

Explain how gains and losses differ from revenues and expenses.

When JPS sells merchandise inventory for more than it cost, the difference between the sales revenue and the cost of the goods sold is called the *gross margin*. In contrast, when JPS sells land for more than it cost, the difference between the sales price and the cost of the land is called a **gain**. Why is one called *gross margin* and the other a *gain*? The terms are used to alert financial statement users to the fact that the nature of the underlying transactions is different.

JPS' primary business is selling inventory, not land. The term *gain* indicates profit resulting from transactions that are not likely to regularly recur. Similarly, had the land sold for less than cost the difference would have been labeled **loss** rather than expense. This term also indicates the underlying transaction is not from normal, recurring operating activities. Gains and losses are shown separately on the income statement to communicate the expectation that they are nonrecurring.

The presentation of gains and losses in the income statement is discussed in more detail in a later section of the chapter. At this point note that the sale increases cash, decreases land, and increases retained earnings on the balance sheet. The income statement shows a gain on the sale of land and net income increases. The \$6,200 cash inflow is shown as an investing activity on the statement of cash flows. These effects are shown below:

Assets = Liab. + Stockholders' Equity																					
Cash	+	Accts. Rec.	+	Inventory	+	Land	=	Accts. Pay.	+	Notes Pay.	+	Com. Stk.	+	Ret. Earn.	Gain	−	Exp.	=	Net Inc.	Cash Flow	
6,200	+	NA	+	NA	+	(5,500)	=	NA	+	NA	+	NA	+	700	700	−	NA	=	700	6,200	IA

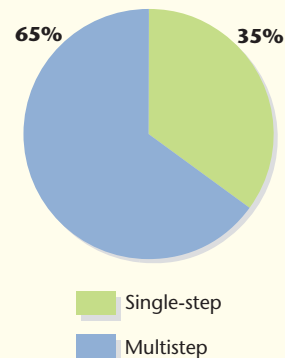
goods sold is called *gross margin*. Next, the operating expenses are subtracted from the gross margin to determine the *operating income*. **Operating income** is the amount of income that is generated from the normal recurring operations of a business. Items that are not expected to recur on a regular basis are subtracted from the operating income to determine the amount of *net income*.<sup>1</sup>

### EXHIBIT 3.3

JUNE'S PLANT SHOP	
Income Statement	
For the Period Ended December 31, 2011	
Sales revenue	\$ 24,750
Cost of goods sold	(11,500)
Gross margin	13,250
Less: Operating expenses	
Selling and administrative expense	(5,000)
Transportation-out	(450)
Operating income	7,800
Nonoperating items	
Interest expense	(360)
Gain on the sale of land	700
Net income	<u>\$ 8,140</u>

### EXHIBIT 3.4

#### Income Statement Format Used by U.S. Companies



Data Source: AICPA, *Accounting Trends and Techniques*.

### EXHIBIT 3.5

JUNE'S PLANT SHOP	
Balance Sheet	
As of December 31, 2011	
Assets	
Cash	\$25,540
Merchandise inventory	<u>4,600</u>
Total assets	<u>\$30,140</u>
Liabilities	
Notes payable	\$ 4,000
Stockholders' equity	
Common stock	\$15,000
Retained earnings	<u>11,140</u>
Total stockholders' equity	<u>26,140</u>
Total liabilities and stockholders' equity	<u>\$30,140</u>

Income statements that show these additional relationships are called **multistep income statements**. Income statements that display a single comparison of all revenues minus all expenses are called **single-step income statements**. To this point in the text we have shown only single-step income statements to promote simplicity. However, the multistep form is used more frequently in practice. Exhibit 3.4 shows the percentage of companies that use the multistep versus the single-step format. Go to Exhibit 3.1 and identify the company that presents its income statement in the multistep format. You should have identified Blue Nile as the company using the multistep format. Zale's statement is shown in the single-step format.

<sup>1</sup>Revenue and expense items with special characteristics may be classified as discontinued or extraordinary items. These items are shown separately just above net income regardless of whether a company uses a single-step or multistep format. Further discussion of these items is beyond the scope of this text.



**EXHIBIT 3.6**

**JUNE'S PLANT SHOP**  
Statement of Cash Flows  
For the Period Ended December 31, 2011

<b>Operating activities</b>		
Inflow from customers	\$ 24,750	
Outflow for inventory*	(10,100)	
Outflow for transportation-out	(450)	
Outflow for selling and administrative expense	(5,000)	
Outflow for interest expense	(360)	
Net cash outflow for operating activities		\$ 8,840
<b>Investing activities</b>		
Inflow from sale of land		6,200
<b>Financing activities</b>		
Inflow from issue of note payable		4,000
Net change in cash		19,040
Plus beginning cash balance		6,500
Ending cash balance		<u>\$25,540</u>

\*Net cost on inventory \$9,800 + transportation-in \$300 = \$10,100

Note that interest is reported as a *nonoperating* item on the income statement in Exhibit 3.3. In contrast, it is shown in the *operating* activities section of the statement of cash flows in Exhibit 3.6. When the FASB issued Statement of Financial Accounting Standard (SFAS) 95, it required interest to be reported in the operating activities section of the statement of cash flows. There was no corresponding requirement for the treatment of interest on the income statement. Prior to SFAS 95, interest was considered to be a nonoperating item. Most companies continued to report interest as a nonoperating item on their income statements even though they were required to change how it was reported on the statement of cash flows. As a result, there is frequent inconsistency in the way interest is reported on the two financial statements.

Also note that while the gain on the sale of land is shown on the income statement, it is not included in the operating activities section of the statement of cash flows. Since the gain is a nonoperating item, it is included in the cash inflow from the sale of land shown in the investing activities section. In this case the full cash inflow from the sale of land (\$6,200) is shown in the investing activities section of the statement of cash flows in Exhibit 3.6.

## LOST, DAMAGED, OR STOLEN INVENTORY

### LO 6

Show the effect of lost, damaged, or stolen inventory on financial statements.

Most merchandising companies experience some level of inventory **shrinkage**, a term that reflects decreases in inventory for reasons other than sales to customers. Inventory may be stolen by shoplifters, damaged by customers or employees, or even simply lost or misplaced. Since the *perpetual* inventory system is designed to record purchases and sales of inventory as they occur, the balance in the merchandise inventory account represents the amount of inventory that *should* be on hand at any given time. By taking a physical count of the merchandise inventory at the end of the accounting period and comparing that amount with the book balance in the Merchandise Inventory account, managers can determine the amount of any inventory shrinkage. If goods have been lost, damaged, or stolen, the book balance will be higher than the actual amount of inventory on hand and an adjusting entry is required to reduce assets and equity. The Merchandise Inventory account is reduced, and an expense for the amount of the lost, damaged, or stolen inventory is recognized.

## Reality BYTES

“Closed for Inventory Count” is a sign you frequently see on retail stores sometime during the month of January. Even if companies use a perpetual inventory system, the amount of inventory on hand may be unknown because of lost, damaged, or stolen goods. The only way to determine the amount of inventory on hand is to count it. Why count it in January? Christmas shoppers and many after-Christmas sales shoppers are satiated by mid-January, leaving the stores low on both merchandise and customers. Accordingly, stores have less merchandise to count and “lost sales” are minimized during January. Companies that do not depend on seasonal sales (e.g., a plumbing supplies wholesale business) may choose to count inventory at some other time during the year. Counting inventory is not a revenue-generating activity; it is a necessary evil that should be conducted when it least disrupts operations.



### Adjustment for Lost, Damaged, or Stolen Inventory

To illustrate, assume that Midwest Merchandising Company maintains perpetual inventory records. Midwest determined, through a physical count, that it had \$23,500 of merchandise inventory on hand at the end of the accounting period. The balance in the Inventory account was \$24,000. Midwest must make an adjusting entry to write down the Inventory account so the amount reported on the financial statements agrees with the amount actually on hand at the end of the period. The write-down decreases both assets (inventory) and stockholders' equity (retained earnings). The write-down increases expenses and decreases net income. Cash flow is not affected. The effects on the statements are as follows.

Assets	=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
(500)	=	NA	+	(500)	NA	–	500	=	(500)	NA

Theoretically, inventory losses are operating expenses. However, because such losses are normally immaterial in amount, they are usually added to cost of goods sold for external reporting purposes.

### EVENTS AFFECTING SALES

To this point we assumed JPS did not offer cash discounts to its customers. However, sales, as well as purchases of inventory, can be affected by returns, allowances, and discounts. **Sales discounts** are price reductions offered by sellers to encourage buyers to pay promptly. To illustrate, assume JPS engaged in the following selected events during January 2012.

**EVENT 1A** JPS sold on account merchandise with a list price of \$8,500. Payment terms were 1/10, n/30. The merchandise had cost JPS \$4,000.

The sale increases both assets (accounts receivable) and shareholders' equity (retained earnings). Recognizing revenue increases net income. The statement of cash flows is not affected. The effects on the financial statements follow.

Assets = Liab. + Stockholders' Equity										Rev.	–	Exp.	=	Net Inc.	Cash Flow	
Cash	+	Accts. Rec.	+	Inventory	=	Note Pay.	+	Com. Stk.	+	Retained Earnings						
NA	+	8,500	+	NA	=	NA	+	NA	+	8,500	8,500	–	NA	=	8,500	NA

**EVENT 1B JPS recognized \$4,000 of cost of goods sold.**

Recognizing the expense decreases assets (merchandise inventory) and stockholders' equity (retained earnings). Cost of goods sold increases and net income decreases. Cash flow is not affected. The effects on the financial statements follow.

Assets = Liab. + Stockholders' Equity										Rev.	−	Exp.	=	Net Inc.	Cash Flow	
Cash	+	Accts. Rec.	+	Inventory	=	Note Pay.	+	Com. Stk.	+	Retained Earnings						
NA	+	NA	+	(4,000)	=	NA	+	NA	+	(4,000)	NA	−	4,000	=	(4,000)	NA

**Accounting for Sales Returns and Allowances****EVENT 2A A customer from Event 1A returned inventory with a \$1,000 list price. The merchandise had cost JPS \$450.**

The sales return decreases both assets (accounts receivable) and stockholders' equity (retained earnings) on the balance sheet. Sales and net income decrease. Cash flow is not affected. The effects on the financial statements follow.

Assets = Liab. + Stockholders' Equity										Rev.	−	Exp.	=	Net Inc.	Cash Flow	
Cash	+	Accts. Rec.	+	Inventory	=	Note Pay.	+	Com. Stk.	+	Retained Earnings						
NA	+	(1,000)	+	NA	=	NA	+	NA	+	(1,000)	(1,000)	−	NA	=	(1,000)	NA

**EVENT 2B The cost of the goods (\$450) is returned to the inventory account.**

Since JPS got the inventory back, the sales return increases both assets (merchandise inventory) and stockholders' equity (retained earnings). The expense (cost of goods sold) decreases and net income increases. Cash flow is not affected. The effects on the financial statements follow.

Assets = Liab. + Stockholders' Equity										Rev.	–	Exp.	=	Net Inc.	Cash Flow	
Cash	+	Accts. Rec.	+	Inventory	=	Note Pay.	+	Com. Stk.	+	Retained Earnings						
NA	+	NA	+	450	=	NA	+	NA	+	450	NA	–	(450)	=	450	NA

**Accounting for Sales Discounts****EVENT 3 JPS collected the balance of the accounts receivable generated in Event 1A. Recall the goods were sold under terms 1/10, net/30.****ALTERNATIVE 1 The collection occurs before the discount period has expired (within 10 days from the date of the sale).**

JPS would give the buyer a 1 percent discount. Given the original sales amount of \$8,500 and a sales return of \$1,000, the amount of the discount is \$75  $[(\$8,500 - \$1,000) \times .01]$ . The sales discount reduces the amount of accounts receivable and retained earnings on the balance sheet. It also reduces the amount of revenue and the

net income shown on the balance sheet. It does not affect the statement of cash flows. The effects on the financial statements follow.

Assets					=	Liab.	+	Stockholders' Equity			Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Accts. Rec.	+	Inventory	=	Note Pay.	+	Com. Stk.	+	Retained Earnings						
NA	+	(75)	+	NA	=	NA	+	NA	+	(75)	(75)	–	NA	=	(75)	NA

The balance due on the account receivable is \$7,425 (\$8,500 original sales – \$1,000 sales return – \$75 discount). The collection increases the Cash account and decreases the Accounts Receivable account. The income statement is not affected. The cash inflow is shown in the operating activities section of the statement of cash flows. The effects on the financial statements follow.

Assets = Liab. + Stockholders' Equity										Rev.	–	Exp.	=	Net Inc.	Cash Flow	
Cash	+	Accts. Rec.	+	Inventory	=	Accts. Pay.	+	Com. Stk.	+	Retained Earnings						
7,425	+	(7,425)	+	NA	=	NA	+	NA	+	NA	NA	–	NA	=	NA	7,425 OA

### Net Sales

The gross amount of sales minus **sales returns and allowance** and sales discounts is commonly called **net sales**. Companies are not required by GAAP to show sales returns and allowance and sales discount on their income statement. Indeed, most companies show only the amount of *net sales* on the income statement. In this case the net sales amount to \$7,425 (\$8,500 original sales – \$1,000 sales return – \$75 discount).

**ALTERNATIVE 2** The collection occurs after the discount period has expired (after 10 days from the date of the sale).

Under these circumstances there is no sales discount. The amount collected is \$7,500 (\$8,500 original sale – \$1,000 sales return). Net sales shown on the income statement would also be \$7,500.



Merchandising is a highly competitive business. In order to succeed, merchandisers develop different strategies to distinguish themselves in the marketplace. For example, some companies like **Wal-Mart**, **Kmart**, and **Costco** focus on price competition while others such as **Neiman Marcus** and **Saks Fifth Avenue** sell high price goods that offer high quality, style, and strong guaranties. Financial analysts have developed specific tools that are useful in scrutinizing the success or failure of a company's sales strategy. The first step in the analytical process is to develop common size statements so that comparisons can be made between companies.

### LO 7

Use common size financial statements and ratio analysis to evaluate managerial performance.

## Common Size Financial Statements

How good is a \$1,000,000 increase in net income? The answer is not clear because there is no indication as to the size of the company. A million dollar increase may be excellent for a small company but would be virtually meaningless for a company the size of **Exxon**. To enable meaningful comparisons analysts prepare **common size financial statements**. Common size statements display information in percentages as well as absolute dollar amounts.

To illustrate, we expand the income statements for JPS to include percentages. The results are shown in Exhibit 3.7. The percentage data are computed by defining net sales as the base figure, or 100 percent. The other amounts on the statements are then shown as a percentage of net sales. For example, the *cost of goods sold percentage* is the dollar amount of *cost of goods sold* divided by the dollar amount of *net sales*, which produces a percentage of 66.7 percent ( $\$8,000 \div \$12,000$ ) for 2010 and 46.5 percent ( $\$11,500 \div \$24,750$ ) for 2011. Other income statement items are computed using the same approach.

### EXHIBIT 3.7

### Common Size Financial Statements

JUNE'S PLANT SHOP Income Statement For the Period Ended				
	2010		2011	
Net sales*	\$12,000	100.0%	\$24,750	100.0%
Cost of goods sold	(8,000)	66.7	(11,500)	46.5
Gross margin	4,000	33.3	13,250	53.5
Less: Operating expenses				
Selling and administrative expense	(1,000)	8.3	(5,000)	20.2
Transportation-out			(450)	1.8
Operating income	3,000	25.0	7,800	31.5
Nonoperating items				
Interest expense			(360)	(1.5)
Gain on the sale of land			700	2.8
Net income	\$ 3,000	25.0	\$ 8,140	32.9

\*Since JPS did not offer sales discounts or have sales returns and allowances during 2010 or 2011, the amount of sales revenue is equal to the amount of net sales. We use the term *net sales* here because it is more commonly used in business practice. Percentages do not add exactly because they have been rounded.

## Ratio Analysis

Two of the percentages shown in Exhibit 3.7 are used frequently in business to make comparisons within a specific company or between two or more different companies. These two commonly used percentages are the **gross margin percentage** and the **net income percentage**. These percentages are calculated as follows:

$$\text{Gross margin percentage} = \frac{\text{Gross margin}}{\text{Net sales}}$$

The gross margin percentage provides insight about a company's pricing strategy. All other things being equal, a high gross margin percentage means that a company is charging high prices in relation to its cost of goods sold.

$$\text{Net income percentage} = \frac{\text{Net income}}{\text{Net sales}}$$

In practice, the *net income percentage* is frequently called the **return on sales** ratio. The return on sales ratio provides insight as to how much of each sales dollar is left as

net income after all expenses are paid. All other things being equal, companies with high ratios are doing a better job of controlling expenses.

## Comparisons within a Particular Company

To illustrate comparisons within a particular company, assume that JPS relocated its store in an upscale mall in early 2011. Management realized that the company would have to pay more for operating expenses but believed those expenses could be offset by charging significantly higher prices. We use the gross margin percentage and the net income percentage to assess the success of JPS's strategy. Exhibit 3.7 shows an increase in the *gross margin percentage* from 33.3 to 53.5. This confirms that JPS was able to increase prices relative to its cost of goods sold. The increase in the *return on sales* ratio (25 percent to 32.9 percent) confirms that the increase in gross margin was larger than the increase in total expenses. We therefore conclude that JPS's strategy to relocate was successful. As a side note this may also explain why JPS sold its land in late 2011. Considering the success the company experienced at the new location, there was no motive to build a store on the land.

Since net income is affected by nonoperating items, some financial analysts would prefer to use *operating income* instead of *net income* when computing the *return on sales* ratio. In this case the nonoperating items were immaterial. Indeed, to simplify the discussion in this chapter we always assume immateriality when computing this ratio. However, when nonoperating items are significant, it is more insightful to use *operating income* as the numerator of the *return on sales* ratio.

## Comparisons between Companies

Does **Wal-Mart** sell merchandise at a higher or lower price than **Target**? The *gross margin percentage* is useful in answering questions such as this. Since Wal-Mart's annual report shows a gross margin percentage of 22.9 while Target's report shows a gross margin percentage of 33.6, we conclude that there is validity to Wal-Mart's claim of "always the low price." The next section of the chapter provides insight as to how the *gross margin percentage* and the *return on sales* ratio can be used to gain insight about the operations of several real world companies.

### CHECK Yourself 3.3

The following sales data are from the records of two retail sales companies. All amounts are in thousands.

	Company A	Company B
Sales	\$21,234	\$43,465
Cost of goods sold	(14,864)	(34,772)
Gross margin	\$ 6,370	\$ 8,693

One company is an upscale department store, and the other is a discount store. Which company is the upscale department store?

**Answer** The gross margin percentage for Company A is approximately 30 percent ( $\$6,370 \div \$21,234$ ). The gross margin percentage for Company B is 20 percent ( $\$8,693 \div \$43,465$ ). These percentages suggest that Company A is selling goods with a higher markup than Company B, which implies that Company A is the upscale department store.



## Answers to The *Curious* Accountant

The income statement data show that compared to Zales, Blue Nile does save money by not operating bricks-and-mortar stores. The *gross margin percentage* gives some indication of how much a company is charging in relation to what it pays to purchase the goods it is selling (its cost of goods sold). The *return on sales ratio* reveals how much profit, as a percentage of sales, a company is making after *all* its expenses have been taken into account. For the most recent year shown, Zales' gross margin was 51.4% while Blue Nile's was 22.3%, indicating that Blue Nile really does charge less for its jewelry. However, the return on sales for Blue Nile was 6.5% while Zales was only 4.5%. This shows that while Blue Nile charges less for its products, it makes up for the lower gross margin with lower operating expenses. In fact, as a percentage of sales, Zales' operating expenses were over three times higher than those of Blue Nile. Excluding costs of goods sold, the operating expenses at Blue Nile were 13.4% of sales; Zales' were 44.0%.

The income statement data show that compared to Zales, Blue Nile does save money by not operating bricks-and-mortar stores. The *gross margin*

### Real-World Data

Exhibit 3.8 shows the gross margin percentages and return on sales ratios for 10 companies. Three of the companies are manufacturers that produce pharmaceutical products, and the remaining seven companies sell various products at the retail level.

A review of the data confirms our earlier finding that ratios for companies in the same industry are often more similar than are ratios for companies from different industries. For example, note that the manufacturers have much higher margins, both for gross profit and for net earnings, than do the retailers. Manufacturers are often able to charge higher prices than are retailers because they obtain patents which give them a legal monopoly on the products they create. When a company such as **Merck** develops a new drug, no one else can produce that drug until the patent expires, giving it lots of control over its price at the wholesale level. Conversely, when **Walgreens** sells Merck's drug at the retail level, it faces price competition from **CVS**, a company that is trying

#### EXHIBIT 3.8

Industry/Company	Gross Margin %	Return on Sales
Pharmaceutical manufacturers		
<b>GlaxoSmithKline</b>	78.0%	21.6%
<b>Johnson &amp; Johnson</b>	72.4	20.6
<b>Merck &amp; Co.</b>	76.6	21.0
Retail pharmacies		
<b>CVS</b>	26.8	3.3
<b>Rite Aid</b>	25.0	1.8
<b>Walgreens</b>	27.9	3.7
Department stores		
<b>Federated</b>	41.6	6.3
<b>Wal-Mart</b>	23.0	3.6
Office supplies		
<b>Office Depot</b>	30.8	1.9
<b>Staples</b>	28.5	5.2

to sell the same drug to the same consumers. One way CVS can try to get customers to shop at its store is to charge lower prices than its competitors, but this reduces its profit margins, since it must pay the same price to get Merck's drug as did Walgreens. As the data in Exhibit 3.8 show, CVS had a lower gross margin percentage than did Walgreens, indicating it is charging slightly lower prices for similar goods.

In the examples presented in Exhibit 3.8, the companies with higher gross margin percentages usually had higher return on sales ratios than their competitors, but this was not always the case. In the office supplies business, **Office Depot's** gross margin percentage was significantly higher than that of its rival, **Staples**, but its return on sales ratio was considerably lower. **Federated Department Stores**, the company that owns Macy's, among others, had a gross margin percentage that was 81 percent greater than **Wal-Mart's** ( $[41.6 - 23.0] \div 23.0$ ) and its return on sales ratio was 75 percent higher. This is not surprising when you consider how much more luxurious, and costly, the interior of a Macy's store is compared to a Wal-Mart.

## A Look Back



*Merchandising companies* earn profits by selling inventory at prices that are higher than the cost paid for the goods. Merchandising companies include *retail companies* (companies that sell goods to the final consumer) and *wholesale companies* (companies that sell to other merchandising companies). The products sold by merchandising companies are called *inventory*. The costs to purchase inventory, to receive it, and to ready it for sale are *product costs*, which are first accumulated in an inventory account (balance sheet asset account) and then recognized as cost of goods sold (income statement expense account) in the period in which goods are sold. Purchases and sales of inventory can be recorded continually as goods are bought and sold (perpetual system) or at the end of the accounting period (periodic system, discussed in the chapter appendix).

Accounting for inventory includes the treatment of cash discounts, transportation costs, and returns and allowances. The cost of inventory is the list price less any purchase returns and allowances and purchase discounts, plus transportation-in costs. The cost of freight paid to acquire inventory (*transportation-in*) is considered a product cost. The cost of freight paid to deliver inventory to customers (*transportation-out*) is a selling expense. *Sales returns and allowances* and *sales discounts* are subtracted from sales revenue to determine the amount of *net sales* reported on the income statement. Purchase returns and allowances reduce product cost. Theoretically, the cost of lost, damaged, or stolen inventory is an operating expense. However, because these costs are usually immaterial in amount they are typically included as part of cost of goods sold on the income statement.

Some companies use a *multistep income statement* which reports product costs separately from selling and administrative costs. Cost of goods sold is subtracted from sales revenue to determine *gross margin*. Selling and administrative expenses are subtracted from gross margin to determine income from operations. Other companies report income using a *single-step format* in which the cost of goods sold is listed along with selling and administrative items in a single expense category that is subtracted in total from revenue to determine income from operations.

Managers of merchandising businesses operate in a highly competitive environment. They must manage company operations carefully to remain profitable. *Common size financial statements* (statements presented on a percentage basis) and ratio analysis are useful monitoring tools. Common size financial statements permit ready comparisons among different-size companies. Although a \$1 million increase in sales may be good for a small company and bad for a large company, a 10 percent increase can apply to any size company. The two most common ratios used by merchandising companies are the *gross margin percentage* ( $\text{gross margin} \div \text{net sales}$ ) and the *net income percentage* ( $\text{net income} \div \text{net sales}$ ). Interpreting these ratios requires an understanding of industry characteristics. For example, a discount store such as **Wal-Mart** would be expected to have a much lower gross margin percentage than an upscale store such as **Neiman Marcus**.

Managers should be aware of the financing cost of carrying inventory. By investing funds in inventory, a firm loses the opportunity to invest them in interest-bearing assets. The cost of financing inventory is an *opportunity cost*. To minimize financing costs, a company should minimize the amount of inventory it carries, the length of time it holds the inventory, and the time it requires to collect accounts receivable after the inventory is sold.



## A Look Forward

To this point, the text has explained the basic accounting cycle for service and merchandising businesses. Future chapters more closely address specific accounting issues. For example, in Chapter 6 you will learn how to deal with inventory items that are purchased at differing prices. Other chapters will discuss a variety of specific practices that are widely used by real-world companies.

## APPENDIX

### LO 8

Identify the primary features of the periodic inventory system.

### Periodic Inventory System

Under certain conditions, it is impractical to record inventory sales transactions as they occur. Consider the operations of a fast-food restaurant. To maintain perpetual inventory records, the restaurant would have to transfer from the Inventory account to the Cost of Goods Sold account the *cost* of each hamburger, order of fries, soft drink, or other food items as they were sold. Obviously, recording the cost of each item at the point of sale would be impractical without using highly sophisticated computer equipment (recording the selling price the customer pays is captured by cash registers; the difficulty lies in capturing inventory cost).

The **periodic inventory system** offers a practical solution for recording inventory transactions in a low-technology, high-volume environment. Inventory costs are recorded in a Purchases account at the time of purchase. Purchase returns and allowances and transportation-in are recorded in separate accounts. No entries for the cost of merchandise purchases or sales are recorded in the Inventory account during the period. The cost of goods sold is determined at the end of the period as shown in Exhibit 3.9.

The perpetual and periodic inventory systems represent alternative procedures for recording the same information. The amounts of cost of goods sold and ending inventory reported in the financial statements will be the same regardless of the method used.

The **schedule of cost of goods sold** presented in Exhibit 3.9 is used for internal reporting purposes. It is normally not shown in published financial statements. The amount of cost of goods sold is reported as a single line item on the income statement. The income statement in Exhibit 3.3 will be the same whether JPS maintains perpetual or periodic inventory records.

#### EXHIBIT 3.9

##### Schedule of Cost of Goods Sold for 2011

Beginning inventory	\$ 6,000
Purchases	11,000
Purchase returns and allowances	(−1,000)
Purchase discounts	(200)
Transportation-in	300
Cost of goods available for sale	16,100
Ending inventory	4,600
Cost of goods sold	<u>\$11,500</u>

### Advantages and Disadvantages of the Periodic System versus the Perpetual System

The chief advantage of the periodic method is recording efficiency. Recording inventory transactions occasionally (periodically) requires less effort than recording them continually (perpetually). Historically, practical limitations offered businesses like fast-food restaurants or grocery stores no alternative to using the periodic system. The sheer volume of transactions made recording individual decreases to the Inventory account balance as each item was sold impossible. Imagine the number of transactions a grocery store would have to record every business day to maintain perpetual records.

Although the periodic system provides a recordkeeping advantage over the perpetual system, perpetual inventory records provide significant control advantages over periodic records. With perpetual records, the book balance in the Inventory account should agree with the amount of inventory in stock at any given time. By comparing that book balance with the results of a physical inventory count, management can determine the amount of lost, damaged, destroyed, or stolen inventory. Perpetual records also permit more timely and accurate reorder decisions and profitability assessments.

When a company uses the *periodic* inventory system, lost, damaged, or stolen merchandise is automatically included in cost of goods sold. Because such goods are not included in the year-end physical count, they are treated as sold regardless of the reason for their absence. Since the periodic system does not separate the cost of lost, damaged, or stolen merchandise from the cost of goods sold, the amount of any inventory shrinkage is unknown. This feature is a major disadvantage of the periodic system. Without knowing the amount of inventory losses, management cannot weigh the costs of various security systems against the potential benefits.

Advances in such technology as electronic bar code scanning and increased computing power have eliminated most of the practical constraints that once prevented merchandisers with high-volume, low dollar-value inventories from recording inventory transactions on a continual basis. As a result, use of the perpetual inventory system has expanded rapidly in recent years and continued growth can be expected. This text, therefore, concentrates on the perpetual inventory system.



## SELF-STUDY REVIEW PROBLEM

Academy Sales Company (ASC) started the 2010 accounting period with the balances given in the financial statements model shown below. During 2010 ASC experienced the following business events.

1. Purchased \$16,000 of merchandise inventory on account, terms 2/10, n/30.
2. The goods that were purchased in Event 1 were delivered FOB shipping point. Freight costs of \$600 were paid in cash by the responsible party.
3. Returned \$500 of goods purchased in Event 1.
- 4a. Recorded the cash discount on the goods purchased in Event 1.
- 4b. Paid the balance due on the account payable within the discount period.
- 5a. Recognized \$21,000 of cash revenue from the sale of merchandise.
- 5b. Recognized \$15,000 of cost of goods sold.
6. The merchandise in Event 5a was sold to customers FOB destination. Freight costs of \$950 were paid in cash by the responsible party.
7. Paid cash of \$4,000 for selling and administrative expenses.
8. Sold the land for \$5,600 cash.

### Required

- a. Record the above transactions in a financial statements model like the one shown below.

Event No.	Cash	+	Inventory	+	Land	=	Accts. Pay.	+	Com. Stk.	+	Ret. Earn.	Rev./ Gain	–	Exp.	=	Net Inc.	Cash Flow
Bal.	25,000	+	3,000	+	5,000	=	–0–	+	18,000	+	15,000	NA	–	NA	=	NA	NA

- b. Prepare a schedule of cost of goods sold. (Appendix)
- c. Prepare a multistep income statement. Include common size percentages on the income statement.

- d. ASC's gross margin percentage in 2009 was 22%. Based on the common size data in the income statement, did ASC raise or lower its prices in 2010? (Appendix)
- e. Assuming a 10 percent rate of growth, what is the amount of net income expected for 2011?

**Answer**

a.

Event No.	Cash	+	Inventory	+	Land	=	Accts. Pay.	+	Com. Stk.	+	Ret. Earn.	Rev./ Gain	−	Exp.	=	Net Inc.	Cash Flow
Bal.	25,000	+	3,000	+	5,000	=	−0−	+	18,000	+	15,000	NA	−	NA	=	NA	NA
1		+	16,000			=	16,000	+		+			−		=		
2	(600)	+	600			=		+		+			−		=		(600) OA
3		+	(500)			=	(500)	+		+			−		=		
4a		+	(310)			=	(310)	+		+			−		=		
4b	(15,190)	+				=	(15,190)	+		+			−		=		(15,190) OA
5a	21,000	+				=		+		+	21,000	21,000	−		=	21,000	21,000 OA
5b		+	(15,000)			=		+		+	(15,000)		−	15,000	=	(15,000)	
6	(950)	+				=		+		+	(950)		−	950	=	(950)	(950) OA
7	(4,000)	+				=		+		+	(4,000)		−	4,000	=	(4,000)	(4,000) OA
8	5,600	+			(5,000)	=		+		+	600	600	−		=	600	5,600 IA
Bal.	30,860	+	3,790		−0−	=	−0−	+	18,000	+	16,650	21,600	−	19,950	=	1,650	5,860 NC

b.

ACADEMY SALES COMPANY	
Schedule of Cost of Goods Sold	
For the Period Ended December 31, 2010	
Beginning inventory	\$ 3,000
Plus purchases	16,000
Less: Purchase returns and allowances	(500)
Less: Purchases discounts	(310)
Plus: Transportation-in	600
Goods available for sale	18,790
Less: Ending inventory	3,790
Cost of goods sold	<u>\$ (15,000)</u>

c.

ACADEMY SALES COMPANY		
Income Statement*		
For the Period Ended December 31, 2010		
Net sales	\$21,000	100.0%
Cost of goods sold	<u>(15,000)</u>	<u>71.4</u>
Gross margin	6,000	28.6
Less: Operating expenses		
Selling and administrative expense	(4,000)	19.0
Transportation-out	<u>(950)</u>	<u>4.5</u>
Operating income	1,050	5.0
Nonoperating items		
Gain on the sale of land	600	2.9
Net income	<u>\$ 1,650</u>	<u>7.9</u>

\*Percentages do not add exactly because they have been rounded.



- d. All other things being equal, the higher the gross margin percentage, the higher the sales prices. Since the gross margin percentage increased from 22% to 28.6%, the data suggest that Academy raised its sales prices.
- e. \$1,155 [ $\$1,050 + (.10 \times \$1,050)$ ]. Note that the gain is not expected to recur.

## KEY TERMS

Cash discount 98	Gross margin percentage 108	Perpetual inventory system 93	Selling and administrative costs 93
Common size financial statements 108	Gross profit 93	Product costs 93	Shrinkage 104
Cost of goods available for sale 93	Loss 102	Purchase discount 98	Single-step income statement 103
Cost of Goods Sold 93	Merchandise inventory 90	Purchase returns and allowances 97	Transportation-in (freight-in) 99
FOB (free on board) destination 99	Merchandising businesses 90	Retail companies 90	Transportation-out (freight-out) 99
FOB (free on board) shipping point 99	Multistep income statement 103	Return on sales 108	2/10, n/30 98
Gain 102	Net income percentage 108	Sales discounts 105	Wholesale companies 90
Gross margin 93	Net sales 107	Sales returns and allowances 107	
	Operating income (or loss) 103	Schedule of cost of goods sold 112	
	Period costs 93		
	Periodic inventory system 112		

## QUESTIONS

- Define *merchandise inventory*. What types of costs are included in the Merchandise Inventory account?
- What is the difference between a product cost and a selling and administrative cost?
- How is the cost of goods available for sale determined?
- What portion of cost of goods available for sale is shown on the balance sheet? What portion is shown on the income statement?
- When are period costs expensed? When are product costs expensed?
- If **PetCo** had net sales of \$600,000, goods available for sale of \$450,000, and cost of goods sold of \$375,000, what is its gross margin? What amount of inventory will be shown on its balance sheet?
- Describe how the perpetual inventory system works. What are some advantages of using the perpetual inventory system? Is it necessary to take a physical inventory when using the perpetual inventory system?
- What are the effects of the following types of transactions on the accounting equation? Also identify the financial statements that are affected. (Assume that the perpetual inventory system is used.)
  - Acquisition of cash from the issue of common stock.
  - Contribution of inventory by an owner of a company.
  - Purchase of inventory with cash by a company.
  - Sale of inventory for cash.
- Northern Merchandising Company sold inventory that cost \$12,000 for \$20,000 cash. How does this event affect the accounting equation? What financial statements and accounts are affected? (Assume that the perpetual inventory system is used.)
- If goods are shipped FOB shipping point, which party (buyer or seller) is responsible for the shipping costs?
- Define *transportation-in*. Is it a product or a period cost?
- Quality Cellular Co. paid \$80 for freight on merchandise that it had purchased for resale to customers (transportation-in) and paid \$135 for freight on merchandise delivered to customers (transportation-out). What account is debited for the \$80 payment? What account is debited for the \$135 payment?
- Why would a seller grant an allowance to a buyer of the seller's merchandise?
- Dyer Department Store purchased goods with the terms 2/10, n/30. What do these terms mean?
- Eastern Discount Stores incurred a \$5,000 cash cost. How does the accounting for this cost differ if the cash were paid for inventory versus commissions to sales personnel?
- What is the purpose of giving a cash discount to charge customers?
- Define *transportation-out*. Is it a product cost or a period cost for the seller?
- Ball Co.** purchased inventory with a list price of \$4,000 with the terms 2/10, n/30. What amount will be debited to the Merchandise Inventory account?
- Explain the difference between purchase returns and sales returns. How do purchase returns affect the financial statements of both buyer and seller? How do sales returns affect the financial statements of both buyer and seller?
- Explain the difference between gross margin and a gain.
- What is the difference between a multistep income statement and a single-step income statement?
- What is the advantage of using common size income statements to present financial information for several accounting periods?
- What information is provided by the net income percentage (return on sales ratio)?



24. What is the purpose of preparing a schedule of cost of goods sold?
25. Explain how the periodic inventory system works. What are some advantages of using the periodic inventory system? What are some disadvantages of using the periodic inventory system? Is it necessary to take a physical inventory when using the periodic inventory system?
26. Why does the periodic inventory system impose a major disadvantage for management in accounting for lost, stolen, or damaged goods?

## EXERCISES



### All applicable Exercises are available with McGraw-Hill *Connect Accounting*.

When the instructions for *any* exercise or problem call for the preparation of an income statement, use the *multistep format* unless otherwise indicated.

#### LO 1, 2

#### Exercise 3-1 Comparing a merchandising company with a service company

The following information is available for two different types of businesses for the 2010 accounting period. Madison Consulting is a service business that provides consulting services to small businesses. Books For Less is a merchandising business that sells books to college students.

##### Data for Madison Consulting

1. Borrowed \$40,000 from the bank to start the business.
2. Performed services for customers and collected \$30,000 cash.
3. Paid salary expense of \$19,200.

##### Data for Books For Less

1. Borrowed \$40,000 from the bank to start the business.
2. Purchased \$19,000 of inventory for cash.
3. Inventory costing \$16,800 was sold for \$30,000 cash.
4. Paid \$2,400 cash for operating expenses.

##### Required

- a. Prepare an income statement, balance sheet, and statement of cash flows for each of the companies.
- b. What is different about the income statements of the two businesses?
- c. What is different about the balance sheets of the two businesses?
- d. How are the statements of cash flow different for the two businesses?

#### LO 2

#### Exercise 3-2 Effect of inventory transactions on financial statements: perpetual system

Chris Daniels started a small merchandising business in 2010. The business experienced the following events during its first year of operation. Assume that Daniels uses the perpetual inventory system.

1. Acquired \$60,000 cash from the issue of common stock.
2. Purchased inventory for \$50,000 cash.
3. Sold inventory costing \$36,000 for \$56,000 cash.

##### Required

- a. Record the events in a statements model like the one shown below.

Assets			=	Equity			Rev.	—	Exp.	=	Net Inc.	Cash Flow
Cash	+	Inv.	=	Com. Stk.	+	Ret. Earn.						

- b. Prepare an income statement for 2010 (use the multistep format).
- c. What is the amount of total assets at the end of the period?

**Exercise 3-3** *Effect of inventory transactions on the income statement and statement of cash flows: perpetual system*

LO 2

During 2011, Lang Merchandising Company purchased \$20,000 of inventory on account. The company sold inventory on account that cost \$15,000 for \$22,500. Cash payments on accounts payable were \$12,500. There was \$20,000 cash collected from accounts receivable. Lang also paid \$4,000 cash for operating expenses. Assume that Lang started the accounting period with \$18,000 in both cash and common stock.

**Required**

- a. Identify the events described in the preceding paragraph and record them in a horizontal statements model like the following one.

Assets = Liab. + Equity										Rev.	–	Exp.	=	Net inc.	Cash Flow
Cash	+	Accts. Rec.	+	Inv.	=	Accts. Pay.	+	Com. Stk.	+	Ret. Earn.					
18,000	+	NA	+	NA	=	NA	+	18,000	+	NA	NA	–	NA	=	NA

- b. What is the balance of accounts receivable at the end of 2011?
- c. What is the balance of accounts payable at the end of 2011?
- d. What are the amounts of gross margin and net income for 2011?
- e. Determine the amount of net cash flow from operating activities.
- f. Explain any differences between net income and net cash flow from operating activities.

**Exercise 3-4** *Recording inventory transactions in a financial statements model*

LO 2

David's Paint Supply experienced the following events during 2012, its first year of operation:

1. Acquired \$30,000 cash from the issue of common stock.
2. Purchased inventory for \$24,000 cash.
3. Sold inventory costing \$13,000 for \$22,000 cash.
4. Paid \$1,600 for advertising expense.

**Required**

Record the events in a statements model like the one shown below.

Assets				=	Equity			Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Inv.	=	Com. Stk.	+	Ret. Earn.							

**Exercise 3-5** *Understanding the freight terms FOB shipping point and FOB destination*

LO 3

**Required**

For each of the following events, indicate whether the freight terms are FOB destination or FOB shipping point.

- a. Sold merchandise and paid the freight costs.
- b. Purchased merchandise and paid the freight costs.
- c. Sold merchandise and the buyer paid the freight costs.
- d. Purchased merchandise and the seller paid the freight costs.

**LO 2, 3****Exercise 3-6** *Effect of purchase returns and allowances and freight costs on the journal, ledger, and financial statements: perpetual system*

The trial balance for The Photo Hut as of January 1, 2011, was as follows:

Account Titles	Debit	Credit
Cash	\$6,000	
Inventory	3,000	
Common Stock		\$7,500
Retained Earnings		1,500
Total	<u>\$9,000</u>	<u>\$9,000</u>

The following events affected the company during the 2011 accounting period:

1. Purchased merchandise on account that cost \$4,100.
2. Purchased goods in Event 1. FOB shipping point with freight cost of \$300 cash.
3. Returned \$500 of damaged merchandise for credit on account.
4. Agreed to keep other damaged merchandise for which the company received a \$250 allowance.
5. Sold merchandise that cost \$2,750 for \$4,750 cash.
6. Delivered merchandise to customers under terms FOB destination with freight costs amounting to \$200 cash.
7. Paid \$3,000 on the merchandise purchased in Event 1.

**Required**

- a. Organize appropriate ledger accounts under an accounting equation. Record the beginning balances and the transaction data in the accounts.
- b. Prepare an income statement and statement of cash flows for 2011.
- c. Explain why a difference does or does not exist between net income and net cash flow from operating activities.

**LO 2, 3****Exercise 3-7** *Accounting for product costs: perpetual inventory system*

Which of the following would be *debited* to the Inventory account for a merchandising business using the perpetual inventory system?

**Required**

- a. Purchase of inventory.
- b. Allowance received for damaged inventory.
- c. Transportation-in.
- d. Cash discount given on goods sold.
- e. Transportation-out.
- f. Purchase of office supplies.

**LO 1, 2, 3****Exercise 3-8** *Effect of product cost and period cost: horizontal statements model*

Nigil Co. experienced the following events for the 2010 accounting period:

1. Acquired \$10,000 cash from the issue of common stock.
2. Purchased \$18,000 of inventory on account.
3. Received goods purchased in Event 2 FOB shipping point. Freight cost of \$500 paid in cash.
4. Returned \$4,000 of goods purchased in Event 2 because of poor quality.
5. Sold inventory on account that cost \$14,300 for \$44,000.
6. Freight cost on the goods sold in Event 5 was \$100. The goods were shipped FOB destination. Cash was paid for the freight cost.
7. Collected \$16,500 cash from accounts receivable.
8. Paid \$12,000 cash on accounts payable.

9. Paid \$2,200 for advertising expense.  
10. Paid \$4,400 cash for insurance expense.

### Required

- Which of these transactions result in period (selling and administrative) costs? Which result in product costs? If neither, label the transaction NA.
- Record each event in a horizontal statements model like the following one. The first event is recorded as an example.

Assets = Liab. + Equity										Rev.	−	Exp.	=	Net Inc.	Cash Flow	
Cash	+	Accts. Rec.	+	Inv.	=	Accts. Pay.	+	C. Stk.	+	Ret. Earn.						
10,000	+	NA	+	NA	=	NA	+	10,000	+	NA	NA	−	NA	=	NA	10,000 FA

### Exercise 3-9 Cash discounts and purchase returns

**LO 3**

On March 6, 2010, Ed's Imports purchased merchandise from Watches Inc. with a list price of \$31,000, terms 2/10, n/45. On March 10, Ed's returned merchandise to Watches Inc. for credit. The list price of the returned merchandise was \$6,400. Ed's paid cash to settle the accounts payable on March 15, 2010.

### Required

- What is the amount of the check that Ed's must write to Watches Inc. on March 15?
- Record the events in a horizontal statements model like the following one.

[illegible]

- How much would Ed's pay for the merchandise purchased if the payment is not made until March 20, 2010?
- Record the payment of the merchandise in Event *c* in a horizontal statements model like the one shown above.
- Why would Watches Inc. sell merchandise with the terms 2/10, n/45?

**Exercise 3-10** *Effect of sales returns and allowances and freight costs on the journal, ledger, and financial statements: perpetual system*

**LO 2, 3**

Sans Company began the 2010 accounting period with \$18,000 cash, \$60,000 inventory, \$50,000 common stock, and \$28,000 retained earnings. During the 2010 accounting period, Sans experienced the following events.

1. Sold merchandise costing \$38,200 for \$74,500 on account to Hughes's General Store.
2. Delivered the goods to Hughes under terms FOB destination. Freight costs were \$400 cash.
3. Received returned goods from Hughes. The goods cost Sans \$2,000 and were sold to Hughes for \$3,800.
4. Granted Hughes a \$1,000 allowance for damaged goods that Hughes agreed to keep.
5. Collected partial payment of \$52,000 cash from accounts receivable.

### Required

- a. Record the events in a statements model like the one shown below.

[illegible]

## LO 2, 3

- b. Prepare an income statement, balance sheet, and statement of cash flows.
- c. Why would Sans grant the \$2,000 allowance to Hughes? Who benefits more?

**Exercise 3-11** *Effect of cash discounts on financial statements: perpetual system (gross method)*

Digital Sales was started in 2011. The company experienced the following accounting events during its first year of operation.

1. Started business when it acquired \$80,000 cash from the issue of common stock.
2. Purchased merchandise with a list price of \$64,000 on account, terms 2/10, n/30.
3. Paid off one-half of the accounts payable balance within the discount period.
4. Sold merchandise on account that had a list price of \$52,000. Credit terms were 1/20, n/30. The merchandise had cost Digital \$31,000.
5. Collected cash from the account receivable within the discount period.
6. Paid \$9,600 cash for operating expenses.
7. Paid the balance due on accounts payable. The payment was not made within the discount period.

**Required**

- a. Record the events in a horizontal statements model like the following one.

Assets				=	Liab.	+	Equity			Rev.	-	Exp.	=	Net Inc.	Cash Flow
Cash	+	Accts. Rec.	+	Inv.	=	Accts. Pay.	+	Com. Stk.	+	Ret. Earn.					

- b. What is the amount of gross margin for the period? What is the net income for the period?
- c. Why would Digital Sales sell merchandise with the terms 1/20, n/30?
- d. What do the terms 2/10, n/30 in Event 2 mean to Digital Sales?

## LO 2, 3

**Exercise 3-12** *Effect of inventory transactions on the financial statements: comprehensive exercise with sales and purchase returns and discounts*

Yoder Sales Company had the following balances in its accounts on January 1, 2012.

Cash	\$ 60,000
Merchandise Inventory	40,000
Land	100,000
Common Stock	80,000
Retained Earnings	120,000

Yoder experienced the following events during 2012.

1. Sold merchandise inventory that cost \$32,000 for \$68,000.
2. Sold land that cost \$40,000 for \$75,000.

**Required**

- a. Determine the amount of gross margin recognized by Yoder.
- b. Determine the amount of the gain on the sale of land recognized by Yoder.
- c. Comment on how the gross margin versus the gain will be recognized on the income statement.
- d. Comment on how the gross margin versus the gain will be recognized on the statement of cash flows.

## LO 2, 5

**Exercise 3-13** *Effect of inventory losses: perpetual system*

Cox Sales experienced the following events during 2010, its first year of operation.

1. Started the business when it acquired \$50,000 cash from the issue of common stock.
2. Paid \$21,000 cash to purchase inventory.



3. Sold inventory costing \$12,500 for \$26,500 cash.
4. Physically counted inventory showing \$7,900 inventory was on hand at the end of the accounting period.

### Required

- a. Determine the amount of the difference between book balance and the actual amount of inventory as determined by the physical count.
- b. Explain how differences between the book balance and the physical count of inventory could arise. Why is being able to determine whether differences exist useful to management?

### Exercise 3-14 *Determining the effect of inventory transactions on the horizontal statements model: perpetual system*

LO 2



Ramsey Company experienced the following events.

1. Purchased merchandise inventory on account.
2. Purchased merchandise inventory for cash.
3. Sold merchandise inventory on account. Label the revenue recognition 3a and the expense recognition 3b.
4. Returned merchandise purchased on account.
5. Sold merchandise inventory for cash. Label the revenue recognition 5a and the expense recognition 5b.
6. Paid cash on accounts payable within the discount period.
7. Paid cash for selling and administrative expenses.
8. Collected cash from accounts receivable not within the discount period.
9. Paid cash for transportation-out.
10. Paid cash for transportation-in.

### Required

Identify each event as asset source (AS), asset use (AU), asset exchange (AE), or claims exchange (CE). Also explain how each event affects the financial statements by placing a + for increase, – for decrease, or NA for not affected under each of the components in the following statements model. Assume the company uses the perpetual inventory system. The first event is recorded as an example.

Event No.	Event Type	Assets	=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
1	AS	+	=	+	+	NA	NA	–	NA	=	NA	NA

### Exercise 3-15 *Single-step and multistep income statements*

LO 4

The following information was taken from the accounts of Helen's Groceries, a delicatessen. The accounts are listed in alphabetical order, and each has a normal balance.

Accounts payable	\$600
Accounts receivable	400
Advertising expense	200
Cash	410
Common stock	200
Cost of goods sold	600
Interest expense	70
Merchandise inventory	450
Prepaid rent	40
Retained earnings	
(Beginning balance)	635
Sales revenue	1,000
Salaries expense	130
Supplies expense	110
Loss on sale of land	25



**Required**

First, prepare an income statement using the single-step approach. Then prepare another income statement using the multistep approach.

**LO 2****Exercise 3-16** *Determining the cost of financing inventory*

On January 1, 2012, Sam started a small sailboat merchandising business that he named Sam's Boats. The company experienced the following events during the first year of operation.

1. Started the business by issuing common stock for \$30,000 cash.
2. Paid \$22,000 cash to purchase inventory.
3. Sold a sailboat that cost \$12,000 for \$24,000 on account.
4. Collected \$14,000 cash from accounts receivable.
5. Paid \$5,800 for operating expenses.

**Required**

- a. Organize ledger accounts under an accounting equation and record the events in the accounts.
- b. Prepare an income statement, balance sheet, and statement of cash flows.
- c. Since Sam sold inventory for \$24,000, he will be able to recover more than half of the \$30,000 he invested in the stock. Do you agree with this statement? Why or why not?

**LO 3****Exercise 3-17** *Inventory financing costs*

Jerry Guardino comes to you for advice. He has just purchased a large amount of inventory with the terms 1/10, n/30. The amount of the invoice is \$320,000. He is currently short of cash but has good credit. He can borrow the money needed to settle the account payable at an annual interest rate of 7%. Guardino is sure he will have the necessary cash by the due date of the invoice but not by the last day of the discount period.

**Required**

- a. Convert the discount rate into an annual interest rate.
- b. Make a recommendation regarding whether Guardino should borrow the money and pay off the account payable within the discount period.

**LO 8****Exercise 3-18** *Effect of inventory transactions on the income statement and balance sheet: periodic system (Appendix)*

Daniel Jackson is the owner of ABC Cleaning. At the beginning of the year, Jackson had \$2,400 in inventory. During the year, Jackson purchased inventory that cost \$13,000. At the end of the year, inventory on hand amounted to \$3,600.

**Required**

Calculate the following.

- a. Cost of goods available for sale during the year.
- b. Cost of goods sold for the year.
- c. Inventory amount ABC Cleaning would report on its year-end balance sheet.

**LO 8****Exercise 3-19** *Determining cost of goods sold: periodic system (Appendix)*

Laura's Clothing Co. uses the periodic inventory system to account for its inventory transactions. The following account titles and balances were drawn from Laura's records for the year 2009: beginning balance in inventory, \$24,900; purchases, \$306,400; purchase returns and allowances, \$12,400; sales, \$720,000; sales returns and allowances, \$6,370; transportation-in, \$1,820; and operating expenses, \$51,400. A physical count indicated that \$24,800 of merchandise was on hand at the end of the accounting period.

**Required**

- a. Prepare a schedule of cost of goods sold.
- b. Prepare a multistep income statement.

### Exercise 3-20 Performing ratio analysis using real-world data

LO 7

The following data were taken from **Microsoft Corporation's** 2007 annual report. All dollar amounts are in millions.



	Fiscal Years Ending	
	June 30, 2007	June 30, 2006
Revenue	\$51,122	\$44,282
Cost of Goods Sold	10,693	7,650
Net Income	14,065	12,599

#### Required

- Compute Microsoft's gross margin percentage for 2007 and 2006.
- Compute Microsoft's return on sales percentage for 2007 and 2006.
- Based on the percentages computed in Requirements *a* and *b*, did Microsoft's performance get better or worse from 2006 to 2007?
- Compare Microsoft's gross margin percentages and return on sales percentages to those of the other real-world companies discussed in this chapter and discuss whether or not it appears to have better-than-average financial performance or not.

## PROBLEMS

All applicable Problems are available with McGraw-Hill  
**Connect Accounting.**

connect  
ACCOUNTING

### Problem 3-21 Basic transactions for three accounting cycles: perpetual system

LO 2

Ferguson Company was started in 2008 when it acquired \$60,000 from the issue of common stock. The following data summarize the company's first three years' operating activities. Assume that all transactions were cash transactions.

#### CHECK FIGURES

2008 Net Income: \$7,100  
2010 Total Assets: \$76,300

	2008	2009	2010
Purchases of inventory	\$24,000	\$12,000	\$20,500
Sales	26,000	30,000	36,000
Cost of goods sold	13,400	18,500	20,000
Selling and administrative expenses	5,500	8,200	10,100

#### Required

Prepare an income statement (use the multistep format) and balance sheet for each fiscal year. (*Hint:* Record the transaction data for each accounting period in the accounting equation before preparing the statements for that year.)

### Problem 3-22 Identifying product and period costs

#### Required

Indicate whether each of the following costs is a product cost or a period (selling and administrative) cost.

- Transportation-in.
- Insurance on the office building.
- Office supplies.
- Costs incurred to improve the quality of goods available for sale.
- Goods purchased for resale.

- f. Salaries of salespersons.
- g. Advertising costs.
- h. Transportation-out.
- i. Rent expense.
- j. Salary of the company president.

**LO 3****CHECK FIGURE**

Event (b): Freight Cost is zero

**Problem 3-23 Identifying freight costs****Required**

For each of the following events, determine the amount of freight paid by The Book Shop. Also indicate whether the freight cost would be classified as a product or period (selling and administrative) cost.

- a. Purchased merchandise with freight costs of \$700. The merchandise was shipped FOB shipping point.
- b. Shipped merchandise to customers, freight terms FOB shipping point. The freight costs were \$100.
- c. Purchased inventory with freight costs of \$1,000. The goods were shipped FOB destination.
- d. Sold merchandise to a customer. Freight costs were \$900. The goods were shipped FOB destination.

**LO 2, 3****CHECK FIGURES**

- a. Ending Cash: \$26,592
- d. Net Income: \$4,750

**Problem 3-24 Effect of purchase returns and allowances and purchase discounts on the financial statements: perpetual system (gross method)**

The following events were completed by John's Hobby Shop in September 2012.

- Sept. 1 Acquired \$40,000 cash from the issue of common stock.
- 1 Purchased \$28,000 of merchandise on account with terms 2/10, n/30.
- 5 Paid \$600 cash for freight to obtain merchandise purchased on September 1.
- 8 Sold merchandise that cost \$9,000 to customers for \$17,000 on account, with terms 1/10, n/30.
- 8 Returned \$900 of defective merchandise from the September 1 purchase to the supplier.
- 10 Paid cash for the balance due on the merchandise purchased on September 1.
- 20 Received cash from customers of September 8 sale in settlement of the account balances, but not within the discount period.
- 30 Paid \$3,250 cash for selling expenses.

**Required**

- a. Record each event in a statements model like the following one. The first event is recorded as an example.

Assets				=	Liab.	+	Equity		Rev.	-	Exp.	=	Net Inc.	Cash Flow
Cash	+	Accts. Rec.	+	Inv.	=	Accts. Pay.	+	Com. Stk.	+	Ret. Earn.				
30,000	+	NA	+	NA	=	NA	+	30,000	+	NA			NA	30,000 FA

- b. Prepare an income statement for the month ending September 30.
- c. Prepare a statement of cash flows for the month ending September 30.
- d. Explain why there is a difference between net income and cash flow from operating activities.

### Problem 3-25 Comprehensive cycle problem: perpetual system

LO 2, 3, 5, 6

At the beginning of 2012, D & L Enterprises had the following balances in its accounts:

Cash	\$8,400
Inventory	2,000
Common stock	8,000
Retained earnings	2,400

#### CHECK FIGURES

d. Net Income: \$1,584  
Total Assets: \$11,984



During 2012, D & L Enterprises experienced the following events:

1. Purchased inventory costing \$5,600 on account from Smoot Company under terms 2/10, n/30. The merchandise was delivered FOB shipping point. Freight costs of \$500 were paid in cash.
2. Returned \$400 of the inventory that it had purchased because the inventory was damaged in transit. The freight company agreed to pay the return freight cost.
3. Paid the amount due on its account payable to Smoot Company within the cash discount period.
4. Sold inventory that had cost \$6,000 for \$9,000. The sale was on account under terms 2/10, n/45.
5. Received returned merchandise from a customer. The merchandise had originally cost \$520 and had been sold to the customer for \$840 cash. The customer was paid \$840 cash for the returned merchandise.
6. Delivered goods in Event 4 FOB destination. Freight costs of \$600 were paid in cash.
7. Collected the amount due on accounts receivable within the discount period.
8. Took a physical count indicating that \$1,800 of inventory was on hand at the end of the accounting period.

#### Required

- a. Identify these events as asset source (AS), asset use (AU), asset exchange (AE), or claims exchange (CE).
- b. Record each event in a statements model like the following one.

Event	Balance Sheet							Income Statement				Statement of Cash Flows
	Assets		=	Liab.	=	Equity	Rev.	−	Exp.	=	Net Inc.	
	Cash	+ Accts. Rec.	+ Mdse. Inv.	= Accts. Pay.	+ Ret. Earn.							

- c. Prepare an income statement, a statement of changes in stockholders' equity, a balance sheet, and a statement of cash flows.

### Problem 3-26 Using common size income statements to make comparisons

LO 6

The following income statements were drawn from the annual reports of Pierro Sales Company.



	2010*	2011*
Net Sales	\$426,500	\$520,600
Cost of Goods Sold	(312,000)	(369,600)
Gross Margin	114,500	151,000
Less: Operating Expense		
Selling and Administrative Expenses	(50,200)	(64,800)
Net Income	\$ 64,300	\$ 86,200

\*All dollar amounts are reported in thousands.

The president's message in the company's annual report stated that the company had implemented a strategy to increase market share by spending more on advertising. The president indicated that prices held steady and sales grew as expected. Write a memo indicating whether you agree with the president's statements. How has the strategy affected profitability? Support your answer by measuring growth in sales and selling expenses. Also prepare common size income statements and make appropriate references to the differences between 2010 and 2011.

**LO 5, 8****CHECK FIGURES**

- a. Cost of Goods Available for Sale: \$171,500  
b. Net Income: \$55,400

**Problem 3-27** *Preparing a schedule of cost of goods sold and multistep and single-step income statements: periodic system (Appendix)*

The following account titles and balances were taken from the adjusted trial balance of Wright Sales Co. at December 31, 2012. The company uses the periodic inventory method.

Account Title	Balance
Advertising expense	\$ 10,400
Income taxes	8,200
Interest expense	5,000
Merchandise inventory, January 1	18,000
Merchandise inventory, December 31	20,100
Miscellaneous expense	800
Purchases	150,000
Purchase returns and allowances	2,700
Rent expense	18,000
Salaries expense	53,000
Sales	320,000
Sales returns and allowances	8,000
Transportation-in	6,200
Transportation-out	10,800
Gain on sale of land	4,000

**Required**

- Prepare a schedule to determine the amount of cost of goods sold.
- Prepare a multistep income statement.
- Prepare a single-step income statement.

**LO 8****CHECK FIGURES**

- b. Ending Cash: \$57,640  
c. Cost of Goods Sold: \$50,810

**Problem 3-28** *Comprehensive cycle problem: periodic system (Appendix)*

The following trial balance pertains to Mitchell Home Products as of January 1, 2010.

Account Title	Debit	Credit
Cash	\$14,000	
Accounts receivable	9,000	
Merchandise inventory	60,000	
Accounts payable		\$ 5,000
Common stock		70,000
Retained earnings		8,000
Total	<u>\$83,000</u>	<u>\$83,000</u>

The following events occurred in 2010. Assume that Mitchell Home Products uses the periodic inventory system.

- Purchased land for \$8,000 and a building for \$53,000 cash.
- Purchased merchandise on account for \$23,000, terms 2/10 n/30.
- The merchandise purchased was shipped FOB shipping point for \$230 cash.
- Returned \$2,000 of defective merchandise purchased in Event 2.
- Sold merchandise for \$27,000 cash.

6. Sold merchandise on account for \$50,000, terms 1/20 n/30.
7. Paid cash within the discount period on accounts payable due on merchandise purchased in Event 2.
8. Paid \$1,200 cash for selling expenses.
9. Collected \$35,000 of accounts receivable within the discount period.
10. Collected \$12,000 of accounts receivable but not within the discount period.
11. Performed a physical count indicating that \$30,000 of inventory was on hand at the end of the accounting period.

### Required

- a. Record the above transactions in a horizontal statements model like the following one.

Event	Balance Sheet										Income Statement			Statement of Cash Flows	
	Assets					=	Equity					Rev.	Exp.		Net Inc.
	Cash	+	Accts. Rec.	+	Mdse. Inv.	+	Land	=	Accts. Pay.	+	Com. Stock	+	Ret. Earn.		

- b. Prepare a schedule of cost of goods sold and an income statement.

### Problem 3-29 Performing ratio analysis using real-world data

LO 7



Supervalu, Inc., claims to be the largest publicly held food wholesaler in the United States. In addition to being a food wholesaler, it operates “extreme value” retail grocery stores under the name Save-A-Lot. Most of these discount stores are located in inner-city areas not served by others. Whole Food Markets claims to be the world’s largest retailer of natural and organic foods. Unlike Save-A-Lot stores that focuses on low-income customers, Whole Foods offers specialty products to customers with sufficient disposal income to spend on such goods. The following data were taken from these companies’ 2007 annual reports. All dollar amounts are in millions.

	Supervalu, Inc. February 24, 2007	Whole Foods September 30, 2007
Sales	\$37,406	\$6,592
Cost of Goods Sold	29,267	4,295
Net Income	452	183

### Required

- a. Before performing any calculations, speculate as to which company will have the highest gross margin and return on sales percentage. Explain the rationale for your decision.
- b. Calculate the gross margin percentages for Supervalu and Whole Foods Market.
- c. Calculate the return on sales percentages for Supervalu and Whole Foods Market.
- d. Do the calculations from Requirements b and c confirm your speculations in Requirement a?

## ANALYZE, THINK, COMMUNICATE

### ATC 3-1 Business Applications Case Understanding real world annual reports

### Required

Use the **Topps Company**’s annual report in Appendix B to answer the following questions.

- a. What was Topps’ gross margin percentage for 2006 and 2005?
- b. What was Topps’ return on sales percentage for 2006 and 2005?

The Topps Company, Inc.



- c. Topps' Gross Profit on Sales was about \$9 million lower in 2006 than in 2005 and this caused its Net Income to be lower as well. However, its gross margin percentage also decreased in 2006. Ignoring taxes, how much higher would its 2006 net income have been if the gross margin percentage in 2006 had been the same as for 2005?

### ATC 3-2 Group Exercise *Multistep income statement*



The following quarterly information is given for Raybon for the year ended 2010 (amounts shown are in millions).

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Net Sales	\$736.0	\$717.4	\$815.2	\$620.1
Gross Margin	461.9	440.3	525.3	252.3
Net Income	37.1	24.6	38.6	31.4

#### Required

- Divide the class into groups and organize the groups into four sections. Assign each section financial information for one of the quarters.
  - Each group should compute the cost of goods sold and operating expenses for the specific quarter assigned to its section and prepare a multistep income statement for the quarter.
  - Each group should compute the gross margin percentage and cost of goods sold percentage for its specific quarter.
  - Have a representative of each group put that quarter's sales, cost of goods sold percentage, and gross margin percentage on the board.

#### Class Discussion

- Have the class discuss the change in each of these items from quarter to quarter and explain why the change might have occurred. Which was the best quarter and why?

### ATC 3-3 Real-World Case *Identifying companies based on financial statement information*



Presented here is selected information from the 2005 fiscal-year 10-K reports of four companies. The four companies, in alphabetical order, are **Caterpillar, Inc.**, a manufacturer of heavy machinery; **Oracle Corporation**, a company that develops software; **Starbucks**, a company that sells coffee products; and **Tiffany & Company**, a company that operates high-end jewelry and department stores. The data for the companies, presented in the order of the amount of their sales in millions of dollars, follow.

	A	B	C	D
Sales	\$2,395	\$6,369	\$11,799	\$36,339
Cost of Goods Sold	1,052	2,605	2,651	26,558
Net Earnings	255	495	2,886	2,854
Inventory	1,060	546	0	5,224
Accounts Receivable	142	191	2,900	13,968
Total Assets	\$2,777	\$3,514	\$20,687	\$47,069

#### Required

Based on these financial data and your knowledge and assumptions about the nature of the businesses that the companies operate, determine which data relate to which companies. Write a memorandum explaining your decisions. Include a discussion of which ratios you used in your analysis, and show the computations of these ratios in your memorandum.

### ATC 3-4 Business Applications Case *Using ratios to make comparisons*

The following income statements were drawn from the annual reports of Design Company and Royal Company.

	Design	Royal
Net Sales	\$95,700	\$52,300
Cost of Goods Sold	<u>68,900</u>	<u>31,400</u>
Gross Margin	26,800	20,900
Less: Selling and Admin. Expenses	<u>22,000</u>	<u>18,800</u>
Net Income	<u>\$ 4,800</u>	<u>\$ 2,100</u>

Note: All figures are reported in thousands of dollars.

#### Required

- One of the companies is a high-end retailer that operates in exclusive shopping malls. The other operates discount stores located in low-cost stand-alone buildings. Identify the high-end retailer and the discounter. Support your answer with appropriate ratios.
- If Design and Royal have equity of \$40,000 and \$21,000, respectively, which company is the more profitable?

### ATC 3-5 Business Applications Case *Using common size statements and ratios to make comparisons*

At the end of 2009, the following information is available for Chicago and St. Louis companies:

	Chicago	St. Louis
Sales	\$3,000,000	\$3,000
Cost of Goods Sold	1,800,000	2,100
Selling and Administrative Expenses	960,000	780
Total Assets	3,750,000	3,750
Stockholders' Equity	1,000,000	1,200

#### Required

- Prepare common size income statements for each company.
- Compute the return on assets and return on equity for each company.
- Which company is more profitable from the stockholders' perspective?
- One company is a high-end retailer, and the other operates a discount store. Which is the discounter? Support your selection by referring to appropriate ratios.

### ATC 3-6 Written Assignment, Critical Thinking *Effect of sales returns on financial statements*

Bell Farm and Garden Equipment reported the following information for 2010:

Net Sales of Equipment	\$2,450,567
Other Income	6,786
Cost of Goods Sold	1,425,990
Selling, General, and Administrative Expense	<u>325,965</u>
Net Operating Income	<u>\$ 705,398</u>



Selected information from the balance sheet as of December 31, 2010, follows.

Cash and Marketable Securities	\$113,545
Inventory	248,600
Accounts Receivable	82,462
Property, Plant, and Equipment—Net	335,890
Other Assets	5,410
Total Assets	<u>\$785,907</u>

Assume that a major customer returned a large order to Bell on December 31, 2010. The amount of the sale had been \$146,800 with a cost of sales of \$94,623. The return was recorded in the books on January 1, 2011. The company president does not want to correct the books. He argues that it makes no difference as to whether the return is recorded in 2010 or 2011. Either way, the return has been duly recognized.

### Required

- Assume that you are the CFO for Bell Farm and Garden Equipment Co. Write a memo to the president explaining how omitting the entry on December 31, 2010, could cause the financial statements to be misleading to investors and creditors. Explain how omitting the return from the customer would affect net income and the balance sheet.
- Why might the president want to record the return on January 1, 2011, instead of December 31, 2010?
- Would the failure to record the customer return violate the AICPA Code of Professional Conduct? (See Exhibit 1.4 in Chapter 1.)
- If the president of the company refuses to correct the financial statements, what action should you take?

### ATC 3-7 Corporate Governance *Wait until I get mine*



Ada Fontanez is the chief executive officer (CEO) of a large company that owns a chain of athletic shoe stores. The company was in dire financial condition when she was hired three years ago. To motivate Fontanez, the board of directors included a bonus plan as part of her compensation package. According to her employment contract, on January 15 of each year, Fontanez is paid a cash bonus equal to 5 percent of the amount of net income reported on the preceding December 31 income statement. Fontanez was sufficiently motivated. Through her leadership, the company prospered. Her efforts were recognized throughout the industry, and she received numerous lucrative offers to leave the company. One offer was so enticing that she decided to change jobs. Her decision was made in late December 2010. However, she decided to resign effective February 1, 2011, to ensure the receipt of her January bonus. On December 31, 2010, the chief financial officer (CFO), Walter Smith, advised Fontanez that the company had a sizable quantity of damaged inventory. A warehouse fire had resulted in smoke and water damage to approximately \$600,000 of inventory. The warehouse was not insured, and the accountant recommended that the loss be recognized immediately. After examining the inventory, Fontanez argued that it could be sold as *damaged goods* to customers at reduced prices. She refused to allow the write-off the accountant recommended. She stated that so long as she is president, the inventory stays on the books at cost. She told the accountant that he could take up the matter with the new president in February.

### Required

- How would an immediate write-off of the damaged inventory affect the December 31, 2010, income statement, balance sheet, and statement of cash flows?
- How would the write-off affect Fontanez's bonus?
- If the new president is given the same bonus plan, how will Fontanez's refusal to recognize the loss affect his or her bonus?
- Assume Walter Smith (CFO) yields to the pressure exerted by Ada Fontanez (CEO) and certifies the financial statements without requiring the write-off. What penalties may he face under the Sarbanes-Oxley Act?

- e. Assume that Walter Smith is a CPA. Explain how signing off on the financial statements without recognizing the write-off violates Article II of the AICPA Code of Professional Conduct (see Chapter 2, Exhibit 2.7).

### **ATC 3-8 Research Assignment** *Analyzing Alcoa's profit margins*

Using either **Alcoa's** most current Form 10-K or the company's annual report, answer the questions below. To obtain the Form 10-K you can use either the EDGAR system following the instructions in Appendix A, or the company's website. The company's annual report is available on its website.



#### **Required**

- a. What was Alcoa's gross margin percentage for the most current year?
- b. What was Alcoa's gross margin percentage for the previous year? Has it changed significantly?
- c. What was Alcoa's return on sales percentage for the most current year?
- d. What percentage of Alcoa's total sales for the most current year was from operations in the United States?
- e. Comment on the appropriateness of comparing Alcoa's gross margin with that of **Ford Motor Company**. If Ford has a higher/lower margin, does that mean that Ford is a better managed company?

## CHAPTER



# Accounting *for* Inventories

## LEARNING OBJECTIVES

**After you have mastered the material in this chapter you will be able to:**

- 1** Explain how different inventory cost flow methods (specific identification, FIFO, LIFO, and weighted average) affect financial statements.
- 2** Demonstrate the computational procedures for FIFO, LIFO, and weighted average.
- 3** Identify the key elements of a strong system of internal control.
- 4** Identify special internal controls for cash.
- 5** Prepare a bank reconciliation.
- 6** Explain the importance of inventory turnover to a company's profitability.

## CHAPTER OPENING



In the previous chapter, we used the simplifying assumption that identical inventory items cost the same amount. In practice, businesses often pay different amounts for identical items. Suppose The Mountain Bike Company (TMBC) sells high-end Model 201 helmets. Even though all Model 201 helmets are identical, the price TMBC pays for each helmet frequently changes.

Assume TMBC purchases one Model 201 helmet at a cost of \$100. Two weeks later, TMBC purchases a second Model 201 helmet. Because the supplier has raised prices, the second helmet costs \$110. If TMBC sells one of its two helmets, should it record \$100 or \$110 as cost of goods sold? The following section of this chapter discusses several acceptable alternative methods for determining the amount of cost of goods sold from which companies may choose under generally accepted accounting principles.

## The *Curious* Accountant

**Albertson's** is one of the largest food store chains in the United States, operating about 2,500 stores. As of February 2, 2006, the company had approximately \$3 billion of inventory reported on its balance sheet. In the footnotes to its financial statements, Albertson's reported that it uses an inventory method that assumes its newest goods are sold first and its oldest goods are kept in inventory.

Can you think of any reason why a company selling perishable goods such as milk and vegetables uses an inventory method that assumes older goods are kept while newer goods are sold? (Answer on page 150.)





**LO 1**

Explain how different inventory cost flow methods (specific identification, FIFO, LIFO, and weighted average) affect financial statements.

## INVENTORY COST FLOW METHODS

Recall that when goods are sold, product costs flow (are transferred) from the Inventory account to the Cost of Goods Sold account. Four acceptable methods for determining the amount of cost to transfer are (1) specific identification; (2) first-in, first-out (FIFO); (3) last-in, first-out (LIFO); and weighted average.

### Specific Identification

Suppose TMBC tags inventory items so that it can identify which one is sold at the time of sale. TMBC could then charge the actual cost of the specific item sold to cost of goods sold. Recall that the first inventory item TMBC purchased cost \$100 and the second item cost \$110. Using **specific identification**, cost of goods sold would be \$100 if the first item purchased were sold or \$110 if the second item purchased were sold.

When a company's inventory consists of many low-priced, high-turnover goods, the record keeping necessary to use specific identification isn't practical. Imagine the difficulty of recording the cost of each specific food item in a grocery store. Another disadvantage of the specific identification method is the opportunity for managers to manipulate the income statement. For example, TMBC can report a lower cost of goods sold by selling the first instead of the second item. Specific identification is, however, frequently used for high-priced, low-turnover inventory items such as automobiles. For big ticket items like cars, customer demands for specific products limit management's ability to select which merchandise is sold and volume is low enough to manage the recordkeeping.

### First-In, First-Out (FIFO)

The **first-in, first-out (FIFO) cost flow method** requires that the cost of the items purchased *first* be assigned to cost of goods sold. Using FIFO, TMBC's cost of goods sold is \$100.

### Last-In, First-Out (LIFO)

The **last-in, first-out (LIFO) cost flow method** requires that the cost of the items purchased *last* be charged to cost of goods sold. Using LIFO, TMBC's cost of goods sold is \$110.

### Weighted Average

To use the **weighted-average cost flow method**, first calculate the average cost per unit by dividing the *total cost* of the inventory available by the *total number* of units available. In the case of TMBC, the average cost per unit of the inventory is \$105  $(\$100 + \$110) \div 2$ . Cost of goods sold is then calculated by multiplying the average cost per unit by the number of units sold. Using weighted average, TMBC's cost of goods sold is \$105  $(\$105 \times 1)$ .

### Physical Flow

The preceding discussion pertains to the flow of *costs* through the accounting records, *not* the actual **physical flow of goods**. Goods usually move physically on a FIFO basis, which means that the first items of merchandise acquired by a company (first-in) are the first items sold to its customers (first-out). The inventory items on hand at the end of the accounting period are typically the last items in (the most recently acquired goods). If companies did not sell their oldest inventory items first, inventories would include dated, less marketable merchandise. *Cost flow*, however, can differ from *physical flow*. For example, a company may use LIFO or weighted average for financial reporting even if its goods flow physically on a FIFO basis.

## EFFECT OF COST FLOW ON FINANCIAL STATEMENTS

### Effect on Income Statement

The cost flow method a company uses can significantly affect the gross margin reported in the income statement. To demonstrate, assume that TMBC sold the inventory item

discussed previously for \$120. The amounts of gross margin using the FIFO, LIFO, and weighted-average cost flow assumptions are shown in the following table.

	FIFO	LIFO	Weighted Average
Sales	\$120	\$120	\$120
Cost of goods sold	(100)	(110)	(105)
Gross margin	<u>\$ 20</u>	<u>\$ 10</u>	<u>\$ 15</u>

Even though the physical flow is assumed to be identical for each method, the gross margin reported under FIFO is double the amount reported under LIFO. Companies experiencing identical economic events (same units of inventory purchased and sold) can report significantly different results in their financial statements. Meaningful financial analysis requires an understanding of financial reporting practices.

### Effect on Balance Sheet

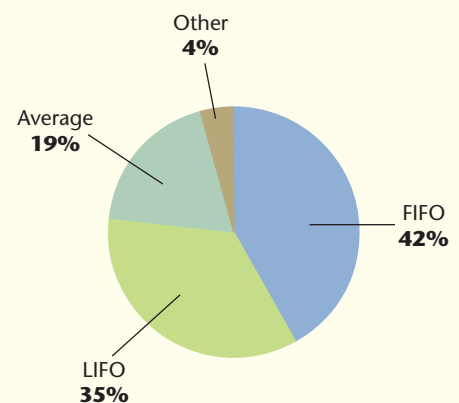
Since total product costs are allocated between costs of goods sold and ending inventory, the cost flow method a company uses affects its balance sheet as well as its income statement. Since FIFO transfers the first cost to the income statement, it leaves the last cost on the balance sheet. Similarly, by transferring the last cost to the income statement, LIFO leaves the first cost in ending inventory. The weighted-average method bases both cost of goods sold and ending inventory on the average cost per unit. To illustrate, the ending inventory TMBC would report on the balance sheet using each of the three cost flow methods is shown in the following table.

	FIFO	LIFO	Weighted Average
Ending inventory	<u>\$110</u>	<u>\$100</u>	<u>\$105</u>

The FIFO, LIFO, and weighted-average methods are all used extensively in business practice. The same company may even use one cost flow method for some of its products and different cost flow methods for other products. Exhibit 4.1 illustrates the relative use of the different cost flow methods among U.S. companies.

#### EXHIBIT 4.1

##### Use of Inventory Cost Flow Methods



Data Source: AICPA, *Accounting Trends and Techniques*.

### CHECK Yourself 4.1

Nash Office Supply (NOS) purchased two Model 303 copiers at different times. The first copier purchased cost \$400 and the second copier purchased cost \$450. NOS sold one of the copiers for \$600. Determine the gross margin on the sale and the ending inventory balance assuming NOS accounts for inventory using (1) FIFO, (2) LIFO, and (3) weighted average.

**Answer**

	FIFO	LIFO	Weighted Average
Sales	\$600	\$600	\$600
Cost of goods sold	(400)	(450)	(425)
Gross margin	<u>\$200</u>	<u>\$150</u>	<u>\$175</u>
Ending inventory	<u>\$450</u>	<u>\$400</u>	<u>\$425</u>

## INVENTORY COST FLOW UNDER A PERPETUAL SYSTEM

### Multiple Layers with Multiple Quantities

#### LO 2

Demonstrate the computational procedures for FIFO, LIFO, and weighted average.

The previous example illustrates different **inventory cost flow methods** using only two cost layers (\$100 and \$110) with only one unit of inventory in each layer. Actual business inventories are considerably more complex. Most real-world inventories are composed of multiple cost layers with different quantities of inventory in each layer. The underlying allocation concepts, however, remain unchanged.

For example, a different inventory item The Mountain Bike Company (TMBC) carries in its stores is a bike called the Eraser. TMBC's beginning inventory and two purchases of Eraser bikes are described below.

Jan. 1	Beginning inventory	10 units @ \$200	=	\$ 2,000
Mar. 18	First purchase	20 units @ \$220	=	4,400
Aug. 21	Second purchase	25 units @ \$250	=	<u>6,250</u>
	Total cost of the 55 bikes available for sale			<u>\$12,650</u>

The accounting records for the period show that TMBC paid cash for all Eraser bike purchases and that it sold 43 bikes at a cash price of \$350 each.

### Allocating Cost of Goods Available for Sale

The following discussion shows how to determine the cost of goods sold and ending inventory amounts under FIFO, LIFO, and weighted average. We show all three methods to demonstrate how they affect the financial statements differently; TMBC would actually use only one of the methods.

Regardless of the cost flow method chosen, TMBC must allocate the cost of goods available for sale (\$12,650) between cost of goods sold and ending inventory. The amounts assigned to each category will differ depending on TMBC's cost flow method. Computations for each method are shown below.

#### FIFO Inventory Cost Flow

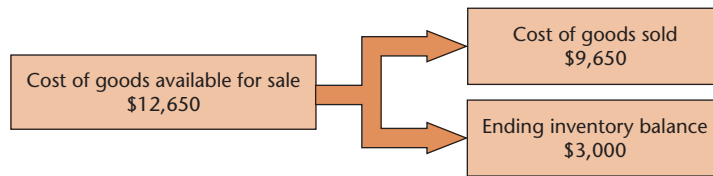
Recall that TMBC sold 43 Eraser bikes during the accounting period. The FIFO method transfers to the Cost of Goods Sold account the *cost of the first 43 bikes* TMBC had available to sell. The first 43 bikes acquired by TMBC were the 10 bikes in the beginning inventory (these were purchased in the prior period) plus the 20 bikes purchased in March and 13 of the bikes purchased in August. The expense recognized for the cost of these bikes (\$9,650) is computed as follows.

Jan. 1	Beginning inventory	10 units @ \$200	=	\$2,000
Mar. 18	First purchase	20 units @ \$220	=	4,400
Aug. 21	Second purchase	13 units @ \$250	=	<u>3,250</u>
	Total cost of the 43 bikes sold			<u>\$9,650</u>

Since TMBC had 55 bikes available for sale it would have 12 bikes (55 available – 43 sold) in ending inventory. The cost assigned to these 12 bikes (the ending balance in the Inventory account) equals the cost of goods available for sale minus the cost of goods sold as shown below.

Cost of goods available for sale	\$12,650
Cost of goods sold	<u>(9,650)</u>
Ending inventory balance	<u>\$ 3,000</u>

We show the allocation of the cost of goods available for sale between cost of goods sold and ending inventory graphically below.



### LIFO Inventory Cost Flow

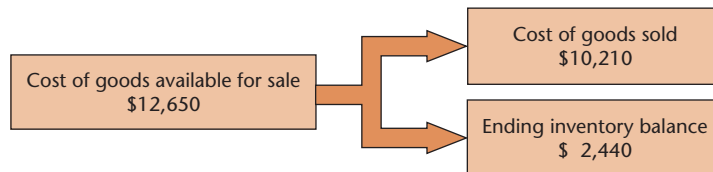
Under LIFO, the cost of goods sold is the cost of the last 43 bikes acquired by TMBC, computed as follows.

Aug. 21	Second purchase	25 units @ \$250	=	\$ 6,250
Mar. 18	First purchase	18 units @ \$220	=	<u>3,960</u>
Total cost of the 43 bikes sold				<u>\$10,210</u>

The LIFO cost of the 12 bikes in ending inventory is computed as shown below.

Cost of goods available for sale	\$12,650
Cost of goods sold	<u>(10,210)</u>
Ending inventory balance	<u>\$ 2,440</u>

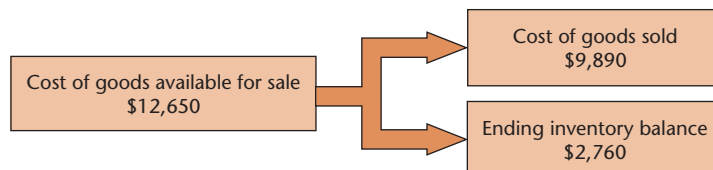
We show the allocation of the cost of goods available for sale between cost of goods sold and ending inventory graphically below.



### Weighted-Average Cost Flow

The weighted-average cost per unit is determined by dividing the *total cost of goods available for sale* by the *total number of units* available for sale. For TMBC, the weighted-average cost per unit is \$230 ( $\$12,650 \div 55$ ). The weighted-average cost of goods sold is determined by multiplying the average cost per unit by the number of units sold ( $\$230 \times 43 = \$9,890$ ). The cost assigned to the 12 bikes in ending inventory is \$2,760 ( $12 \times \$230$ ).

We show the allocation of the cost of goods available for sale between cost of goods sold and ending inventory graphically below.



### Effect of Cost Flow on Financial Statements

Exhibit 4.2 displays partial financial statements for The Mountain Bike Company (TMBC). This exhibit includes only information pertaining to the Eraser bikes inventory item described above. Other financial statement data are omitted.

**EXHIBIT 4.2**

<b>TMBC COMPANY</b>			
Comparative Financial Statements			
Partial Income Statements			
	<b>FIFO</b>	<b>LIFO</b>	<b>Weighted Average</b>
Sales	\$15,050	\$15,050	\$15,050
Cost of goods sold	(9,650)	(10,210)	(9,890)
Gross margin	5,400	4,840	5,160
Partial Balance Sheets			
	<b>FIFO</b>	<b>LIFO</b>	<b>Weighted Average</b>
Assets			
Cash	\$ xx	\$ xx	\$ xx
Accounts receivable	xx	xx	xx
Inventory	3,000	2,440	2,760
Partial Statements of Cash Flows			
	<b>FIFO</b>	<b>LIFO</b>	<b>Weighted Average</b>
<b>Operating Activities</b>			
Cash inflow from customers	\$15,050	\$15,050	\$15,050
Cash outflow for inventory	(10,650)	(10,650)	(10,650)

Recall that assets are reported on the balance sheet in order of liquidity (how quickly they are expected to be converted to cash). Since companies frequently sell inventory on account, inventory is less liquid than accounts receivable. As a result, companies commonly report inventory below accounts receivable on the balance sheet.

Exhibit 4.2 demonstrates that the amounts reported for gross margin on the income statement and inventory on the balance sheet differ significantly. The cash flow from operating activities on the statement of cash flows, however, is identical under all three methods. Regardless of cost flow reporting method, TMBC paid \$10,650 cash (\$4,400 first purchase + \$6,250 second purchase) to purchase inventory and received \$15,050 cash for inventory sold.

### **The Impact of Income Tax**

Based on the financial statement information in Exhibit 4.2, which cost flow method should TMBC use? Most people initially suggest FIFO because FIFO reports the highest gross margin and the largest balance in ending inventory. However, other factors are relevant. FIFO produces the highest gross margin; it also produces the highest net income and the highest income tax expense. In contrast, LIFO results in recognizing the lowest gross margin, lowest net income, and the lowest income tax expense.

Will investors favor a company with more assets and higher net income or one with lower tax expense? Recognize that specific identification, FIFO, LIFO, and weighted average are *different methods of reporting the same information*. TMBC experienced only one set of events pertaining to Eraser bikes. Exhibit 4.2 reports those same events three different ways. However, if the FIFO reporting method causes TMBC to pay more taxes than the LIFO method, using FIFO will cause a real reduction in the value of the company. Paying more money in taxes leaves less money in the company. Knowledgeable investors would be more attracted to TMBC if it uses LIFO because the lower tax payments allow the company to keep more value in the business.

Research suggests that, as a group, investors are knowledgeable. They make investment decisions based on economic substance regardless of how information is reported in financial statements.

### **The Income Statement versus the Tax Return**

In some instances companies may use one accounting method for financial reporting and a different method to compute income taxes (the tax return must explain any differences). With respect to LIFO, however, the Internal Revenue Service requires that companies using LIFO for income tax purposes must also use LIFO for financial reporting. A company could not, therefore, get both the lower tax benefit provided by LIFO and the financial reporting advantage offered under FIFO.

### **Inflation versus Deflation**

Our illustration assumes an inflationary environment (rising inventory prices). In a deflationary environment, the impact of using LIFO versus FIFO is reversed. LIFO produces tax advantages in an inflationary environment, while FIFO produces tax advantages in a deflationary environment. Companies operating in the computer industry where prices are falling would obtain a tax advantage by using FIFO. In contrast, companies that sell medical supplies in an inflationary environment would obtain a tax advantage by using LIFO.

### **Full Disclosure and Consistency**

Generally accepted accounting principles allow each company to choose the inventory cost flow method best suited to its reporting needs. Because results can vary considerably among methods, however, the GAAP principle of **full disclosure** requires that financial statements disclose the method chosen. In addition, so that a company's financial statements are comparable from year to year, the GAAP principle of **consistency** generally requires that companies use the same cost flow method each period. The limited exceptions to the consistency principle are described in more advanced accounting courses.

## **CHECK Yourself 4.2**

The following information was drawn from the inventory records of Fields, Inc.

Beginning inventory	200 units @ \$20
First purchase	400 units @ \$22
Second purchase	600 units @ \$24

Assume that Fields sold 900 units of inventory.

1. Determine the amount of cost of goods sold using FIFO.
2. Would using LIFO produce a higher or lower amount of cost of goods sold? Why?

#### **Answer**

1. Cost of goods sold using FIFO

Beginning inventory	200 units @ \$20	=	\$ 4,000
First purchase	400 units @ \$22	=	8,800
Second purchase	300 units @ \$24	=	<u>7,200</u>
Total cost of goods sold			<u>\$20,000</u>

2. The inventory records reflect an inflationary environment of steadily rising prices. Since LIFO charges the latest costs (in this case the highest costs) to the income statement, using LIFO would produce a higher amount of cost of goods sold than would using FIFO.



## Reality **BYTES**

To avoid spoilage or obsolescence, most companies use a first-in, first-out (FIFO) approach for the flow of physical goods. The older goods (first units purchased) are sold before the newer goods are sold. For example, **Albertson's** and other food stores stack older merchandise at the front of the shelf where customers are more likely to pick it up first. As a result, merchandise is sold before it becomes dated. However, when timing is not an issue, convenience may dictate the use of the last-in, first-out (LIFO) method. Examples of products that frequently move on a LIFO basis include rock, gravel, dirt, or other nonwasting assets. Indeed, rock, gravel, and dirt are normally stored in piles that are unprotected from weather. New inventory is simply piled on top of the old. Inventory that is sold is taken from the top of the pile because it is convenient to do so. Accordingly, the last inventory purchased is the first inventory sold. For example, **Vulcan Materials Co.**, which claims to be the nation's largest producer of construction aggregates (stone and gravel), uses LIFO. Regardless of whether the flow of physical goods occurs on a LIFO or FIFO basis, costs can flow differently. The flow of inventory through the physical facility is a separate issue from the flow of costs through the accounting system.



## KEY FEATURES OF INTERNAL CONTROL SYSTEMS

### LO 3

Identify the key elements of a strong system of internal control.

Suppose Wal-Mart's corporate-level executives establish a policy to ensure that inventory items have a short shelf life. More specifically, the executives decide to discount the price of any inventory item that is not sold within 30 days. How do the executives know that the store managers around the world will implement this policy? The answer: by establishing an effective set of internal controls.

**Internal controls** are the policies and procedures used to provide reasonable assurance that the objectives of an enterprise will be accomplished.<sup>1</sup>

Internal controls can be divided into two categories: (1) **accounting controls** are designed to safeguard company assets and ensure reliable accounting records; and (2) **administrative controls** are concerned with evaluating performance and assessing the degree of compliance with company policies and public laws.

Internal control systems vary from company to company. However, most systems include certain basic policies and procedures that have proven effective over time. A discussion of the more common features of a strong system of internal control follows.

### Separation of Duties

The likelihood of fraud or theft is reduced if collusion is required to accomplish it. Clear **separation of duties** is frequently used as a deterrent to corruption. When duties are separated, the work of one employee can act as a check on the work of another employee. For example, a person selling seats to a movie may be tempted to steal money received from customers who enter the theater. This temptation is reduced if the person staffing the box office is required to issue tickets that a second employee collects as people enter the theater. If ticket stubs collected by the second employee are compared with the cash receipts from ticket sales, any cash shortages would become apparent. Furthermore, friends and relatives of the ticket agent could not easily enter the theater without paying. Theft or unauthorized entry would require collusion between the ticket agent and the usher who collects the tickets. Both individuals would have to be dishonest enough to steal, yet trustworthy enough to convince each other they would keep the embezzlement secret. Whenever possible, the functions of *authorization*, *recording*, and *custody of assets* should be performed by separate individuals.

<sup>1</sup>AICPA Professional Standards, vol. 1, sec. 320, par. 6 (June 1, 1989).

## Quality of Employees

A business is only as good as the people it employs. Cheap labor is not a bargain if the employees are incompetent. Employees should be properly trained. In fact, they should be trained to perform a variety of tasks. The ability of employees to substitute for one another prevents disruptions when co-workers are absent because of illnesses, vacations, or other commitments. The capacity to rotate jobs also relieves boredom and increases respect for the contributions of other employees. Every business should strive to maximize the productivity of every employee. Ongoing training programs are essential to a strong system of internal control.

## Bonded Employees

The best way to ensure employee honesty is to hire individuals with *high levels of personal integrity*. Employers should screen job applicants using interviews, background checks, and recommendations from prior employers or educators. Even so, screening programs may fail to identify character weaknesses. Further, unusual circumstances may cause honest employees to go astray. Therefore, employees in positions of trust should be bonded. A **fidelity bond** provides insurance that protects a company from losses caused by employee dishonesty.

## Required Absences

Employees should be required to take regular vacations and their duties should be rotated periodically. Employees may be able to cover up fraudulent activities if they are always present at work. Consider the case of a parking meter collection agent who covered the same route for several years with no vacation. When the agent became sick, a substitute collected more money each day than the regular reader usually reported. Management checked past records and found that the ill meter reader had been understating the cash receipts and pocketing the difference. If management had required vacations or rotated the routes, the embezzlement would have been discovered much earlier.

## Procedures Manual

Appropriate accounting procedures should be documented in a **procedures manual**. The manual should be routinely updated. Periodic reviews should be conducted to ensure that employees are following the procedures outlined in the manual.

## Authority and Responsibility

Employees are motivated by clear lines of authority and responsibility. They work harder when they have the authority to use their own judgment and they exercise reasonable caution when they are held responsible for their actions. Businesses should prepare an **authority manual** that establishes a definitive *chain of command*. The authority manual should guide both specific and general authorizations. **Specific authorizations** apply to specific positions within the organization. For example, investment decisions are authorized at the division level while hiring decisions are authorized at the departmental level. In contrast, **general authority** applies across different levels of management. For example, employees at all levels may be required to fly coach or to make purchases from specific vendors.

## Prenumbered Documents

How would you know if a check were stolen from your check book? If you keep a record of your check numbers, the missing number would tip you off immediately. Businesses also use prenumbered checks to avoid the unauthorized use of their bank accounts. In fact, prenumbered forms are used for all important documents such as purchase orders, receiving reports, invoices, and checks. To reduce errors, prenumbered forms should be as simple and easy to use as possible. Also, the documents should allow for authorized signatures. For example, credit sales slips should be signed by the customer to clearly establish who made the purchase, reducing the likelihood of unauthorized transactions.

## Physical Control

Employees walk away with billions of dollars of business assets each year. To limit losses, companies should establish adequate physical control over valuable assets. For example, inventory should be kept in a storeroom and not released without proper authorization. Serial numbers on equipment should be recorded along with the name of the individual who is responsible for the equipment. Unannounced physical counts should be conducted randomly to verify the presence of company-owned equipment. Certificates of deposit and marketable securities should be kept in fireproof vaults. Access to these vaults should be limited to authorized personnel. These procedures protect the documents from fire and limit access to only those individuals who have the appropriate security clearance to handle the documents.

In addition to safeguarding assets, there should be physical control over the accounting records. The accounting journals, ledgers, and supporting documents should be kept in a fireproof safe. Only personnel responsible for recording transactions in the journals should have access to them. With limited access, there is less chance that someone will change the records to conceal fraud or embezzlement.

## Performance Evaluations

Because few people can evaluate their own performance objectively, internal controls should include independent verification of employee performance. For example, someone other than the person who has control over inventory should take a physical count of inventory. Internal and external audits serve as independent verification of performance. Auditors should evaluate the effectiveness of the internal control system as well as verify the accuracy of the accounting records. In addition, the external auditors attest to the company's use of generally accepted accounting principles in the financial statements.

## Limitations

A system of internal controls is designed to prevent or detect errors and fraud. However, no control system is foolproof. Internal controls can be circumvented by collusion among employees. Two or more employees working together can hide embezzlement by covering for each other. For example, if an embezzler goes on vacation, fraud will not be reported by a replacement who is in collusion with the embezzler. No system can prevent all fraud. However, a good system of internal controls minimizes illegal or unethical activities by reducing temptation and increasing the likelihood of early detection.

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### CHECK *Yourself* 4.3

What are nine features of an internal control system?

#### Answer

The nine features follow.

1. Separating duties so that fraud or theft requires collusion.
  2. Hiring and training competent employees.
  3. Bonding employees to recover losses through insurance.
  4. Requiring employees to be absent from their jobs so that their replacements can discover errors or fraudulent activity that might have occurred.
  5. Establishing proper procedures for processing transactions.
  6. Establishing clear lines of authority and responsibility.
  7. Using prenumbered documents.
  8. Implementing physical controls such as locking cash in a safe.
  9. Conducting performance evaluations through independent internal and external audits.
-

## ACCOUNTING FOR CASH

For financial reporting purposes, **cash** generally includes currency and other items that are payable *on demand*, such as checks, money orders, bank drafts, and certain savings accounts. Savings accounts that impose substantial penalties for early withdrawal should be classified as *investments* rather than cash. Postdated checks or IOUs represent *receivables* and should not be included in cash. As illustrated in Exhibit 4.3, most companies combine currency and other payable on demand items in a single balance sheet account with varying titles.

Companies must maintain a sufficient amount of cash to pay employees, suppliers, and other creditors. When a company fails to pay its legal obligations, its creditors can force the company into bankruptcy. Even so, management should avoid accumulating more cash than is needed. The failure to invest excess cash in earning assets reduces profitability. Cash inflows and outflows must be managed to prevent a shortage or surplus of cash.

### Controlling Cash

Controlling cash, more than any other asset, requires strict adherence to internal control procedures. Cash has universal appeal. A relatively small suitcase filled with high-denomination currency can represent significant value. Furthermore, the rightful owner of currency is difficult to prove. In most cases, possession constitutes ownership. As a result, cash is highly susceptible to theft and must be carefully protected. Cash is most susceptible to embezzlement when it is received or disbursed. The following controls should be employed to reduce the likelihood of theft.

#### Cash Receipts

A record of all cash collections should be prepared immediately upon receipt. The amount of cash on hand should be counted regularly. Missing amounts of money can be detected by comparing the actual cash on hand with the book balance. Employees who receive cash should give customers a copy of a written receipt. Customers usually review their receipts to ensure they have gotten credit for the amount paid and call any errors to the receipts clerk's attention. This not only reduces errors but also provides a control on the clerk's honesty. Cash receipts should be deposited in a bank on a timely basis. Cash collected late in the day should be deposited in a night depository. Every effort should be made to minimize the amount of cash on hand. Keeping large amounts of cash on hand not only increases the risk of loss from theft but also places employees in danger of being harmed by criminals who may be tempted to rob the company.

#### Cash Payments

To effectively control cash, a company should make all disbursements using checks, thereby providing a record of cash payments. All checks should be prenumbered, and unused checks should be locked up. Using prenumbered checks allows companies to easily identify lost or stolen checks by comparing the numbers on unused and canceled checks with the numbers used for legitimate disbursements.

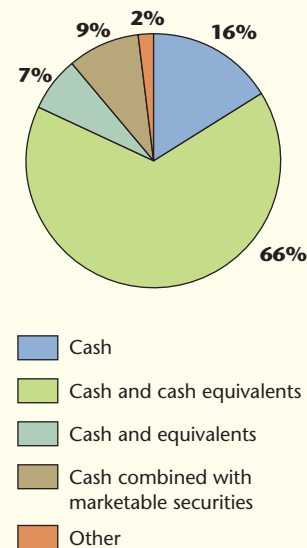
The duties of approving disbursements, signing checks, and recording transactions should be separated. If one person is authorized to approve, sign, and record checks, he or she could falsify supporting documents, write an unauthorized check, and record a cover-up transaction in the accounting records. By separating these duties, the check signer reviews the documentation provided by the approving individual before signing the check. Likewise, the recording clerk reviews the work of both the approving person and the check signer when the disbursement is recorded in the accounting records. Thus writing unauthorized checks requires trilevel collusion.

### LO 4

Identify special internal controls for cash.

### EXHIBIT 4.3

Balance Sheet Classifications That Include the Word Cash



Data Source: AICPA, *Accounting Trends and Techniques*, 2006.

Supporting documents with authorized approval signatures should be required when checks are presented to the check signer. For example, a warehouse receiving order should be matched with a purchase order before a check is approved to pay a bill from a supplier. Before payments are approved, invoice amounts should be checked and payees verified as valid vendors. Matching supporting documents with proper authorization discourages employees from creating phony documents for a disbursement to a friend or fictitious business. Also, the approval process serves as a check on the accuracy of the work of all employees involved.

Supporting documents should be marked *Paid* when the check is signed. If the documents are not indelibly marked, they could be retrieved from the files and resubmitted for a duplicate, unauthorized payment. A payables clerk could collude with the payee to split extra cash paid out by submitting the same supporting documents for a second payment.

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## Reality BYTES

### THE COST OF PROTECTING CASH

Could you afford to buy a safe like the one shown here? The vault is only one of many expensive security devices used by banks to safeguard cash. By using checking accounts, companies are able to avoid many of the costs associated with keeping cash safe. In addition to providing physical control, checking accounts enable companies to maintain a written audit trail of cash receipts and payments. Checking accounts represent the most widely used internal control device in modern society. It is difficult to imagine a business operating without the use of checking accounts.



---

All spoiled and voided checks should be defaced and retained. If defaced checks are not retained, an employee could steal a check and then claim that it was written incorrectly and thrown away. The clerk could then use the stolen check to make an unauthorized payment.

### Checking Account Documents

The previous section explained the need for businesses to use checking accounts. A description of four main types of forms associated with a bank checking account follows.

#### Signature Card

A bank **signature card** shows the bank account number and the signatures of the people authorized to sign checks. The card is retained in the bank's files. If a bank employee is unfamiliar with the signature on a check, he or she can refer to the signature card to verify the signature before cashing the check.

#### Deposit Ticket

Each deposit of cash or checks is accompanied by a **deposit ticket**, which normally identifies the account number and the name of the account. The depositor lists the individual amounts of currency, coins, and checks, as well as the total deposited, on the deposit ticket.



## Bank Check

A written check affects three parties: (1) the person or business writing the check (the *payer*); (2) the bank on which the check is drawn; and (3) the person or business to whom the check is payable (the *payee*). Companies often write **checks** using multicopy, prenumbered forms, with the name of the issuing business preprinted on the face of each check. A remittance notice is usually attached to the check forms. This portion of the form provides the issuer space to record what the check is for (e.g., what invoices are being paid), the amount being disbursed, and the date of payment. When signed by the person whose signature is on the signature card, the check authorizes the bank to transfer the face amount of the check from the payer's account to the payee.

## Bank Statement

Periodically, the bank sends the depositor a **bank statement**. The bank statement is presented from the bank's point of view. Checking accounts are liabilities to a bank because the bank is obligated to pay back the money that customers have deposited in their accounts. Therefore, in the bank's accounting records a customer's checking account has a *credit* balance. As a result, **bank statement debit memos** describe transactions that reduce the customer's account balance (the bank's liability). **Bank statement credit memos** describe activities that increase the customer's account balance (the bank's liability). Since a checking account is an asset (cash) to the depositor, a *bank statement debit memo* requires a *credit entry* to the cash account on the depositor's books. Likewise, when a bank tells you that it has credited your account, you will debit your cash account in response.

Bank statements normally report (a) the balance of the account at the beginning of the period; (b) additions for customer deposits made during the period; (c) other additions described in credit memos (e.g., for interest earned); (d) subtractions for the payment of checks drawn on the account during the period; (e) other subtractions described in debit memos (e.g., for service charges); (f) a running balance of the account; and (g) the balance of the account at the end of the period. The sample bank statement in Exhibit 4.4 on the next page illustrates these items with references to the preceding letters in parentheses. Normally, the canceled checks or copies of them are enclosed with the bank statement.

## Reconciling the Bank Account

Usually the ending balance reported on the bank statement differs from the balance in the depositor's cash account as of the same date. The discrepancy is normally attributable to timing differences. For example, a depositor deducts the amount of a check from its cash account when it writes the check. However, the bank does not deduct the amount of the check from the depositor's account until the payee presents it for payment, which may be days, weeks, or even months after the check is written. As a result, the balance on the depositor's books is lower than the balance on the bank's books. Companies prepare a **bank reconciliation** to explain the differences between the cash balance reported on the bank statement and the cash balance recorded in the depositor's accounting records.

### LO 5

Prepare a bank reconciliation.

## Determining True Cash Balance

A bank reconciliation normally begins with the cash balance reported by the bank which is called the **unadjusted bank balance**. The adjustments necessary to determine the amount of cash that the depositor actually owns as of the date of the bank statement are then added to and subtracted from the unadjusted bank balance. The final total is the **true cash balance**. The true cash balance is independently reached a second time by making adjustments to the **unadjusted book balance**. The bank account is reconciled when the true cash balance determined from the perspective of the unadjusted *bank* balance agrees with the true cash balance determined from the perspective of the unadjusted *book* balance. The procedures a company uses to determine the *true cash balance* from the two different perspectives are outlined here.



## EXHIBIT 4.4



of Frisco County

2121 Westbury Drive • Harrison, Nevada • 54269 - 0001

**Green Shades Resorts, Inc**

1439 Lazy Lane

Harrison, Nevada 54275 - 0023

Account Number  
53-9872-3

Checking Account Summary	On This Date 8/31/2003	Your Balance Was (a) 4,779.86	Deposits Added 3,571.72	No. Deposits 5	Checks Paid 4,537.22	No. Checks 22
	Other Debits	Resulting in a Balance of		On This Date		Enclosures
	297.91	(g) 3,516.45		9/30/2003		29
Checks and Debits		Deposits and Credits		Date	Balance	
(d) 15.82	24.85	(b) 600.25		9/3	(f) 5,339.44	
249.08	497.00			9/5	4,593.36	
42.53	124.61			9/7	4,426.22	
79.87	859.38			9/8	3,486.97	
685.00	742.59	711.43		9/9	2,770.81	
25.75	38.98			9/12	2,706.08	
36.45	59.91			9/14	2,609.72	
	(e) 8.40 DM	(c) 940.00 CM		9/15	3,541.32	
61.40		689.47		9/18	4,169.39	
289.51 NS				9/19	3,879.88	
71.59	82.00			9/21	3,726.29	
312.87				9/24	3,413.42	
25.00		630.57		9/27	4,018.99	
227.00				9/28	3,791.99	
95.06	180.48			9/30	3,516.45	

LEGEND – NS Nonsufficient Funds • DM Debit Memo • CM Credit Memo

FIRST STATE BANK OF FRISCO COUNTY

**Adjustments to the Bank Balance**

A typical format for determining the true cash balance beginning with the unadjusted bank balance is

Unadjusted bank balance
+ Deposits in transit
– Outstanding checks
= True cash balance

**Deposits in transit.** Companies frequently leave deposits in the bank's night depository or make them on the day following the receipt of cash. Such deposits are called **deposits in transit**. Since these deposits have been recorded in the depositor's accounting records but have not yet been added to the depositor's account by the bank, they must be added to the unadjusted bank balance.

**Outstanding checks.** These are disbursements that have been properly recorded as cash deductions on the depositor's books. However, the bank has not deducted the amounts from the depositor's bank account because the checks have not yet been presented by the payee to the bank for payment; that is, the checks have not cleared the bank. **Outstanding checks** must be subtracted from the unadjusted bank balance to determine the true cash balance.

### Adjustments to the Book Balance

A typical format for determining the true cash balance beginning with the unadjusted book balance is as follows.

Unadjusted book balance
+ Accounts receivable collections
+ Interest earned
– Bank service charges
– <u>Non-sufficient-funds (NSF) checks</u>
= True cash balance

**Accounts receivable collections.** To collect cash as quickly as possible, many companies have their customers send payments directly to the bank. The bank adds the collection directly to the depositor's account and notifies the depositor about the collection through a credit memo that is included on the bank statement. The depositor adds the amount of the cash collections to the unadjusted book balance in the process of determining the true cash balance.

**Interest earned.** Banks pay interest on certain checking accounts. The amount of the interest is added directly to the depositor's bank account. The bank notifies the depositor about the interest through a credit memo that is included on the bank statement. The depositor adds the amount of the interest revenue to the unadjusted book balance in the process of determining the true cash balance.

**Service charges.** Banks frequently charge depositors fees for services performed. They may also charge a penalty if the depositor fails to maintain a specified minimum cash balance throughout the period. Banks deduct such fees and penalties directly from the depositor's account and advise the depositor of the deduction through a debit memo that is included on the bank statement. The depositor deducts such **service charges** from the unadjusted book balance to determine the true cash balance.

**Non-sufficient-funds (NSF) checks.** **NSF checks** are checks that a company obtains from its customers and deposits in its checking account. However, when the checks are submitted to the customers' banks for payment, the banks refuse payment because there is insufficient money in the customers' accounts. When such checks are returned, the amounts of the checks are deducted from the company's bank account balance. The company is advised of NSF checks through debit memos that appear on the bank statement. The depositor deducts the amounts of the NSF checks from the unadjusted book balance in the process of determining the true cash balance.

### Correction of Errors

In the course of reconciling the bank statement with the cash account, the depositor may discover errors in the bank's records, the depositor's records, or both. If an error is found on the bank statement, an adjustment for it is made to the unadjusted bank balance to determine the true cash balance, and the bank should be notified immediately to correct its records. Errors made by the depositor require adjustments to the book balance to arrive at the true cash balance.

### Certified Checks

A **certified check** is guaranteed for payment by a bank. Whereas a regular check is deducted from the customer's account when it is presented for payment, a certified check is deducted from the customer's account when the bank certifies that the check is good. Certified checks, therefore, *have* been deducted by the bank in determining the unadjusted

bank balance, whether they have cleared the bank or remain outstanding as of the date of the bank statement. Since certified checks are deducted both from bank and depositor records immediately, they do not cause differences between the depositor and bank balances. As a result, certified checks are not included in a bank reconciliation.

## Illustrating a Bank Reconciliation

The following example illustrates preparing the bank reconciliation for Green Shades Resorts, Inc. (GSRI). The bank statement for GSRI is displayed in Exhibit 4.4. Exhibit 4.5 illustrates the completed bank reconciliation. The items on the reconciliation are described below.

### Adjustments to the Bank Balance

As of September 30, 2010, the bank statement showed an unadjusted balance of \$3,516.45. A review of the bank statement disclosed three adjustments that had to be made to the unadjusted bank balance to determine GSRI's true cash balance.

1. Comparing the deposits on the bank statement with deposits recorded in GSRI's accounting records indicated there was \$724.11 of deposits in transit.
2. An examination of the returned checks disclosed that the bank had erroneously deducted a \$25 check written by Green Valley Resorts from GSRI's bank account. This amount must be added back to the unadjusted bank balance to determine the true cash balance.
3. The checks returned with the bank statement were sorted and compared to the cash records. Three checks with amounts totaling \$235.25 were outstanding.

After these adjustment are made GSRI's true cash balance is determined to be \$4,030.31.

### EXHIBIT 4.5

#### GREEN SHADES RESORTS, INC.

##### Bank Reconciliation

September 30, 2010

<b>Unadjusted bank balance, September 30, 2010</b>	\$3,516.45
Add: Deposits in transit	724.11
Bank error: Check drawn on Green Valley Resorts charged to GSRI	25.00
Less: Outstanding checks	

Check No.	Date	Amount
639	Sept. 18	\$ 13.75
646	Sept. 20	29.00
672	Sept. 27	192.50

Total	(235.25)
<b>True cash balance, September 30, 2010</b>	<u><b>\$4,030.31</b></u>
<b>Unadjusted book balance, September 30, 2010</b>	\$3,361.22
Add: Receivable collected by bank	940.00
Error made by accountant (Check no. 633 recorded as \$63.45 instead of \$36.45)	27.00
Less: Bank service charges	(8.40)
NSF check	(289.51)
<b>True cash balance, September 30, 2010</b>	<u><b>\$4,030.31</b></u>

### Adjustments to the Book Balance

As indicated in Exhibit 4.5, GSRI's unadjusted book balance as of September 30, 2010, was \$3,361.22. This balance differs from GSRI's true cash balance because of four unrecorded accounting events:

1. The bank collected a \$940 account receivable for GSRI.
2. GSRI's accountant made a \$27 recording error.
3. The bank charged GSRI an \$8.40 service fee.
4. GSRI had deposited a \$289.51 check from a customer who did not have sufficient funds to cover the check.

Two of these four adjustments increase the unadjusted cash balance. The other two decrease the unadjusted cash balance. After the adjustments have been recorded, the cash account reflects the true cash balance of \$4,030.31 (\$3,361.22 unadjusted cash balance + \$940.00 receivable collection + \$27.00 recording error – \$8.40 service charge – \$289.51 NSF check). Since the true balance determined from the perspective of the bank statement agrees with the true balance determined from the perspective of GSRI's books, the bank statement has been successfully reconciled with the accounting records.

### Updating GSRI's Accounting Records

Each of the adjustments to the book balance must be recorded in GSRI's financial records. The effects of each adjustment on the financial statements are as follows.

#### ADJUSTMENT 1 *Recording the \$940 receivable collection increases cash and reduces accounts receivable.*

The event is an asset exchange transaction. The effect of the collection on GSRI's financial statements is

Assets				=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Accts. Rec.											
940	+	(940)		=	NA	+	NA	NA	–	NA	=	NA	940 OA

#### ADJUSTMENT 2 *Assume the \$27 recording error occurred because GSRI's accountant accidentally transposed two numbers when recording check no. 633 for utilities expense.*

The check was written to pay utilities expense of \$36.45 but was recorded as a \$63.45 disbursement. Since cash payments are overstated by \$27.00 (\$63.45 – \$36.45), this amount must be added back to GSRI's cash balance and deducted from the utilities expense account, which increases net income. The effects on the financial statements are

Assets				=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	=						Ret. Earn.						
27	=	NA	+				27	NA	–	(27)	=	27	27 OA

**ADJUSTMENT 3** *The \$8.40 service charge is an expense that reduces assets, stockholders' equity, net income, and cash.*

The effects are

Assets	=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	=			Ret. Earn.						
(8.40)	=	NA	+	(8.40)	NA	–	8.40	=	(8.40)	(8.40) OA

**ADJUSTMENT 4** *The \$289.51 NSF check reduces GSRI's cash balance.*

When it originally accepted the customer's check, GSRI increased its cash account. Since there is not enough money in the customer's bank account to pay the check, GSRI didn't actually receive cash so GSRI must reduce its cash account. GSRI will still try to collect the money from the customer. In the meantime, it will show the amount of the NSF check as an account receivable. The adjusting entry to record the NSF check is an asset exchange transaction. Cash decreases and accounts receivable increases. The effect on GSRI's financial statements is

Assets	=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash + Accts. Rec.										
(289.51) + 289.51	=	NA	+	NA	NA	–	NA	=	NA	(289.51) OA

## Answers to The *Curious* Accountant

its oldest inventory first. As explained in the text material, GAAP allows a company to report its costs of goods sold in an order that is different from the actual physical flow of its goods. The primary reason some companies use the LIFO assumption is to reduce income taxes. Over the years, Albertson's has saved approximately \$100 million in taxes by using the LIFO versus the FIFO cost flow assumption when computing its taxable income.

Even though **Albertson's** uses the last-in, first-out cost flow assumption for financial reporting purposes, it, like most other companies, actually sells

### THE FINANCIAL

### ANALYST

#### LO 6

Explain the importance of inventory turnover to a company's profitability.

Assume a grocery store sells two brands of kitchen cleansers, Zjax and Cosmos. Zjax costs \$1 and sells for \$1.25, resulting in a gross margin of \$0.25 (\$1.25 – \$1.00). Cosmos costs \$1.20 and sells for \$1.60, resulting in a gross margin of \$0.40 (\$1.60 – \$1.20). Is it more profitable to stock Cosmos than Zjax? Not if the store can sell significantly more cans of Zjax.

Suppose the lower price results in higher customer demand for Zjax. If the store can sell 7,000 units of Zjax but only 3,000 units of Cosmos, Zjax will provide a total gross profit of \$1,750 (7,000 units × \$0.25 per unit), while Cosmos will provide only \$1,200 (3,000 units × \$0.40 per unit). How fast inventory sells is as important as the spread

between cost and selling price. To determine how fast inventory is selling, financial analysts calculate a ratio that measures the *average number of days it takes to sell inventory*.

## Average Number of Days to Sell Inventory

The first step in calculating the average number of days it takes to sell inventory is to compute the **inventory turnover**, as follows.

$$\frac{\text{Cost of goods sold}}{\text{Inventory}}$$

The result of this computation is the number of times the balance in the Inventory account is turned over (sold) each year. To more easily interpret the inventory turnover ratio, analysts often take a further step and determine the **average number of days to sell inventory** (also called the **average days in inventory**), computed as

$$\frac{365}{\text{Inventory turnover}}$$

## Is It a Marketing or an Accounting Decision?

As suggested, overall profitability depends upon two elements: gross margin and inventory turnover. The most profitable combination would be to carry high-margin inventory that turns over rapidly. To be competitive, however, companies must often concentrate on one or the other of the elements. For example, *discount merchandisers* such as **Costco** offer lower prices to stimulate greater sales. In contrast, fashionable stores such as **Neiman Marcus** charge higher prices to compensate for their slower inventory turnover. These upscale stores justify their higher prices by offering superior style, quality, convenience, service, etc. While decisions about pricing, advertising, service, and so on are often viewed as marketing decisions, effective choices require understanding the interaction between the gross margin percentage and inventory turnover.

## Real-World Data

Exhibit 4.6 shows the *average number of days to sell inventory* for eight real-world companies in three different industries. The data raise several questions.

First, why do **Concha y Toro** and **Willamette Valley Vineyards** take so long to sell their inventories compared to the other companies? Both of these companies produce and sell wine. Quality wine is aged before it is sold; time spent in inventory is actually a part of the production process. In the wine world, wines produced by Willamette Valley are, on average, considered to be of higher quality than those produced by Concha y Toro. This higher quality results, in part, from the longer time Willamette Valley wines spend aging prior to sale.

**EXHIBIT 4.6**

Industry	Company	Average Number of Days to Sell Inventory
Fast Food	<b>McDonald's</b>	10
	<b>Starbucks</b>	77
	<b>Yum! Brands</b>	12
Office Supplies	<b>Office Depot</b>	50
	<b>OfficeMax</b>	50
	<b>Staples</b>	54
Wine	<b>Concha y Toro</b>	203
	<b>Willamette Valley Vineyards</b>	348



Why does Starbucks hold its inventory so much longer than the other two fast-food businesses? Starbucks' inventory is mostly coffee. It is more difficult for Starbucks to obtain coffee than it is for McDonald's to obtain beef or Yum! Brands to obtain flour, cheese, and fresh vegetables. Very little coffee is grown in the United States (Hawaii is the only state that produces coffee). Since purchasing coffee requires substantial delivery time, Starbucks cannot order its inventory at the last minute. This problem is further complicated by the fact that coffee harvests are seasonal. Cattle, on the other hand, can be processed into hamburgers year-round. As a result, Starbucks must hold inventory longer than McDonald's or Yum! Brands.

Finally, why do companies in the office supply business take longer to sell inventory than those in the fast-food business? Part of the answer is that food is perishable and stationery is not. But there is also the fact that office supply stores carry many more inventory items than do fast-food restaurants. It is much easier to anticipate customer demand if a company sells only 20 different items than if the company sells 20,000 different items. The problem of anticipating customer demand is solved by holding larger quantities of inventory.

### Effects of Cost Flow on Ratio Analysis

Since the amounts of ending inventory and cost of goods sold are affected by the cost flow method (FIFO, LIFO, etc.) a company uses, the gross margin and inventory turnover ratios are also affected by the cost flow method used. Further, since cost of goods sold affects the amount of net income and retained earnings, many other ratios are also affected by the inventory cost flow method that a company uses. Financial analysts must consider that the ratios they use can be significantly influenced by which accounting methods a company chooses.



## A Look Back

This chapter discussed the inventory cost flow methods of first-in, first-out (FIFO), last-in, first-out (LIFO), weighted average, and specific identification. Under *FIFO*, the cost of the items purchased first is reported on the income statement, and the cost of the items purchased last is reported on the balance sheet. Under *LIFO*, the cost of the items purchased last is reported on the income statement, and the cost of the items purchased first is reported on the balance sheet. Under the *weighted-average method*, the average cost of inventory is reported on both the income statement and the balance sheet. Finally, under specific identification the actual cost of the goods is reported on the income statement and the balance sheet.

The policies and procedures used to provide reasonable assurance that the objectives of an enterprise will be accomplished are called *internal controls*, which can be subdivided into two categories: accounting controls and administrative controls. *Accounting controls* are composed of procedures designed to safeguard the assets and ensure that the accounting records contain reliable information. *Administrative controls* are designed to evaluate performance and the degree of compliance with company policies and public laws. While the mechanics of internal control systems vary from company to company, the more prevalent features include the following.

1. *Separation of duties.* Whenever possible, the functions of authorization, recording, and custody should be exercised by different individuals.
2. *Quality of employees.* Employees should be qualified to competently perform the duties that are assigned to them. Companies must establish hiring practices to screen out unqualified candidates. Furthermore, procedures should be established to ensure that employees receive appropriate training to maintain their competence.
3. *Bonded employees.* Employees in sensitive positions should be covered by a fidelity bond that provides insurance to reimburse losses due to illegal actions committed by employees.

4. *Required absences.* Employees should be required to take extended absences from their jobs so that they are not always present to hide unscrupulous or illegal activities.
5. *Procedures manual.* To promote compliance, the procedures for processing transactions should be clearly described in a manual.
6. *Authority and responsibility.* To motivate employees and promote effective control, clear lines of authority and responsibility should be established.
7. *Prenumbered documents.* Prenumbered documents minimize the likelihood of missing or duplicate documents. Prenumbered forms should be used for all important documents such as purchase orders, receiving reports, invoices, and checks.
8. *Physical control.* Locks, fences, security personnel, and other physical devices should be employed to safeguard assets.
9. *Performance evaluations.* Because few people can evaluate their own performance objectively, independent performance evaluations should be performed. Substandard performance will likely persist unless employees are encouraged to take corrective action.

Because cash is such an important business asset and because it is tempting to steal, much of the discussion of internal controls in this chapter focused on cash controls. Special procedures should be employed to control the receipts and payments of cash. One of the most common control policies is to use *checking accounts* for all payments except petty cash disbursements.

A *bank reconciliation* should be prepared each month to explain differences between the bank statement and a company's internal accounting records. A common reconciliation format determines the true cash balance based on both bank and book records. Items that typically appear on a bank reconciliation include the following:

Unadjusted bank balance	xxx	Unadjusted book balance	xxx
Add		Add	
Deposits in transit	xxx	Interest revenue	xxx
		Collection of receivables	xxx
Subtract		Subtract	
Outstanding checks	xxx	Bank service charges	xxx
		NSF checks	xxx
True cash balance	<u>xxx</u>	True cash balance	<u>xxx</u>

Agreement of the two true cash balances provides evidence that accounting for cash transactions has been accurate.

Finally, this chapter explains how to calculate the time it takes a company to sell its inventory. The measure of how fast inventory sells is called *inventory turnover*; it is computed by dividing cost of goods sold by inventory. The result of this computation is the number of times the balance in the inventory account is turned over each year. The *average number of days to sell inventory* can be determined by dividing the number of days in a year (365) by the inventory turnover ratio.

## A Look Forward



Accounting for receivables and payables was introduced in Chapter 2 using relatively simple illustrations. For example, we assumed that customers who purchased services on account always paid their bills. In real business practice, some customers do not pay their bills. Among other topics, Chapter 5 examines how companies account for uncollectible accounts receivable.



## SELF-STUDY REVIEW PROBLEM 1

Erie Jewelers sells gold earrings. Its beginning inventory of Model 407 gold earrings consisted of 100 pairs of earrings at \$50 per pair. Erie purchased two batches of Model 407 earrings during the year. The first batch purchased consisted of 150 pairs at \$53 per pair; the second batch consisted of 200 pairs at \$56 per pair. During the year, Erie sold 375 pairs of Model 407 earrings.

### Required

Determine the amount of product cost Erie would allocate to cost of goods sold and ending inventory assuming that Erie uses (a) FIFO, (b) LIFO, and (c) weighted average.

### Solution to Requirements a–c

#### Goods Available for Sale

Beginning inventory	100	@	\$50	=	\$ 5,000
First purchase	150	@	53	=	7,950
Second purchase	<u>200</u>	@	56	=	<u>11,200</u>
Goods available for sale	<u>450</u>				<u>\$24,150</u>

#### a. FIFO

Cost of Goods Sold	Pairs		Cost per Pair		Cost of Goods Sold
From beginning inventory	100	@	\$50	=	\$ 5,000
From first purchase	150	@	53	=	7,950
From second purchase	<u>125</u>	@	56	=	<u>7,000</u>
Total pairs sold	<u>375</u>				<u>\$19,950</u>

Ending inventory = Goods available for sale – Cost of goods sold

Ending inventory = \$24,150 – \$19,950 = \$4,200

#### b. LIFO

Cost of Goods Sold	Pairs		Cost per Pair		Cost of Goods Sold
From second purchase	200	@	\$56	=	\$11,200
From first purchase	150	@	53	=	7,950
From beginning inventory	<u>25</u>	@	50	=	<u>1,250</u>
Total pairs sold	<u>375</u>				<u>\$20,400</u>

Ending inventory = Goods available for sale – Cost of goods sold

Ending inventory = \$24,150 – \$20,400 = \$3,750

#### c. Weighted average

Goods available for sale ÷ Total pairs = Cost per pair

\$24,150 ÷ 450 = \$53.6667

Cost of goods sold 375 units @ \$53.6667 = \$20,125

Ending inventory 75 units @ \$53.6667 = \$4,025

## SELF-STUDY REVIEW PROBLEM 2

The following information pertains to Terry's Pest Control Company (TPCC) for July:

- The unadjusted bank balance at July 31 was \$870.
- The bank statement included the following items:
  - A \$60 credit memo for interest earned by TPCC.
  - A \$200 NSF check made payable to TPCC.
  - A \$110 debit memo for bank service charges.
- The unadjusted book balance at July 31 was \$1,400.
- A comparison of the bank statement with company accounting records disclosed the following:
  - A \$400 deposit in transit at July 31.
  - Outstanding checks totaling \$120 at the end of the month.

### Required

Prepare a bank reconciliation.

### Solution

TERRY'S PEST CONTROL COMPANY	
Bank Reconciliation	
July 31	
Unadjusted bank balance	\$ 870
Add: Deposits in transit	400
Less: Outstanding checks	(120)
True cash balance	<u>\$1,150</u>
Unadjusted book balance	\$1,400
Add: Interest revenue	60
Less: NSF check	(200)
Less: Bank service charges	(110)
True cash balance	<u>\$1,150</u>

## KEY TERMS

Accounting controls 140	Cash 143	Inventory cost flow methods 136	Service charges 147
Administrative controls 140	Certified check 147	Inventory turnover 151	Signature card 144
Authority manual 141	Checks 145	Last-in, first-out (LIFO) cost flow method 134	Specific authorizations 141
Average number of days to sell inventory (average days in inventory) 151	Consistency 139	Non-sufficient-funds (NSF) checks 147	Specific identification 134
Bank reconciliation 145	Deposit ticket 144	Outstanding checks 146	True cash balance 145
Bank statement 145	Deposits in transit 146	Physical flow of goods 134	Unadjusted bank balance 145
Bank statement credit memo 145	Fidelity bond 141	Procedures manual 141	Unadjusted book balance 145
Bank statement debit memo 145	First-in, first-out (FIFO) cost flow method 134	Separation of duties 140	Weighted-average cost flow method 134
	Full disclosure 139		
	General authority 141		
	Internal controls 140		

## QUESTIONS

- Name and describe the four cost flow methods discussed in this chapter.
- What are some advantages and disadvantages of the specific identification method of accounting for inventory?
- What are some advantages and disadvantages of using the FIFO method of inventory valuation?
- What are some advantages and disadvantages of using the LIFO method of inventory valuation?

5. In an inflationary period, which inventory cost flow method will produce the highest net income? Explain.
6. In an inflationary period, which inventory cost flow method will produce the largest amount of total assets on the balance sheet? Explain.
7. What is the difference between the flow of costs and the physical flow of goods?
8. Does the choice of cost flow method (FIFO, LIFO, or weighted average) affect the statement of cash flows? Explain.
9. Assume that Key Co. purchased 1,000 units of merchandise in its first year of operations for \$25 per unit. The company sold 850 units for \$40. What is the amount of cost of goods sold using FIFO? LIFO? Weighted average?
10. Assume that Key Co. purchased 1,500 units of merchandise in its second year of operation for \$27 per unit. Its beginning inventory was determined in Question 9. Assuming that 1,500 units are sold, what is the amount of cost of goods sold using FIFO? LIFO? Weighted average?
11. Refer to Questions 9 and 10. Which method might be preferable for financial statements? For income tax reporting? Explain.
12. In an inflationary period, which cost flow method, FIFO or LIFO, produces the larger cash flow? Explain.
13. Which inventory cost flow method produces the highest net income in a deflationary period?
14. What are the policies and procedures called that are used to provide reasonable assurance that the objectives of an enterprise will be accomplished?
15. What is the difference between accounting controls and administrative controls?
16. What are several features of an effective internal control system?
17. What is meant by *separation of duties*? Give an illustration.
18. What are the attributes of a high-quality employee?
19. What is a fidelity bond? Explain its purpose.
20. Why is it important that every employee periodically take a leave of absence or vacation?
21. What are the purpose and importance of a procedures manual?
22. What is the difference between specific and general authorizations?
23. Why should documents (checks, invoices, receipts) be prenumbered?
24. What procedures are important in the physical control of assets and accounting records?
25. What is the purpose of independent verification of performance?
26. What items are considered cash?
27. Why is cash more susceptible to theft or embezzlement than other assets?
28. Giving written copies of receipts to customers can help prevent what type of illegal acts?
29. What procedures can help to protect cash receipts?
30. What procedures can help protect cash disbursements?
31. What effect does a debit memo in a bank statement have on the Cash account? What effect does a credit memo in a bank statement have on the Cash account?
32. What information is normally included in a bank statement?
33. Why might a bank statement reflect a balance that is larger than the balance recorded in the depositor's books? What could cause the bank balance to be smaller than the book balance?
34. What is the purpose of a bank reconciliation?
35. What is an outstanding check?
36. What is a deposit in transit?
37. What is a certified check?
38. How is an NSF check accounted for in the accounting records?
39. What information does inventory turnover provide?
40. What is an example of a business that would have a high inventory turnover? A low inventory turnover?

## EXERCISES



### LO 1

All applicable Exercises are available with McGraw-Hill  
**Connect Accounting.**

#### Exercise 4-1 *Effect of inventory cost flow assumption on financial statements*

##### Required

For each of the following situations, fill in the blank with *FIFO*, *LIFO*, or *weighted average*.

- a. \_\_\_\_\_ would produce the highest amount of net income in an inflationary environment.
- b. \_\_\_\_\_ would produce the highest amount of assets in an inflationary environment.
- c. \_\_\_\_\_ would produce the lowest amount of net income in a deflationary environment.
- d. \_\_\_\_\_ would produce the same unit cost for assets and cost of goods sold in an inflationary environment.

- e. \_\_\_\_\_ would produce the lowest amount of net income in an inflationary environment.
- f. \_\_\_\_\_ would produce an asset value that was the same regardless of whether the environment was inflationary or deflationary.
- g. \_\_\_\_\_ would produce the lowest amount of assets in an inflationary environment.
- h. \_\_\_\_\_ would produce the highest amount of assets in a deflationary environment.

**Exercise 4-2** *Allocating product cost between cost of goods sold and ending inventory*

**LO 1, 2**

Ming Co. started the year with no inventory. During the year, it purchased two identical inventory items. The inventory was purchased at different times. The first purchase cost \$2,400 and the other, \$3,000. One of the items was sold during the year.

**Required**

Based on this information, how much product cost would be allocated to cost of goods sold and ending inventory on the year-end financial statements, assuming use of

- a. FIFO?
- b. LIFO?
- c. Weighted average?

**Exercise 4-3** *Allocating product cost between cost of goods sold and ending inventory: multiple purchases*

**LO 1, 2**

Rainey Company sells coffee makers used in business offices. Its beginning inventory of coffee makers was 200 units at \$25 per unit. During the year, Rainey made two batch purchases of coffee makers. The first was a 300-unit purchase at \$30 per unit; the second was a 250-unit purchase at \$35 per unit. During the period, Rainey sold 700 coffee makers.

**Required**

Determine the amount of product costs that would be allocated to cost of goods sold and ending inventory, assuming that Rainey uses

- a. FIFO.
- b. LIFO.
- c. Weighted average.

**Exercise 4-4** *Effect of inventory cost flow (FIFO, LIFO, and weighted average) on gross margin*

**LO 1, 2**

The following information pertains to Boone Company for 2009.



Beginning inventory	70 units @ \$26
Units purchased	280 units @ \$30

Ending inventory consisted of 30 units. Boone sold 320 units at \$40 each. All purchases and sales were made with cash.

**Required**

- a. Compute the gross margin for Boone Company using the following cost flow assumptions: (1) FIFO, (2) LIFO, and (3) weighted average.
- b. What is the dollar amount of difference in net income between using FIFO versus LIFO? (Ignore income tax considerations.)



- c. Determine the cash flow from operating activities, using each of the three cost flow assumptions listed in Requirement a. Ignore the effect of income taxes. Explain why these cash flows have no differences.

**LO 1, 2****Exercise 4-5** *Effect of inventory cost flow on ending inventory balance and gross margin*

Ross Sales had the following transactions for DVDs in 2010, its first year of operations.

Jan. 20	Purchased	75 units @ \$15	=	\$1,125
Apr. 21	Purchased	450 units @ \$20	=	9,000
July 25	Purchased	300 units @ \$23	=	6,900
Sept. 19	Purchased	100 units @ \$26	=	2,600

During the year, Ross Sales sold 850 DVDs for \$60 each.

**Required**

- Compute the amount of ending inventory Ross would report on the balance sheet, assuming the following cost flow assumptions: (1) FIFO, (2) LIFO, and (3) weighted average.
- Compute the difference in gross margin between the FIFO and LIFO cost flow assumptions.

**LO 1, 2****Exercise 4-6** *Income tax effect of shifting from FIFO to LIFO*

The following information pertains to the inventory of the Eaton Company.

Jan. 1	Beginning Inventory	600 units @ \$22
Apr. 1	Purchased	2,500 units @ \$25
Oct. 1	Purchased	700 units @ \$28

During the year, Eaton sold 3,300 units of inventory at \$40 per unit and incurred \$15,000 of operating expenses. Eaton currently uses the FIFO method but is considering a change to LIFO. All transactions are cash transactions. Assume a 30 percent income tax rate.

**Required**

- Prepare income statements using FIFO and LIFO.
- Determine the amount of income taxes Eaton would save if it changed cost flow methods.
- Determine the cash flow from operating activities under FIFO and LIFO.
- Explain why cash flow from operating activities is lower under FIFO when that cost flow method produced the higher gross margin.

**LO 1, 2****Exercise 4-7** *Effect of FIFO versus LIFO on income tax expense*

Beth Porter, Inc., had sales of \$225,000 for 2009, its first year of operation. On April 2, the company purchased 200 units of inventory at \$210 per unit. On September 1, an additional 150 units were purchased for \$230 per unit. The company had 50 units on hand at the end of the year. The company's income tax rate is 35 percent. All transactions are cash transactions.

**Required**

- The preceding paragraph describes five accounting events: (1) a sales transaction, (2) the first purchase of inventory, (3) a second purchase of inventory, (4) the recognition of cost of goods sold expense, and (5) the payment of income tax expense. Record the amounts of each event in horizontal statements models like the following ones, assuming first a FIFO and then a LIFO cost flow.

Effect of Events on Financial Statements												
Panel 1: FIFO Cost Flow												
Event No.	Balance Sheet						Income Statement				Statement of Cash Flows	
	Cash	+	Inventory	=	C. Stk.	+	Ret. Earn.	Rev.	–	Exp.	=	Net Inc.

Panel 2: LIFO Cost Flow												
Event No.	Balance Sheet						Income Statement				Statement of Cash Flows	
	Cash	+	Inventory	=	C. Stk.	+	Ret. Earn.	Rev.	–	Exp.	=	Net Inc.

- Compute net income using FIFO.
- Compute net income using LIFO.
- Explain the difference, if any, in the amount of income tax expense incurred using the two cost flow assumptions.
- How does the use of the FIFO versus the LIFO cost flow assumptions affect the statement of cash flows?

#### Exercise 4-8 Features of a strong internal control system

LO 3

##### Required

List and describe nine features of a strong internal control system discussed in this chapter.



#### Exercise 4-9 Internal controls for equipment

LO 3

##### Required

List the internal control procedures that pertain to the protection of business equipment.

#### Exercise 4-10 Features of internal control procedures for cash

LO 4

##### Required

List and discuss effective internal control procedures that apply to cash.



#### Exercise 4-11 Internal controls to prevent theft

LO 3

Sarah Black worked as the parts manager for Country Automobiles, a local automobile dealership. Sarah was very dedicated and never missed a day of work. Since Country was a small operation, she was the only employee in the parts department. Her duties consisted of ordering parts for stock and as needed for repairs, receiving the parts and checking them in, distributing them as needed to the shop or to customers for purchase, and keeping track of and taking the year-end inventory of parts. Country decided to expand and needed to secure additional financing. The local bank agreed to a loan contingent on an audit of the dealership. One requirement of the audit was to oversee the inventory count of both automobiles and parts on hand. Sarah was clearly nervous, explaining that she had just inventoried all parts in the parts department and supplied the auditors with a detailed list. The inventory showed parts on hand worth \$225,000. This seemed a little excessive, and the accountants decided they needed to verify at least a substantial part of the inventory. When the auditors began their counts, a pattern began to develop. Each type of part seemed to be one or two items short when the actual count was taken. This raised more concern. Although Sarah assured the auditors the parts were just misplaced, the auditors continued the count. After completing the count of parts on hand, the auditors could document only \$155,000 of actual parts. Suddenly, Sarah quit her job and moved to another state.



##### Required

- What do you suppose caused the discrepancy between the actual count and the count that Sarah had supplied?
- What procedures could be put into place to prevent this type of problem?

## LO 3

**Exercise 4-12** *Internal control procedures*

Dick Haney is opening a new business that will sell sporting goods. It will initially be a small operation, and he is concerned about the security of his assets. He will not be able to be at the business all of the time and will have to rely on his employees and internal control procedures to ensure that transactions are properly accounted for and assets are safeguarded. He will have a store manager and two other employees who will be sales personnel and stock personnel and who will also perform any other duties necessary. Dick will be in the business on a regular basis. He has come to you for advice.

**Required**

Write a memo to Dick outlining the procedures that he should implement to ensure that his store assets are protected and that the financial transactions are properly recorded.

## LO 5

**Exercise 4-13** *Treatment of NSF check*

The bank statement of Gear Supplies included a \$300 NSF check that one of Gear's customers had written to pay for services that were provided by Gear.

**Required**

- a. Show the effects of recognizing the NSF check on the financial statements by recording the appropriate amounts in a horizontal statements model like the following one.

Assets		=	Liab.	+	Equity	Rev.	-	Exp.	=	Net Inc.	Cash Flow
Cash	+ Accts. Rec.										

- b. Is the recognition of the NSF check on Gear's books an asset source, use, or exchange transaction?
- c. Suppose the customer redeems the check by giving Gear \$325 cash in exchange for the bad check. The additional \$25 paid a service fee charged by Gear. Show the effects on the financial statements in the horizontal statements model in Requirement *a*.
- d. Is the receipt of cash referred to in Requirement *c* an asset source, use, or exchange transaction?

## LO 5

**Exercise 4-14** *Adjustments to the balance per books***Required**

Identify which of the following items are added to or subtracted from the unadjusted *book balance* to arrive at the true cash balance. Distinguish the additions from the subtractions by placing a + beside the items that are added to the unadjusted book balance and a - beside those that are subtracted from it. The first item is recorded as an example.

Reconciling Items	Book Balance Adjusted?	Added or Subtracted?
Interest revenue	Yes	+
Deposits in transit		
Debit memo		
Bank service charge		
Charge for checks		
NSF check from customer		
Note receivable collected by the bank		
Outstanding checks		
Credit memo		

## LO 5

**Exercise 4-15** *Adjustments to the balance per bank***Required**

Identify which of the following items are added to or subtracted from the unadjusted *bank balance* to arrive at the true cash balance. Distinguish the additions from the subtractions by

placing a + beside the items that are added to the unadjusted bank balance and a – beside those that are subtracted from it. The first item is recorded as an example.

Reconciling Items	Bank Balance Adjusted?	Added or Subtracted?
Deposits in transit	Yes	+
Debit memo		
Credit memo		
Certified checks		
Petty cash voucher		
NSF check from customer		
Interest revenue		
Bank service charge		
Outstanding checks		

#### Exercise 4-16 *Adjusting the cash account*

LO 5

As of May 31, 2010, the bank statement showed an ending balance of \$18,500. The unadjusted Cash account balance was \$16,950. The following information is available.

1. Deposit in transit, \$2,630.
2. Credit memo in bank statement for interest earned in May, \$25.
3. Outstanding check, \$4,208.
4. Debit memo for bank service charge, \$53.

#### Required

Determine the true cash balance by preparing a bank reconciliation as of May 31, 2010, using the preceding information.

#### Exercise 4-17 *Determining the true cash balance, starting with the unadjusted bank balance*

LO 5

The following information is available for Marble Company for the month of August.

1. The unadjusted balance per the bank statement on August 31 was \$57,800.
2. Deposits in transit on August 31 were \$2,900.
3. A debit memo was included with the bank statement for a service charge of \$20.
4. A \$5,620 check written in August had not been paid by the bank.
5. The bank statement included a \$1,000 credit memo for the collection of a note. The principal of the note was \$950, and the interest collected was \$50.

#### Required

Determine the true cash balance as of August 31. (*Hint:* It is not necessary to use all of the preceding items to determine the true balance.)

#### Exercise 4-18 *Determining the true cash balance, starting with the unadjusted book balance*

LO 5

Smith Company had an unadjusted cash balance of \$8,550 as of April 30. The company's bank statement, also dated April 30, included a \$100 NSF check written by one of Smith's customers. There were \$920 in outstanding checks and \$250 in deposits in transit as of April 30. According to the bank statement, service charges were \$75, and the bank collected a \$700 note receivable for Smith. The bank statement also showed \$12 of interest revenue earned by Smith.

#### Required

Determine the true cash balance as of April 30. (*Hint:* It is not necessary to use all of the preceding items to determine the true balance.)

## LO 6

**Exercise 4-19** *Performing ratio analysis using real-world data*

**Safeway, Inc.**, operated 1,743 stores as of December 29, 2007. The following data were taken from the company's annual report. All dollar amounts are in millions.

	<b>Fiscal Years Ending</b>	
	<b>December 29, 2007</b>	<b>December 30, 2006</b>
Revenue	\$42,286.0	\$40,185.0
Cost of Goods Sold	30,133.1	28,604.0
Net Income	888.4	870.6
Merchandise Inventory	2,797.8	2,642.5

**Required**

- Compute Safeway's inventory turnover ratio for 2007 and 2006.
- Compute Safeway's average days to sell inventory for 2007 and 2006.
- Based on your computations in Requirements *a* and *b*, did Safeway's inventory management get better or worse from 2006 to 2007?

**PROBLEMS**

## LO 1, 2



**All applicable Problems are available with McGraw-Hill Connect Accounting.**

**Problem 4-20** *Effect of different inventory cost flow methods on financial statements*

The accounting records of Brooks Photography, Inc., reflected the following balances as of January 1, 2012:

Cash	\$19,000
Beginning inventory	6,750 (75 units @ \$90)
Common stock	7,500
Retained earnings	18,250

**CHECK FIGURES**

- Cost of Goods Sold—FIFO:  
\$28,450
- Net Income—LIFO: \$4,935

The following five transactions occurred in 2012.

- First purchase (cash) 100 units @ \$92
- Second purchase (cash) 175 units @ \$100
- Sales (all cash) 300 units @ \$170
- Paid \$15,000 cash for operating expenses.
- Paid cash for income tax at the rate of 30 percent of income before taxes.

**Required**

- Compute the cost of goods sold and ending inventory, assuming (1) FIFO cost flow, (2) LIFO cost flow, and (3) weighted-average cost flow.
- Use a vertical model to prepare the 2012 income statement, balance sheet, and statement of cash flows under FIFO, LIFO, and weighted average. (*Hint:* Record the events under an accounting equation before preparing the statements.)

## LO 3, 4

**Problem 4-21** *Using internal control to restrict illegal or unethical behavior***Required**

For each of the following fraudulent acts, describe one or more internal control procedures that could have prevented (or helped prevent) the problems.

- Paula Wissel, the administrative assistant in charge of payroll, created a fictional employee, wrote weekly checks to the fictional employee, and then personally cashed the checks for her own benefit.

- b. Larry Kent, the receiving manager of Southern Lumber, created a fictitious supplier named F&M Building Supply. F&M regularly billed Southern Lumber for supplies purchased. Kent had printed shipping slips and billing invoices with the name of the fictitious company and opened a post office box as the mailing address. Kent simply prepared a receiving report and submitted it for payment to the accounts payable department. The accounts payable clerk then paid the invoice when it was received because Kent acknowledged receipt of the supplies.
- c. Holly Baker works at a local hobby shop and usually operates the cash register. She has developed a way to give discounts to her friends. When they come by, she rings a lower price or does not charge the friend for some of the material purchased. At first, Baker thought she would get caught, but no one seemed to notice. Indeed, she has become so sure that there is no way for the owner to find out that she has started taking home some supplies for her own personal use.

#### Problem 4-22 Preparing a bank reconciliation

Tom Landry owns a construction business, Landry Supply Co. The following cash information is available for the month of October 2012.

As of October 31, the bank statement shows a balance of \$13,800. The October 31 unadjusted balance in the Cash account of Landry Supply Co. is \$12,700. A review of the bank statement revealed the following information.

1. A deposit of \$1,600 on October 31, 2012, does not appear on the October 31 bank statement.
2. A debit memo for \$250 was included in the bank statement for the purchase of a new supply of checks.
3. When checks written during the month were compared with those paid by the bank, three checks amounting to \$4,450 were found to be outstanding.
4. It was discovered that a check to pay for repairs was correctly written and paid by the bank for \$3,100 but was recorded on the books as \$1,600.

#### Required

Prepare a bank reconciliation at the end of October showing the true cash balance.

#### Problem 4-23 Missing information in a bank reconciliation

The following data apply to Owens Sports, Inc., for April 2010:

1. Balance per the bank on April 30, \$12,250.
2. Deposits in transit not recorded by the bank, \$2,700.
3. Bank error; check written by Owens on his personal checking account was drawn on the Owens Sports, Inc., account, \$900.
4. The following checks written and recorded by Owens Sports, Inc., were not included in the bank statement:

1901	\$ 250
1920	580
1921	1,650

5. Credit memo for note collected by the bank, \$1,100.
6. Service charge for collection of note, \$10.
7. The bookkeeper recorded a check written for \$560 to pay for April's office supplies as \$650 in the cash disbursements journal.
8. Bank service charge in addition to the note collection fee, \$40.
9. NSF checks returned by the bank, \$150.

#### Required

Determine the amount of the unadjusted cash balance per Owens Sports, Inc.'s books.

LO 5

#### CHECK FIGURE

True Cash Balance, October 31, 2012: \$10,950

LO 5



#### CHECK FIGURE

True Cash Balance, April 30, 2010: \$13,370



## LO 5



## CHECK FIGURE

b. No book adjustment

## LO 5

## CHECK FIGURE

a. True Cash Balance, July 31,  
2010: \$14,929**Problem 4-24** *Adjustments to the cash account based on the bank reconciliation***Required**

Determine whether the following items in Powers Imports' bank reconciliation require adjusting or correcting entries on Powers Imports' books.

- The bank collected \$7,000 of Powers Imports' accounts receivable. Powers Imports had instructed its customers to send their payments directly to the bank.
- The bank mistakenly gave Imports, Inc., credit for a \$500 deposit made by Powers Imports.
- Deposits in transit were \$5,600.
- Powers Imports' bank statement contained a \$750 NSF check. Powers Imports had received the check from a customer and had included it in one of its bank deposits.
- The bank statement indicated that Powers Imports earned \$80 of interest revenue.
- Powers Imports' accountant mistakenly recorded a \$230 check that was written to purchase supplies as \$370.
- Bank service charges for the month were \$50.
- The bank reconciliation disclosed the fact that \$600 had been stolen from Powers Imports' business.
- Outstanding checks amounted to \$1,700.

**Problem 4-25** *Bank reconciliation and adjustments to the Cash account*

The following information is available for River Bed Hotel for July 2010.

Bank Statement			
STATE BANK			
Bolta Vista, NV 10001			
River Bed Hotel 10 Main Street Bolta Vista, NV 10001		Account number 12-4567 July 31, 2010	
Beginning balance 6/30/2010		\$ 9,031	
Total deposits and other credits		28,900	
Total checks and other debits		23,902	
Ending balance 7/31/2010		14,029	
Checks and Debits		Deposits and Credits	
Check No.	Amount	Date	Amount
2350	\$3,761	July 1	\$1,102
2351	1,643	July 10	6,498
2352	8,000	July 15	4,929
2354	2,894	July 21	6,174
2355	1,401	July 26	5,963
2357	6,187	July 30	2,084
DM	16	CM	2,150

The following is a list of checks and deposits recorded on the books of the River Bed Hotel for July 2010.

Date	Check No.	Amount of Check	Date	Amount of Deposit
July 2	2351	\$1,643	July 8	\$6,498
July 4	2352	8,000	July 14	4,929
July 10	2353	1,700	July 21	6,174
July 10	2354	2,894	July 26	5,963
July 15	2355	1,401	July 29	2,084
July 20	2356	950	July 30	3,550
July 22	2357	6,187		

### Other Information

1. Check no. 2350 was outstanding from June.
2. Credit memo was for collection of notes receivable.
3. All checks were paid at the correct amount.
4. Debit memo was for printed checks.
5. The June 30 bank reconciliation showed a deposit in transit of \$1,102.
6. The unadjusted Cash account balance at July 31 was \$12,795.

### Required

- a. Prepare the bank reconciliation for River Bed Hotel at the end of July.
- b. Explain how the adjustments described above affect the cash account.

### Problem 4-26 Bank reconciliation and internal control

Following is a bank reconciliation for Fez's Sandwich Shop for May 31, 2010.

	Cash Account	Bank Statement
Balance as of 5/31/10	\$25,500	\$23,000
Deposit in transit		4,250
Outstanding checks		(1,730)
Note collected by bank	1,050	
Bank service charge	(30)	
Automatic payment on loan	(1,000)	
Adjusted cash balance as of 5/31/10	<u>\$25,520</u>	<u>\$25,520</u>

LO 3, 4, 5

### CHECK FIGURE

- a. True Cash Balance, May 31, 2010: \$23,050

Because of limited funds, Fez's employed only one accountant who was responsible for receiving cash, recording receipts and disbursements, preparing deposits, and preparing the bank reconciliation. The accountant left the company on June 8, 2010, after preparing the preceding statement. His replacement compared the checks returned with the bank statement to the cash disbursements journal and found the total of outstanding checks to be \$4,200.

### Required

- a. Prepare a corrected bank reconciliation.
- b. What is the total amount of cash missing, and how was the difference between the "true cash" per the bank and the "true cash" per the books hidden on the reconciliation prepared by the former employee?
- c. What could Fez's do to avoid cash theft in the future?

### Problem 4-27 Performing ratio analysis using real-world data

**Ruby Tuesday's, Inc.**, operated 834 casual dining restaurants across the United States as of June 5, 2007. As of July 31, 2007, **Zale Corporation** operated 1,471 retail jewelry stores and 793 kiosks throughout the United States, Canada, and Puerto Rico. The following data were taken from these companies' 2007 annual reports. All dollar amounts are in thousands.

LO 6



	Ruby Tuesday's June 5, 2007	Zale Corporation July 31, 2007
Sales	\$1,395,212*	\$2,437,075
Cost of Goods Sold	375,836	1,187,601
Net Income	91,668	59,252
Merchandise Inventory	11,825	1,021,164

\*This excludes franchise revenue.

**Required**

- Before performing any calculations, speculate as to which company will take the longest to sell its inventory. Explain the rationale for your decision.
- Calculate the inventory turnover ratios for Ruby Tuesday's and Zale Corporation.
- Calculate the average days to sell inventory for Ruby Tuesday's and Zale Corporation.
- Do the calculations from Requirements *b* and *c* confirm your speculations in Requirement *a*?

**ANALYZE, THINK, COMMUNICATE****ATC 4-1 Business Applications Case** *Understanding real-world annual reports***Required**

Use the **Topps Company's** annual report in Appendix B to answer the following questions.

- What was Topps' inventory turnover ratio and average days to sell inventory for 2006 and 2005?
- Is the company's management of inventory getting better or worse?
- What cost flow method(s) did Topps use to account for inventory?

**ATC 4-2 Group Assignment** *Inventory cost flow*

The accounting records of Robin Co. showed the following balances at January 1, 2008:

Cash	\$30,000
Beginning inventory (100 units @ \$50, 70 units @ \$55)	8,850
Common stock	20,000
Retained earnings	18,850

Transactions for 2008 were as follows:

Purchased 100 units @ \$54 per unit.  
 Purchased 250 units @ \$58 per unit.  
 Sold 220 units @ \$80 per unit.  
 Sold 200 units @ \$90 per unit.  
 Paid operating expenses of \$3,200.  
 Paid income tax expense. The income tax rate is 30%.

**Required**

- Organize the class into three sections, and divide each section into groups of three to five students. Assign each section one of the cost flow methods, FIFO, LIFO, or weighted average. The company uses the perpetual inventory system.

**Group Tasks**

Determine the amount of ending inventory, cost of goods sold, gross margin, and net income after income tax for the cost flow method assigned to your section. Also prepare an income statement using that cost flow assumption.

**Class Discussion**

- Have a representative of each section put its income statement on the board. Discuss the effect that each cost flow method has on assets (ending inventory), net income, and cash flows. Which method is preferred for tax reporting? For financial reporting? What restrictions are placed on the use of LIFO for tax reporting?

The Topps Company, Inc.



### ATC 4-3 Real-World Case *Analyzing inventory management issues at Ryland Group, Inc.*

In 2005, after years of positive growth in the housing market, sales and prices began to slow down and then decline. By 2007 many large home-construction companies were reporting net losses.

The data below, for **Ryland Group, Inc.**'s fiscal years ending on December 31, 2006, and 2005, pertain to analyzing the company's management of inventory. All dollar amounts are in thousands.



	2006	2005
Sales*	\$4,653,920	\$4,725,751
Cost of goods sold	3,640,075	3,537,603
Ending inventory**	1,735,859	1,188,148
Income before taxes	567,108	721,051

\*Homebuilding sales only.

\*\*Includes "homes under construction" plus "land under development and improved lots" only.

#### Required

- Compute Ryland's gross margin percentage for 2006 and 2005.
- Compute Ryland average days to sell inventory for 2006 and 2005.
- Was Ryland's decline in earnings from 2005 to 2006 affected by either a lower gross margin or lower inventory turnover? Explain.
- Do you think there may have been a connection between the change in Ryland's gross margin percentage from 2005 to 2006 and the change in its average days to sell inventory for the same period? Explain.
- How much higher or lower would Ryland's *earnings before taxes* have been in 2006 if its gross margin percentage had been the same as it was in 2005? Show all supporting computations.

### ATC 4-4 Business Applications Case *Using the average days to sell inventory ratio to make a lending decision*

Carter's Produce has applied for a loan and has agreed to use its inventory to collateralize the loan. The company currently has an inventory balance of \$289,000. The cost of goods sold for the past year was \$7,518,000. The average shelf life for the fruit that Carter sells is 10 days, after which time it begins to spoil and must be sold at drastically reduced prices to dispose of it rapidly. The company maintained steady sales over the past three years and expects to continue at current levels for the foreseeable future.



#### Required

Based on your knowledge of inventory turnover, write a memo that describes the quality of the inventory as collateral for the loan.

### ATC 4-5 Business Applications Case *Using ratios to make comparisons*

The following accounting information pertains to Clemens Corp. and Twain Inc. at the end of 2009. The only difference between the two companies is that Clemens uses FIFO while Twain uses LIFO.



	Clemens	Twain
Cash	\$ 75,000	\$ 75,000
Accounts receivable	200,000	200,000
Merchandise inventory	150,000	100,000
Accounts payable	160,000	160,000
Cost of goods sold	600,000	650,000
Building	250,000	250,000
Sales	1,000,000	1,000,000

**Required**

- Compute the gross margin percentage for each company, and identify the company that *appears* to be charging the higher prices in relation to its costs.
- For each company, compute the inventory turnover ratio and the average number of days to sell inventory. Identify the company that *appears* to be incurring the higher inventory financing cost.
- Explain why the company with the lower gross margin percentage has the higher inventory turnover ratio.

**ATC 4-6 Writing Assignment** *Internal control procedures*

Alison Marsh was a trusted employee of Small City State Bank. She was involved in everything. She worked as a teller, she accounted for the cash at the other teller windows, and she recorded many of the transactions in the accounting records. She was so loyal that she never would take a day off, even when she was really too sick to work. She routinely worked late to see that all the day's work was posted into the accounting records. She would never take even a day's vacation because they might need her at the bank. Tick and Tack, CPAs, were hired to perform an audit, the first complete audit that had been done in several years. Marsh seemed somewhat upset by the upcoming audit. She said that everything had been properly accounted for and that the audit was a needless expense. When Tick and Tack examined some of the bank's internal control procedures, it discovered problems. In fact, as the audit progressed, it became apparent that a large amount of cash was missing. Numerous adjustments had been made to customer accounts with credit memorandums, and many of the transactions had been posted several days late. In addition, there were numerous cash payments for "office expenses." When the audit was complete, it was determined that more than \$200,000 of funds was missing or improperly accounted for. All fingers pointed to Marsh. The bank's president, who was a close friend of Marsh, was bewildered. How could this type of thing happen at this bank?

**Required**

Prepare a written memo to the bank president, outlining the procedures that should be followed to prevent this type of problem in the future.

**ATC 4-7 Corporate Governance** *I need just a little extra money*

Terry Bailey, an accountant, has worked for the past eight years as a payroll clerk for Fairwell Furniture, a small furniture manufacturing firm in the northeast. Terry recently experienced unfortunate circumstances. Her teenage son required minor surgery and the medical bills not covered by Terry's insurance have financially strained Terry's family.

Terry works hard and is a model employee. Although she received regular performance raises during her first few years with Fairwell, Terry's wages have not increased in three years. Terry asked her supervisor, Bill Jameson, for a raise. Bill agreed that Terry deserved a raise, but told her he could not currently approve one because of sluggish sales.

A disappointed Terry returned to her duties while the financial pressures in her life continued. Two weeks later, Larry Tyler, an assembly worker at Fairwell, quit over a dispute with management. Terry conceived an idea. Terry's duties included not only processing employee terminations but also approving time cards before paychecks were issued and then distributing the paychecks to firm personnel. Terry decided to delay processing Mr. Tyler's termination, to forge timecards for Larry Tyler for the next few weeks, and to cash the checks herself. Since she distributed paychecks, no one would find out, and Terry reasoned that she was really entitled to the extra money anyway. In fact, no one did discover her maneuver and Terry stopped the practice after three weeks.

**Required**

- Does Terry's scheme affect Fairwell's balance sheet? Explain your answer.
- Review the AICPA's Code of Professional Conduct (see Chapter 2) and comment on any of the standards that have been violated.
- The fraud triangle (see Chapter 2) identifies three common features of unethical and criminal conduct. Name these features and explain how they pertain to this case.

### ATC 4-8 Research Assignment *Analyzing inventory at Gap Company*

Using either Gap's most current Form 10-K or the company's annual report, answer the questions below. To obtain the Form 10-K use either the EDGAR system following the instructions in Appendix A, or the company's website. The company's annual report is available on its website.



#### Required

- What was the average amount of inventory per store? Use *all* stores operated by The Gap, Inc., not just those called *The Gap*. (*Hint*: The answer to this question must be computed. The number of stores in operation at the end of the most recent year can be found in the MD&A of the 10-K.)
- How many *new* stores did Gap open during the year?
- Using the quarterly financial information in the 10-K, complete the following chart.

Quarter	Sales during Each Quarter
1	\$
2	
3	
4	

- Referring to the chart in Requirement *c*, explain why Gap's sales vary so widely throughout its fiscal year. Do you believe that Gap's inventory level varies throughout the year in relation to sales?



# CHAPTER 5

## Accounting *for* Receivables

### LEARNING OBJECTIVES

**After you have mastered the material in this chapter you will be able to:**

- 1** Explain how the allowance method of accounting for uncollectible accounts affects financial statements.
- 2** Determine uncollectible accounts expense using the percent of revenue method.
- 3** Determine uncollectible accounts expense using the percent of receivables method.
- 4** Explain how accounting for notes receivable affects financial statements.
- 5** Explain how accounting for credit card sales affects financial statements.
- 6** Identify and measure the cost of extending credit to customers.

### CHAPTER OPENING

Many people buy on impulse. If they must wait, the desire to buy wanes. To take advantage of impulse buyers, most merchandising companies offer customers credit because it increases their sales. A disadvantage of this strategy occurs when some customers are unable or unwilling to pay their bills. Nevertheless, the widespread availability of credit suggests that the advantages of increased sales outweigh the disadvantages of some uncollectible accounts.

When a company allows a customer to “buy now and pay later,” the company’s right to collect cash in the future is called an **account receivable**. Typically, amounts due from individual accounts receivable are relatively small and the collection period is short. Most accounts receivable are collected within 30 days. When a longer credit term is needed or when a receivable is large, the seller usually requires the buyer to issue a note reflecting a credit agreement between the parties. The note specifies the maturity date, interest rate, and other credit terms. Receivables evidenced by such notes are called **notes receivable**. Accounts and notes receivable are reported as assets on the balance sheet.

## The *Curious* Accountant

Suppose the U.S. government purchases \$10 million of fuel from **Chevron**. Assume the government offers to pay for the fuel on the day it receives it from Chevron (a cash purchase) or 30 days later (a purchase on account).

Assume that Chevron is absolutely sure the government will pay its account when due. Do you think Chevron should care whether the government pays for the goods upon delivery or 30 days later? Why? (Answers on page 173.)



## ALLOWANCE METHOD OF ACCOUNTING FOR UNCOLLECTIBLE ACCOUNTS

### LO 1

Explain how the allowance method of accounting for uncollectible accounts affects financial statements.

Most companies do not expect to collect the full amount (face value) of their accounts receivable. Even carefully screened credit customers sometimes don't pay their bills. The **net realizable value** of accounts receivable represents the amount of receivables a company estimates it will actually collect. The net realizable value is the *face value* less an *allowance for doubtful accounts*.

The **allowance for doubtful accounts** represents a company's estimate of the amount of uncollectible receivables. To illustrate, assume a company with total accounts receivable of \$50,000 estimates that \$2,000 of its receivables will not be collected. The net realizable value of receivables is computed as follows.

Accounts receivable	\$50,000
Less: Allowance for doubtful accounts	(2,000)
Net realizable value of receivables	<u>\$48,000</u>

A company cannot know today, of course, the exact amount of the receivables it will not be able to collect in the future. The *allowance for doubtful accounts* and the *net realizable value* are necessarily *estimated amounts*. The net realizable value, however, more closely measures the cash that will ultimately be collected than does the face value. To avoid overstating assets, companies usually report receivables on their balance sheets at the net realizable value.

Reporting accounts receivable in the financial statements at net realizable value is commonly called the **allowance method of accounting for uncollectible accounts**. The following section illustrates using the allowance method for Allen's Tutoring Services (ATS).

### Accounting Events Affecting the 2010 Period

Allen's Tutoring Services is a small company that provides tutoring services to college students. Allen's started operations on January 1, 2010. During 2010, Allen's experienced three types of accounting events. These events are discussed below.

#### EVENT 1 Revenue Recognition

*Allen's Tutoring Services recognized \$14,000 of service revenue earned on account during 2010.*

This is an asset source transaction. Allen's Tutoring Services obtained assets (accounts receivable) by providing services to customers. Both assets and stockholders' equity (retained earnings) increase. The event increases revenue and net income. Cash flow is not affected. These effects follow.

Event No.	Assets	=	Liab.	+	Equity	Rev.	—	Exp.	=	Net Inc.	Cash Flow
	Accts. Rec.	=			Ret. Earn.						
1	14,000	=	NA	+	14,000	14,000	—	NA	=	14,000	NA

#### EVENT 2 Collection of Receivables

*Allen's Tutoring Services collected \$12,500 cash from accounts receivable in 2010.*

This event is an asset exchange transaction. The asset cash increases; the asset accounts receivable decreases. Total assets remains unchanged. Net income is not affected.

## Answers to The *Curious* Accountant

**Chevron** would definitely prefer to make the sale to the government in cash rather than on account. Even though it may be certain to collect its

accounts receivable, the sooner Chevron gets its cash, the sooner the cash can be reinvested.

The interest cost related to a small account receivable of \$50 that takes 30 days to collect may seem immaterial; at 4 percent, the lost interest amounts to less than \$.20. However, when one considers that Chevron had approximately \$17.2 billion of accounts receivable, the cost of financing receivables for a real-world company becomes apparent. At 4 percent, the cost of waiting 30 days to collect \$17.2 billion of cash is \$56.5 million ( $\$17.2 \text{ billion} \times .04 \times [30 \div 365]$ ). For one full year, the cost to Chevron would be more than \$688 million ( $\$17.2 \text{ billion} \times 0.04$ ). In 2005, it took Chevron approximately 32 days to collect its accounts receivable, and the weighted-average interest rate on its debt was approximately 4.2 percent.

because the revenue was recognized in the previous transaction. The cash inflow is reported in the operating activities section of the statement of cash flows.

Event No.	Assets			=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
	Cash	+	Accts. Rec.										
2	12,500	+	(12,500)	=	NA	+	NA	NA	–	NA	=	NA	12,500 OA

### Accounting for Uncollectible Accounts Expense

#### EVENT 3 Recognizing Uncollectible Accounts Expense

*Allen's Tutoring Services recognized uncollectible accounts expense for accounts expected to be uncollectible in the future.*

The year-end balance in the accounts receivable account is \$1,500 (\$14,000 of revenue on account – \$12,500 of collections). Although Allen's Tutoring Services has the legal right to receive this \$1,500 in 2011, the company is not likely to collect the entire amount because some of its customers may not pay the amounts due. Allen's will not know the actual amount of uncollectible accounts until some future time when the customers default (fail to pay). However, the company can *estimate* the amount of receivables that will be uncollectible.

Suppose Allen's Tutoring Services estimates that \$75 of the receivables is uncollectible. To improve financial reporting, the company can recognize the estimated expense in 2010. In this way, uncollectible accounts expense and the related revenue will be recognized in the same accounting period (2010). Recognizing an estimated expense is more useful than recognizing no expense. The *matching* of revenues and expenses is improved and the statements are, therefore, more accurate.

The estimated amount of **uncollectible accounts expense** is recognized in a year-end adjusting entry. The adjusting entry reduces the book value of total assets, reduces stockholders' equity (retained earnings), and reduces the amount of reported net

income. The statement of cash flows is not affected. The effects of recognizing uncollectible accounts expense are shown here.

Event No.	Assets			=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
	Accts. Rec.	–	Allow.	=			Ret. Earn.						
3	NA	–	75	=	NA	+	(75)	NA	–	75	=	(75)	NA

Instead of decreasing the receivables account directly, the asset reduction is recorded in the **contra asset account**, Allowance for Doubtful Accounts. Recall that the contra account is subtracted from the accounts receivable balance to determine the net realizable value of receivables, as follows for ATS.

Accounts receivable	\$1,500
Less: Allowance for doubtful accounts	<u>(75)</u>
Net realizable value of receivables	<u>\$1,425</u>

Generally accepted accounting principles require disclosure of both the net realizable value and the amount of the allowance account. Many companies disclose these amounts directly in the balance sheet in a manner similar to that shown in the text box above. Other companies disclose this information in the footnotes to the financial statements.

### Financial Statements

The financial statements for Allen's Tutoring Services' 2010 accounting period are shown in Exhibit 5.1. As previously indicated, estimating uncollectible accounts improves the usefulness of the 2010 financial statements in two ways. First, the balance sheet reports the amount of cash (\$1,500 – \$75 = \$1,425) the company actually expects to collect (net realizable value of accounts receivable). Second, the income statement provides a clearer picture of managerial performance because it better *matches* the uncollectible accounts expense with the revenue it helped produce. The statements in Exhibit 5.1 show that the cash flow from operating activities (\$12,500)

## EXHIBIT 5.1

### Financial Statements for 2010

Income Statement		Balance Sheet		Statement of Cash Flows	
Service revenue	\$14,000	Assets		Operating Activities	
Uncollectible accts. exp.	<u>(75)</u>	Cash	\$12,500	Inflow from customers	\$12,500
Net income	<u>\$13,925</u>	Accounts receivable	\$1,500	Investing Activities	0
		Less: Allowance	<u>(75)</u>	Financing Activities	<u>0</u>
		Net realizable value	<u>1,425</u>	Net change in cash	12,500
		Total assets	<u>\$13,925</u>	Plus: Beginning cash balance	<u>0</u>
		Stockholders' equity		Ending cash balance	<u>\$12,500</u>
		Retained earnings	<u>\$13,925</u>		

## CHECK Yourself 5.1

Pamlico Inc. began operations on January 1, 2011. During 2011, it earned \$400,000 of revenue on account. The company collected \$370,000 of accounts receivable. At the end of the year, Pamlico estimates uncollectible accounts expense will be 1 percent of sales. Based on this information alone, what is the net realizable value of accounts receivable as of December 31, 2011?

**Answer** Accounts receivable at year end are \$30,000 (\$400,000 sales on account – \$370,000 collection of receivables). The amount in the allowance for doubtful accounts would be \$4,000 (\$400,000 credit sales × 0.01). The net realizable value of accounts receivable is therefore \$26,000 (\$30,000 – \$4,000).

differs from net income (\$13,925). The statement of cash flows reports only cash collections, whereas the income statement reports revenues earned on account less the estimated amount of uncollectible accounts expense.

## Accounting Events Affecting the 2011 Period

To further illustrate accounting for uncollectible accounts, we discuss six accounting events affecting Allen's Tutoring Services during 2011.

### Accounting for Write-Off of Uncollectible Accounts Receivable

#### EVENT 1 Write-Off of Uncollectible Accounts Receivable

*Allen's Tutoring Services wrote off \$70 of uncollectible accounts receivable.*

This is an asset exchange transaction. The amount of the uncollectible accounts is removed from the Accounts Receivable account and from the Allowance for Doubtful Accounts account. Since the balances in both the Accounts Receivable and the Allowance accounts decrease, the net realizable value of receivables—and therefore total assets—remains unchanged. The write-off does not affect the income statement. Since the uncollectible accounts expense was recognized in the previous year, the expense would be double counted if it were recognized again at the time an uncollectible account is written off. Finally, the statement of cash flows is not affected by the write-off. These effects are shown in the following statements model.

Event No.	Assets			=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
	Accts. Rec.	–	Allow.										
1	(70)	–	(70)	=	NA	+	NA	NA	–	NA	=	NA	NA

The computation of the *net realizable value*, before and after the write-off, is shown below.

	Before Write-Off	After Write-Off
Accounts receivable	\$1,500	\$1,430
Less: Allowance for doubtful accounts	(75)	(5)
Net realizable value	<u>\$1,425</u>	<u>\$1,425</u>



**EVENT 2 Revenue Recognition**

*Allen's Tutoring Services provided \$10,000 of tutoring services on account during 2011.*

Assets (accounts receivable) and stockholders' equity (retained earnings) increase. Recognizing revenue increases net income. Cash flow is not affected. These effects are illustrated below.

Event No.	Assets			=	Liab.		+	Equity		Rev.	—	Exp.	=	Net Inc.	Cash Flow
	Accts. Rec.			=				Ret. Earn.							
2	10,000			=	NA		+	10,000		10,000	—	NA	=	10,000	NA

**EVENT 3 Collection of Accounts Receivable**

*Allen's Tutoring Services collected \$8,430 cash from accounts receivable.*

The balance in the Cash account increases, and the balance in the Accounts Receivable account decreases. Total assets are unaffected. Net income is not affected because revenue was recognized previously. The cash inflow is reported in the operating activities section of the statement of cash flows.

Event No.	Assets			=	Liab.		+	Equity		Rev.	—	Exp.	=	Net Inc.	Cash Flow
	Cash	+	Accts. Rec.												
3	8,430	+	(8,430)	=	NA		+	NA		NA	—	NA	=	NA	8,430 OA

**Accounting for Recovery of an Uncollectible Account Receivable****EVENT 4 Recovery of an Uncollectible Account: Reinstate Receivable**

*Allen's Tutoring Services recovered a receivable that it had previously written off.*

Occasionally, a company receives payment from a customer whose account was previously written off. In such cases, the customer's account should be reinstated and the cash received should be recorded the same way as any other collection on account. The account receivable is reinstated because a complete record of the customer's payment history may be useful if the customer requests credit again at some future date. To illustrate, assume that Allen's Tutoring Services received a \$10 cash payment from a customer whose account had previously been written off. The first step is to **reinstate** the account receivable by reversing the previous write-off. The balances in the Accounts Receivable and the Allowance accounts increase. Since the Allowance is a contra asset account, the increase in it offsets the increase in the Accounts Receivable account, and total assets are unchanged. Net income and cash flow are unaffected. These effects are shown here.

Event No.	Assets			=	Liab.		+	Equity		Rev.	—	Exp.	=	Net Inc.	Cash Flow
	Accts. Rec.	—	Allow.												
4	10	—	10	=	NA		+	NA		NA	—	NA	=	NA	NA

**EVENT 5 Recovery of an Uncollectible Account: Collection of Receivable**

*Allen's Tutoring Services recorded collection of the reinstated receivable.*

The collection of \$10 is recorded like any other collection of a receivable account. Cash increases, and accounts receivable decreases.

Event No.	Assets			=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
	Cash	+	Accts. Rec.										
5	10	+	(10)	=	NA	+	NA	NA	–	NA	=	NA	10 OA

## ESTIMATING UNCOLLECTIBLE ACCOUNTS EXPENSE USING THE PERCENT OF REVENUE (SALES) METHOD

Companies recognize the estimated amount of uncollectible accounts expense in a period-end adjusting entry. Since Allen's Tutoring Service began operations in 2010, it had no previous credit history upon which to base its estimate. After consulting trade publications and experienced people in the same industry, ATS made an educated guess as to the amount of expense it should recognize for its first year. In its second year of operation, however, ATS can use its first-year experience as a starting point for estimating the second year (2011) uncollectible accounts expense.

At the end of 2010 ATS estimated uncollectible accounts expense to be \$75 on service revenue of \$14,000. In 2011 ATS actually wrote off \$70 of which \$10 was later recovered. ATS therefore experienced actual uncollectible accounts of \$60 on service revenue of \$14,000 for an uncollectible accounts rate of approximately .43 percent of service revenue. ATS could apply this percentage to the 2011 service revenue to estimate the 2011 uncollectible accounts expense. In practice, many companies determine the percentage estimate of uncollectible accounts on a three- or five-year moving average.

Companies adjust the historical percentage for anticipated future circumstances. For example, they reduce it if they adopt more rigorous approval standards for new credit applicants. Alternatively, they may increase the percentage if economic forecasts signal an economic downturn that would make future defaults more likely. A company will also increase the percentage if it has specific knowledge one or more of its customers is financially distressed. Multiplying the service revenue by the percentage estimate of uncollectible accounts is commonly called the **percent of revenue method** of estimating uncollectible accounts expense.

### EVENT 6 Adjustment for Recognition of Uncollectible Accounts Expense

*Using the percent of revenue method, Allen's Tutoring Services recognized uncollectible accounts expense for 2011.*

ATS must record this adjustment as of December 31, 2011, to update its accounting records before preparing the 2011 financial statements. After reviewing its credit history, economic forecasts, and correspondence with customers, management estimates uncollectible accounts expense to be 1.35 percent of service revenue, or \$135 (\$10,000 service revenue  $\times$  .0135). Recognizing the \$135 uncollectible accounts expense decreases both assets (net realizable of receivables) and stockholders' equity (retained earnings). The expense recognition decreases net income. The statement of cash flows is not affected. The financial statements are affected as shown here.

Event No.	Assets			=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
	Accts. Rec.	–	Allow.	=			Ret. Earn.						
6	NA	–	135	=	NA	+	(135)	NA	–	135	=	(135)	NA

## Analysis of Financial Statements

Exhibit 5.2 displays the 2011 financial statements. The amount of uncollectible accounts expense (\$135) differs from the ending balance of the Allowance account (\$150). The balance in the Allowance account was \$15 before the 2011 adjusting entry

### LO 2

Determine uncollectible accounts expense using the percent of revenue method.

**EXHIBIT 5.2**

## Financial Statements for 2011

Income Statement		Balance Sheet		Statement of Cash Flows	
Service revenue	\$10,000	Assets		Operating Activities	
Uncollectible accts. exp.	(135)	Cash	\$20,940	Inflow from customers	\$ 8,440
Net income	<u>\$ 9,865</u>	Accounts receivable	\$3,000	Investing Activities	0
		Less: Allowance	(150)	Financing Activities	0
		Net realizable value	<u>2,850</u>	Net change in cash	8,440
		Total assets	<u>\$23,790</u>	Plus: Beginning cash balance	<u>12,500</u>
		Stockholders' equity		Ending cash balance	<u>\$20,940</u>
		Retained earnings	<u>\$23,790</u>		

for uncollectible accounts expense was recorded. At the end of 2010, Allen's Tutoring Services estimated there would be \$75 of uncollectible accounts as a result of 2010 credit sales. Actual write-offs, however, amounted to \$70 and \$10 of that amount was recovered, indicating the actual uncollectible accounts expense for 2010 was only \$60. hindsight shows the expense for 2010 was overstated by \$15. However, if no estimate had been made, the amount of uncollectible accounts expense would have been understated by \$60. In some accounting periods estimated uncollectible accounts expense will likely be overstated; in others it may be understated. The allowance method cannot produce perfect results, but it does improve the accuracy of the financial statements.

Since no dividends were paid, retained earnings at the end of 2011 equals the December 31, 2010, retained earnings plus 2011 net income (that is, \$13,925 + \$9,865 = \$23,790). Again, the cash flow from operating activities (\$8,440) differs from net income (\$9,865) because the statement of cash flows does not include the effects of revenues earned on account or the recognition of uncollectible accounts expense.

### CHECK *Yourself* 5.2

Maher Company had beginning balances in Accounts Receivable and Allowance for Doubtful Accounts of \$24,200 and \$2,000, respectively. During the accounting period Maher earned \$230,000 of revenue on account and collected \$232,500 of cash from receivables. The company also wrote off \$1,950 of uncollectible accounts during the period. Maher estimates uncollectible accounts expense will be 1 percent of credit sales. Based on this information, what is the net realizable value of receivables at the end of the period?

**Answer** The balance in the Accounts Receivable account is \$19,750 (\$24,200 + \$230,000 – \$232,500 – \$1,950). The amount of uncollectible accounts expense for the period is \$2,300 (\$230,000 × 0.01). The balance in the Allowance for Doubtful Accounts is \$2,350 (\$2,000 – \$1,950 + \$2,300). The net realizable value of receivables is therefore \$17,400 (\$19,750 – \$2,350).

### ESTIMATING UNCOLLECTIBLE ACCOUNTS EXPENSE USING THE PERCENT OF RECEIVABLES METHOD

#### LO 3

Determine uncollectible accounts expense using the percent of receivables method.

As an alternative to the percent of revenue method, which focuses on estimating the *expense* of uncollectible accounts, companies may estimate the amount of the adjusting entry to record uncollectible accounts expense using the **percent of receivables method**. The percent of receivables method focuses on estimating the most accurate amount for the balance sheet *Allowance for Doubtful Accounts* account.

### EXHIBIT 5.3

PYRAMID CORPORATION						
Accounts Receivable Aging Schedule						
December 31, 2011						
Customer Name	Total Balance	Current	Number of Days Past Due			
			0–30	31–60	61–90	Over 90
J. Davis	\$ 6,700	\$ 6,700				
B. Diamond	4,800	2,100	\$ 2,700			
K. Eppy	9,400	9,400				
B. Gilman	2,200				\$1,000	\$1,200
A. Kelly	7,300	7,300				
L. Niel	8,600	1,000	6,000	\$ 1,600		
L. Platt	4,600			4,600		
J. Turner	5,500			3,000	2,000	500
H. Zachry	6,900		3,000	3,900		
<b>Total</b>	<b>\$56,000</b>	<b>\$26,500</b>	<b>\$11,700</b>	<b>\$13,100</b>	<b>\$3,000</b>	<b>\$1,700</b>

The longer an account receivable remains outstanding, the less likely it is to be collected. Companies using the percent of receivables method typically determine the age of their individual accounts receivable accounts as part of estimating the allowance for doubtful accounts. An **aging of accounts receivable** schedule classifies all receivables by their due date. Exhibit 5.3 shows an aging schedule for Pyramid Corporation as of December 31, 2011.

A company estimates the required Allowance for Doubtful Accounts balance by applying different percentages to each category in the aging schedule. The percentage for each category is based on a company's previous collection experience for each of the categories. The percentages become progressively higher as the accounts become older. Exhibit 5.4 illustrates computing the allowance balance Pyramid Corporation requires.

The computations in Exhibit 5.4 mean the *ending balance* in the Allowance for Doubtful Accounts account should be \$3,760. This balance represents the amount Pyramid will subtract from total accounts receivable to determine the net realizable value of receivables. To determine the amount of the adjusting entry to recognize uncollectible accounts expense, Pyramid must take into account any existing balance in the allowance account *before* recording the adjustment. For example, if Pyramid Corporation had a \$500 balance in the Allowance account before the year-end adjustment,

### EXHIBIT 5.4

Balance Required in the Allowance for Doubtful Accounts at December 31, 2011			
Number of Days Past Due	Receivables Amount	Percentage Likely to Be Uncollectible	Required Allowance Account Balance
Current	\$26,500	.01	\$ 265
0–30	11,700	.05	585
31–60	13,100	.10	1,310
61–90	3,000	.25	750
Over 90	1,700	.50	850
<b>Total</b>	<b>\$56,000</b>		<b>\$3,760</b>

the adjusting entry would need to add \$3,260 (\$3,760 – \$500) to the account. The effects on the financial statements are shown below.

Assets			=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Accts. Rec.	–	Allow.	=			Ret. Earn.						
NA	–	3,260	=	NA	+	(3,260)	NA	–	3,260	=	3,260	NA

## Matching Revenues and Expenses versus Asset Measurement

The *percent of revenue* method, with its focus on determining the uncollectible accounts expense, is often called the income statement approach. The *percent of receivables* method, focused on determining the best estimate of the allowance balance, is frequently called the balance sheet approach. Which estimating method is better? In any given year, the results will vary slightly between approaches. In the long run, however, the percentages used in either approach are based on a company's actual history of uncollectible accounts. Accountants routinely revise their estimates as more data become available, using hindsight to determine if the percentages should be increased or decreased. Either approach provides acceptable results.

## ACCOUNTING FOR NOTES RECEIVABLE (PROMISSORY NOTES)

### LO 4

Explain how accounting for notes receivable affects financial statements.

Companies typically do not charge their customers interest on accounts receivable that are not past due. When a company extends credit for a long time or when the amount of credit it extends is large, however, the cost of granting free credit and the potential for disputes about payment terms both increase. To address these concerns, the parties frequently enter into a credit agreement, the terms of which are legally documented in a **promissory note**.

To illustrate, assume Allen's Tutoring Services (ATS) loans some of its idle cash to an individual, Stanford Cummings, so Cummings can buy a car. ATS and Cummings agree that Cummings will repay the money borrowed plus interest at the end of one year. They also agree that ATS will hold the title to the car to secure the debt. Exhibit 5.5 illustrates a promissory note that outlines this credit agreement. For ATS, the credit arrangement represents a *note receivable*.

### EXHIBIT 5.5

#### Promissory Note

Promissory Note	
\$15,000 (3)	<u>November 1, 2012</u>
<b>Amount</b>	<b>Date</b>
<b>For consideration received, <u>Stanford Cummings</u> hereby promises to pay to the order of:</b>	
<u>Allen's Tutoring Services (2)</u>	
<u>Fifteen thousand and no/100</u>	<b>Dollars</b>
<b>payable on</b> <u>October 31, 2013 (5)</u>	
<b>plus interest thereon at the rate of <u>6</u> percent per year. (4)</b>	
<b>Collateral Description</b>	<u>Automobile title (6)</u>
<b>Signature</b>	<u>Stanford Cummings (1)</u>

Features of this note are discussed below. Each feature is cross referenced with a number that corresponds to an item on the promissory note in Exhibit 5.5. Locate each feature in Exhibit 5.5 and read the corresponding description of the feature below.

1. **Maker**—The person responsible for making payment on the due date is the **maker** of the note. The maker may also be called the *borrower* or *debtor*.
2. **Payee**—The person to whom the note is made payable is the **payee**. The payee may also be called the *creditor* or *lender*. The payee loans money to the maker and expects the return of the principal and the interest due.
3. **Principal**—The amount of money loaned by the payee to the maker of the note is the **principal**.
4. **Interest**—The economic benefit earned by the payee for loaning the principal to the maker is **interest**, which is normally expressed as an annual percentage of the principal amount. For example, a note with a 6 percent interest rate requires interest payments equal to 6 percent of the principal amount every year the loan is outstanding.
5. **Maturity Date**—The date on which the maker must repay the principal and make the final interest payment to the payee is the **maturity date**.
6. **Collateral**—Assets belonging to the maker that are assigned as security to ensure that the principal and interest will be paid when due are called **collateral**. In this example, if Cummings fails to pay ATS the amount due, ownership of the car Cummings purchased will be transferred to ATS.

## How Accounting for Notes Receivable Affects Financial Statements

We illustrate accounting for notes receivable using the credit agreement evidenced by the promissory note in Exhibit 5.5. Allen's Tutoring Services engaged in many transactions during 2012; we discuss here only transactions directly related to the note receivable.

### EVENT 1 Loan of Money

The note shows that ATS loaned \$15,000 to Stanford Cummings on November 1, 2012. This event is an asset exchange. The asset account Cash decreases and the asset account Notes Receivable increases. The income statement is not affected. The statement of cash flows shows a cash outflow for investing activities. The effects on the financial statements are shown below.

Date	Assets					=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
	Cash	+	Notes Rec.	+	Int. Rec.	=			Ret. Earn.						
11/01/12	(15,000)	+	15,000	+	NA	=	NA	+	NA	NA	–	NA	=	NA	(15,000) IA

### EVENT 2 Accrual of Interest

For ATS, loaning money to the maker of the note, Stanford Cummings, represents investing in the note receivable. Cummings will repay the principal (\$15,000) plus interest of 6 percent of the principal amount ( $0.06 \times \$15,000 = \$900$ ), or a total of \$15,900, on October 31, 2013, one year from the date he borrowed the money from ATS.

Conceptually, lenders *earn* interest continually even though they do not *collect* cash payment for it every day. Each day, the amount of interest due, called **accrued interest**, is greater than the day before. Companies would find it highly impractical to attempt to record (recognize) accrued interest continually as the amount due increased.



Businesses typically solve the recordkeeping problem by only recording accrued interest when it is time to prepare financial statements or when it is due. At such times, the accounts are *adjusted* to reflect the amount of interest currently due. For example, ATS recorded the asset exchange immediately upon investing in the Note Receivable on November 1, 2012. ATS did not, however, recognize any interest earned on the note until the balance sheet date, December 31, 2012. At year-end ATS made an entry to recognize the interest it had earned during the previous two months (November 1 through December 31). This entry is an **adjusting entry** because it adjusts (updates) the account balances prior to preparing financial statements.

ATS computed the amount of accrued interest by multiplying the principal amount of the note by the annual interest rate and by the length of time for which the note has been outstanding.

$$\text{Principal} \times \text{Annual interest rate} \times \text{Time outstanding} = \text{Interest revenue}$$

$$\$15,000 \times 0.06 \times (2/12) = \$150$$

ATS recognized the \$150 of interest revenue in 2012 although ATS will not collect the cash until 2013. This practice illustrates the **matching concept**. Interest revenue is recognized in (matched with) the period in which it is earned regardless of when the related cash is collected. The adjustment is an asset source transaction. The asset account Interest Receivable increases, and the stockholders' equity account Retained Earnings increases. The income statement reflects an increase in revenue and net income. The statement of cash flows is not affected because ATS will not collect cash until the maturity date (October 31, 2013). The effects on the financial statements are shown below.

Date	Assets = Liab. + Equity									Rev.	−	Exp.	=	Net Inc.	Cash Flow
	Cash	+	Notes Rec.	+	Int. Rec.	=			Ret. Earn.						
12/31/12	NA	+	NA	+	150	=	NA	+	150	150	−	NA	=	150	NA

### EVENT 3 Collection of Principal and Interest on the Maturity Date

ATS collected \$15,900 cash on the maturity date. The collection included \$15,000 for the principal plus \$900 for the interest. Recall that ATS previously accrued interest in the December 31, 2012, adjusting entry for the two months in 2012 that the note was outstanding. Since year-end, ATS has earned an additional 10 months of interest revenue. ATS must recognize this interest revenue before recording the cash collection. The amount of interest earned in 2013 is computed as follows.

$$\text{Principal} \times \text{Annual interest rate} \times \text{Time outstanding} = \text{Interest revenue}$$

$$\$15,000 \times 0.06 \times (10/12) = \$750$$

The effects on the financial statements are shown below.

Date	Assets = Liab. + Equity								Rev. - Exp. = Net Inc.				Cash Flow		
	Cash	+	Notes Rec.	+	Int. Rec.	=		Ret. Earn.							
10/31/13	NA	+	NA	+	750	=	NA	+	750	750	-	NA	=	750	NA

The total amount of accrued interest is now \$900 (\$150 accrued in 2012 plus \$750 accrued in 2013). The \$15,900 cash collection is an asset exchange transaction. The asset account Cash increases and two asset accounts, Notes Receivable and Interest Receivable, decrease. The income statement is not affected. The statement of cash flows shows a \$15,000 inflow

from investing activities (recovery of principal) and a \$900 inflow from operating activities (interest collection). The effects on the financial statements are shown below.

Date	Assets				=	Liab.	+	Equity	Rev.	-	Exp.	=	Net Inc.	Cash Flow	
	Cash	+	Notes Rec.	+	Int. Rec.	=		Ret. Earn.							
10/31/13	15,900	+	(15,000)	+	(900)	=	NA	+	NA	NA	-	NA	=	NA	15,000 IA 900 OA

## Financial Statements

The financial statements reveal key differences between the timing of revenue recognition and the exchange of cash. These differences are highlighted below.

	2012	2013	Total
Interest revenue recognized	\$150	\$750	\$900
Cash inflow from operating activities	0	900	900

Accrual accounting calls for recognizing revenue in the period in which it is earned regardless of when cash is collected.

### Income Statement

Although generally accepted accounting principles require reporting receipts of or payments for interest on the statement of cash flows as operating activities, they do not specify how to classify interest on the income statement. In fact, companies traditionally report interest on the income statement as a nonoperating item. Interest is therefore frequently reported in two different categories within the same set of financial statements.

### Balance Sheet

As with other assets, companies report interest receivable and notes receivable on the balance sheet in order of their liquidity. **Liquidity** refers to how quickly assets are expected to be converted to cash during normal operations. In the preceding example, ATS expects to convert its accounts receivable to cash before it collects the interest receivable and note receivable. Companies commonly report interest and notes receivable after accounts receivable. Exhibit 5.6 shows a partial balance sheet for Southern Company to illustrate the presentation of receivables.

#### EXHIBIT 5.6

##### Typical Balance Sheet Presentation of Receivables

#### SOUTHERN COMPANY

##### Partial Balance Sheet

As of December 31, 2010

Cash		\$xxx
Accounts receivable	\$xxx	
Less: Allowance for doubtful accounts	(xxx)	
Net realizable value of accounts receivable		xxx
Interest receivable		xxx
Notes receivable		xxx

### CHECK Yourself 5.3

On October 1, 2010, Mei Company accepted a promissory note for a loan it made to the Asia Pacific Company. The note had a \$24,000 principal amount, a four-month term, and an annual interest rate of 4 percent. Determine the amount of interest revenue and the cash inflow from operating activities Mei will report in its 2010 and 2011 financial statements.

**Answer** The computation of accrued interest revenue is shown below. The interest rate is stated in annual terms even though the term of the note is only four months. Interest rates are commonly expressed as an annual percentage regardless of the term of the note. The *time outstanding* in the following formulas is therefore expressed as a fraction of a year. Mei charged annual interest of 4 percent, but the note was outstanding for only 3/12 of a year in 2010 and 1/12 of a year in 2011.

2010					
Principal	×	Annual interest rate	×	Time outstanding	= Interest revenue
\$24,000	×	0.04	×	(3/12)	= \$240
2011					
Principal	×	Annual interest rate	×	Time outstanding	= Interest revenue
\$24,000	×	0.04	×	(1/12)	= \$80

In 2010, Mei's cash inflow from interest will be zero.

In 2011, Mei will report a \$320 (\$240 + \$80) cash inflow from operating activities for interest.

## ACCOUNTING FOR CREDIT CARD SALES

### LO 5

Explain how accounting for credit card sales affects financial statements.

Maintaining accounts and notes receivable is expensive. In addition to uncollectible accounts expense, companies extending credit to their customers incur considerable costs for such clerical tasks as running background checks and maintaining customer records. Many businesses find it more efficient to accept third-party credit cards instead of offering credit directly to their customers. Credit card companies service the merchant's credit sales for a fee that typically ranges between 2 and 8 percent of gross sales.

The credit card company provides customers with plastic cards that permit cardholders to charge purchases at various retail outlets. When a sale takes place, the seller records the transaction on a receipt the customer signs. The receipt is forwarded to the credit card company, which immediately pays the merchant.

The credit card company deducts its service fee from the gross amount of the sale and pays the merchant the net balance (gross amount of sale less credit card fee) in cash. The credit card company collects the gross sale amount directly from the customer. The merchant avoids the risk of uncollectible accounts as well as the cost of maintaining customer credit records. To illustrate, assume that Allen's Tutoring Service experiences the following events.

### EVENT 1 Recognition of Revenue and Expense on Credit Card Sales

*ATS accepts a credit card payment for \$1,000 of services rendered.*

Assume the credit card company charges a 5 percent fee for handling the transaction ( $\$1,000 \times 0.05 = \$50$ ). ATS's income increases by the amount of revenue (\$1,000) and decreases by the amount of the credit card expense (\$50). Net income increases by \$950. The event increases an asset, accounts receivable, due from the credit card

company, and stockholders' equity (retained earnings) by \$950 (\$1,000 revenue – \$50 credit card expense). Cash flow is not affected. These effects are shown here.

Event No.	Assets			=	Liab. + Equity		Rev.	–	Exp.	=	Net Inc.	Cash Flow
	Accts. Rec.			=		Ret. Earn.						
1	950			=	NA	+ 950	1,000	–	50	=	950	NA

## EVENT 2 Collection of Credit Card Receivable

*The collection of the receivable due from the credit card company is recorded like any other receivable collection.*

When ATS collects the net amount of \$950 (\$1,000 – \$50) from the credit card company, one asset account (Cash) increases and another asset account (Accounts Receivable) decreases. Total assets are not affected. The income statement is not affected. A \$950 cash inflow is reported in the operating activities section of the statement of cash flows. These effects are illustrated below.

Event No.	Assets			=	Liab. + Equity		Rev.	–	Exp.	=	Net Inc.	Cash Flow
	Cash	+	Accts. Rec.	=								
2	950	+	(950)	=	NA	+ NA	NA	–	NA	=	NA	950 OA



## COSTS OF CREDIT SALES

As mentioned earlier, two costs of extending credit to customers are bad debts expense and record-keeping costs. These costs can be significant. Large companies spend literally millions of dollars to buy the equipment and pay the staff necessary to operate entire departments devoted to managing accounts receivable. Further, there is an implicit interest charge associated with extending credit. When a customer is permitted to delay payment, the creditor forgoes the opportunity to invest the amount the customer owes.

Exhibit 5.7 presents part of a footnote from a recent annual report of **Rent-A-Center**. This excerpt provides insight into the credit costs real companies incur. First, observe that Rent-A-Center was owed \$23.7 million of accounts receivable. These receivables represent money that could be in the bank earning interest if all sales had been made in cash. If Rent-A-Center could have earned interest at 5 percent on that money, the opportunity cost of this lost interest is approximately \$1.2 million (\$23.7 million  $\times$  .05) a year. Next, observe that Rent-A-Center expects to have uncollectible accounts amounting to \$3.3 million (balance in the allowance account). These are indeed significant costs to a company whose net earnings were \$135.8 million.

### LO 6

Identify and measure the cost of extending credit to customers.

## Average Number of Days to Collect Accounts Receivable

The longer it takes to collect accounts receivable, the greater the opportunity cost of lost income. Also, business experience indicates that the older an account receivable

**EXHIBIT 5.7****Rent-A-Center, Inc. December 31**

PARTIAL FOOTNOTE B Regarding Accounts Receivable and Allowance for Doubtful Accounts (amounts shown in thousands)

**Receivables consist of the following:**

	<b>Recent</b>	<b>Previous</b>
Installment sales receivable	\$18,356	\$16,919
Financial service loans receivable	2,757	—
Trade receivables	2,607	1,956
Total	23,720	18,875
Less allowance for doubtful accounts	(3,317)	(2,606)
Net receivables	<u>\$20,403</u>	<u>\$16,269</u>

**Changes in the Company's allowance for doubtful accounts are as follows:**

	<b>Recent</b>	<b>Previous</b>
Beginning balance	\$2,606	\$1,918
Bad debt expense	1,581	1,101
Addition from acquisition	114	—
Accounts written off	(1,271)	(744)
Recoveries	287	331
Ending balance	<u>\$3,317</u>	<u>\$2,606</u>

becomes, the less likely it is to be collected. Finally, taking longer to collect an account typically costs more for salaries, equipment, and supplies used in the process of trying to collect it. Businesses are therefore concerned about how long it takes to collect their receivables.

Two ratios help management, or other users, measure a company's collection period. One is the **accounts receivable turnover ratio**, computed as.<sup>1</sup>

$$\frac{\text{Sales}}{\text{Accounts receivable}}$$

Dividing a company's sales by its accounts receivable tells how many times the accounts receivable balance is "turned over" (converted into cash) each year. The higher the turnover, the shorter the collection period. To simplify its interpretation, the accounts receivable turnover ratio is often taken one step further to determine the **average number of days to collect accounts receivable**, sometimes called the *average collection period*. This is computed as.

$$\frac{365}{\text{Accounts receivable turnover ratio}}$$

This ratio measures how many days, on average, it takes a company to collect its accounts receivable. Since longer collection periods increase costs, shorter periods are obviously more desirable. To illustrate computing the *average number of days to collect accounts receivable* for Allen's Tutoring Services, refer to the 2011 financial statements in Exhibit 5.2. On average, the company takes 104 days to collect its receivables, computed in two steps:

1. The accounts receivable turnover is 3.509 ( $\$10,000 \div \$2,850$ ) times.
2. The average number of days to collect receivables is 104 ( $365 \div 3.509$ ) days.

In the preceding computations, the net realizable value of accounts receivable was used because that is the amount typically reported in published financial statements. The results would not have been materially different had total accounts receivable been used.

## Real-World Data

What is the collection period for real companies? The time required to collect receivables varies among industries and among companies within industries. Column 4 in Exhibit 5.8 displays the average number of days to collect receivables for eight companies in three different industries.

Since fast-food restaurants require customers to pay cash when they purchase hamburgers or coffee, why do these companies have accounts receivable? The accounts receivable for **Yum! Brands** and **McDonald's** arise because these companies sell goods to restaurants that are independent franchisees. So, for example, Yum's accounts receivable represents future collections from restaurant owners, not customers who purchase pepperoni pizzas at Pizza Hut restaurants.

<sup>1</sup>To be more precise, the ratio could be computed using only credit sales and average accounts receivable. Usually, however, companies do not report credit sales separately from cash sales in published financial statements. Average accounts receivable, if desired, is computed as  $[(\text{beginning receivables} + \text{ending receivables}) \div 2]$ . For this course, use the simpler computation shown here ( $\text{sales} \div \text{accounts receivable}$ ).

## EXHIBIT 5.8

Industry	Company	Average Days to Sell Inventory	Average Days to Collect Receivables	Length of Operating Cycle
Fast Food	McDonald's	10	14	24
	Starbucks	77	11	88
	Yum! Brands	12	9	21
Office Supplies	Office Depot	50	31	81
	OfficeMax	59	24	83
	Staples	54	13	67
Wine	Concha y Toro	203	92	295
	Willamette Valley Vineyards	348	42	390

Are the collection periods for **Concha y Toro** and **Willamette Valley** too long? The answer depends on their credit policies. If they are selling goods to customers on net 30-day terms, there may be reason for concern, but if they allow customers 90 days to pay and the cost of this policy has been built into their pricing structure, the collection periods may not be unreasonable.

Some companies allow their customers extended time to pay their bills because the customers would otherwise have difficulty coming up with the money. For example, Concha y Toro may sell to a wine retailer that does not have the cash available to pay immediately. If Concha y Toro allows the retailer sufficient time, the retailer can sell the wine to customers and obtain the cash it needs to pay Concha y Toro. Many small companies do not have cash available to pay up front. Buying on credit is the only way they can obtain the inventory they need. If a manufacturer or wholesaler wants to sell to such companies, credit sales represent the only option available.

The **operating cycle** is defined as the average time it takes a business to convert inventory to accounts receivable plus the time it takes to convert accounts receivable into cash. The average number of days to collect receivables ratio is one component of the operating cycle for a particular company. The other component is the average number of days to sell inventory ratio that will be explained in Chapter 6. The length of the operating cycles for the real-world companies discussed herein is shown in the last column of Exhibit 5.8.

What is the significance of the different operating cycle lengths in Exhibit 5.8? As previously explained, the longer the operating cycle takes, the more it costs the company. Exhibit 5.8 shows it takes **OfficeMax** an average of 16 days longer than **Staples** to complete an operating cycle. All other things being equal, approximately how much did this longer time reduce OfficeMax's earnings? Assume OfficeMax could invest excess cash at 8 percent (or alternatively, assume it pays 8 percent to finance its inventory and accounts receivable). Using the accounting information reported in OfficeMax's financial statements, we can answer the question as follows.

$$\begin{aligned} \text{OfficeMax's investment in inventory} &\times \frac{\text{Interest rate}}{\text{365}} \times \text{Time} = \text{Cost} \\ \$1,114,570,000 &\times 8\% \times 16/365 = \$3,908,629 \end{aligned}$$

With 4.4 operating cycles per year ( $365 \div 83$ ), the extended operating cycle costs OfficeMax \$17.2 million annually. Based on the assumptions used here, OfficeMax would increase its after-tax net earnings by approximately 5 percent if it could reduce its operating cycle by 16 days. Although this illustration is a rough estimate, it demonstrates that it is important for businesses to minimize the length of their operating cycles.



## Focus On INTERNATIONAL ISSUES

### A ROSE BY ANY OTHER NAME . . .

If a person who studied U.S. GAAP wanted to look at the financial statements of a non-U.S. company, choosing statements of a company from another English-speaking country might seem logical. Presumably, this would eliminate language differences, and only the differences in GAAP would remain. However, this is not true.

When an accountant in the United States uses the term *turnover*, she or he is usually thinking of a financial ratio, such as the accounts receivable turnover ratio. However, in the United Kingdom, the term *turnover* refers to what U.S. accountants call *sales*. U.K. balance sheets do not usually show an account named *Inventory*; rather, they use the term *Stocks*. In the United States, accountants typically use the term *stocks* to refer to certificates representing ownership in a corporation. Finally, if an accountant or banker from the United Kingdom should ever ask you about your *gearing ratio*, he or she probably is not interested in your bicycle but in your debt to assets ratio.



### CHECK Yourself 5.4

Randolph Corporation had sales for the year of \$535,333 and an accounts receivable balance at year end of \$22,000. Determine Randolph's average number of days to collect accounts receivable.

**Answer** The accounts receivable turnover is 24.33 ( $\$535,333 \div \$22,000$ ) times per year. The average number of days to collect accounts receivable is 15 ( $365 \div 24.33$ ).



## A Look Back

We first introduced accounting for receivables in Chapter 2. This chapter presented additional complexities related to accounts receivable, such as the *allowance method of accounting for uncollectible accounts*. The allowance method improves matching of expenses with revenues. It also provides a more accurate measure of the value of accounts receivable on the balance sheet.

Under the allowance method, estimated uncollectible accounts expense is recorded in an adjusting entry at the end of the period in which a company has made credit sales. There are two methods commonly used to estimate the amount of uncollectible accounts expense: the percent of revenue method and the percent of receivables method. With the percent of revenue method, uncollectible accounts expense is measured as a percent of the period's sales. With the percent of receivables method, a company analyzes its accounts receivable at the end of the period, usually classifying them by age, to estimate the amount of the accounts receivable balance that is likely to be uncollectible. The balance in the Allowance for Doubtful Accounts account is then adjusted to equal

the estimated amount of uncollectible accounts. Uncollectible accounts expense decreases the net realizable value of receivables (accounts receivable — allowance for doubtful accounts), stockholders' equity, and net income.

The allowance method of accounting for uncollectible accounts is conceptually superior to the *direct write-off method*, in which uncollectible accounts expense is recognized when an account is determined to be uncollectible. The direct write-off method fails to match revenues with expenses and overstates accounts receivable on the balance sheet. It is easier to use, however, and is permitted by generally accepted accounting principles if the amount of uncollectible accounts expense is immaterial.

The chapter also introduced notes receivable and accounting for *accrued interest*. When the term of a promissory note extends over more than one accounting period, companies must record adjusting entries to recognize interest in the appropriate accounting period, even if the cash exchange of interest occurs in a different accounting period.

We also discussed accounting for credit card sales, a vehicle that shifts uncollectible accounts expense to the credit card issuer. Many companies find the benefits of accepting major credit cards to be worth the credit card expense consequently incurred.

Finally, we addressed the costs of making credit sales. In addition to uncollectible accounts expense, interest is a major cost of financing receivables. The length of the collection period provides a measure of the quality of receivables. Short collection periods usually indicate lower amounts of uncollectible accounts and interest cost. Long collection periods imply higher costs. The collection period can be measured in two steps. First, divide sales by the accounts receivable balance to determine the accounts receivable turnover ratio. Then divide the number of days in the year (365) by the accounts receivable turnover ratio.

## A Look Forward



Chapter 6 discusses accounting for long-term assets such as buildings and equipment. As with inventory cost flow, discussed in Chapter 4, GAAP allows companies to use different accounting methods to report on similar types of business events. Life would be easier for accounting students if all companies used the same accounting methods. However, the business world is complex. For the foreseeable future, people are likely to continue to have diverse views as to the best way to account for a variety of business transactions. To function effectively in today's business environment, it is important for you to be able to recognize differences in reporting practices.



### SELF-STUDY REVIEW PROBLEM

During 2010 Calico Company experienced the following accounting events.

1. Provided \$120,000 of services on account.
2. Collected \$85,000 cash from accounts receivable.
3. Wrote off \$1,800 of accounts receivable that were uncollectible.
4. Loaned \$3,000 to an individual, Emma Gardner, in exchange for a note receivable.
5. Paid \$90,500 cash for operating expenses.
6. Estimated that uncollectible accounts expense would be 2 percent of credit sales. Recorded the year-end adjusting entry.
7. Recorded the year-end adjusting entry for accrued interest on the note receivable (see Event 4). Calico made the loan on August 1. It had a six-month term and a 6 percent rate of interest.

Calico's ledger balances on January 1, 2010, were as follows.

Event No.	Assets									=	Liab.	+	Equity		
	Cash	+	Accts. Rec.	−	Allow.	+	Notes Rec.	+	Int. Rec.	=		Com. Stk.	+	Ret. Earn.	
Bal.	12,000		18,000		2,200	+	NA	+	NA	=	NA	+	20,000	+	7,800

### Required

- Record the 2010 events in ledger accounts using the horizontal format shown above.
- Determine net income for 2010.
- Determine net cash flow from operating activities for 2010.
- Determine the net realizable value of accounts receivable at December 31, 2010.
- What amount of interest revenue will Calico recognize on its note receivable in 2011?

### Solution to Requirement a.

Event No.	Assets									=	Liab.	+	Equity		
	Cash	+	Accts. Rec.	−	Allow.	+	Notes Rec.	+	Int. Rec.	=			Com. Stk.	+	Ret. Earn.
Bal.	12,000	+	18,000	−	2,200	+	NA	+	NA	=	NA	+	20,000	+	7,800
1	NA	+	120,000	−	NA	+	NA	+	NA	=	NA	+	NA	+	120,000
2	85,000	+	(85,000)	−	NA	+	NA	+	NA	=	NA	+	NA	+	NA
3	NA	+	(1,800)	−	(1,800)	+	NA	+	NA	=	NA	+	NA	+	NA
4	(3,000)	+	NA	−	NA	+	3,000	+	NA	=	NA	+	NA	+	NA
5	(90,500)	+	NA	−	NA	+	NA	+	NA	=	NA	+	NA	+	(90,500)
6	NA	+	NA	−	2,400	+	NA	+	NA	=	NA	+	NA	+	(2,400)
7	NA	+	NA	−	NA	+	NA	+	75*	=	NA	+	NA	+	75
Totals	3,500	+	51,200	−	2,800	+	3,000	+	75	=	NA	+	20,000	+	34,975

\*\$3,000 × .06 × 5/12 = \$75.

### Solution to Requirements b–e.

- Net income is \$27,175 (\$120,000 − \$90,500 − \$2,400 + \$75).
- Net cash flow from operating activities is an outflow of \$5,500 (\$85,000 − \$90,500).
- The net realizable value of accounts receivable is \$48,400 (\$51,200 − \$2,800).
- In 2011, Calico will recognize interest revenue for one month:  $3,000 \times .06 \times 1/12 = \$15$ .

## KEY TERMS

Account receivable 170  
Accounts receivable turnover ratio 186  
Accrued interest 181  
Adjusting entry 182  
Aging of accounts receivable 179  
Allowance for doubtful accounts 172

Allowance method of accounting for uncollectible accounts 172  
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## QUESTIONS

- What is the difference between accounts receivable and notes receivable?
- What is the *net realizable value* of receivables?
- What type of account is the Allowance for Doubtful Accounts?
- What are two ways in which estimating uncollectible accounts improves the accuracy of the financial statements?
- When using the allowance method, why is uncollectible accounts expense an estimated amount?
- What is the most common format for reporting accounts receivable on the balance sheet? What information does this method provide beyond showing only the net amount?
- Why is it necessary to reinstate a previously written off account receivable before the collection is recorded?
- What are some factors considered in estimating the amount of uncollectible accounts receivable?
- What is the effect on the accounting equation of recognizing uncollectible accounts expense?
- What is the effect on the accounting equation of writing off an uncollectible account receivable when the allowance method is used?
- How does the recovery of a previously written-off account affect the income statement when the allowance method is used? How does the recovery of a previously written-off account affect the statement of cash flows when the allowance method is used?
- What is the advantage of using the allowance method of accounting for uncollectible accounts?
- How do companies determine the percentage estimate of uncollectible accounts when using the percent of revenue method?
- What is an advantage of using the percent of receivables method of estimating uncollectible accounts expense?
- What is “aging of accounts receivable”?
- What is a promissory note?
- Define the following terms:
  - Maker
  - Payee
  - Principal
  - Interest
  - Maturity date
  - Collateral
- What is the formula for computing interest revenue?
- What is accrued interest?
- How does the accrual of interest revenue or expense illustrate the matching concept?
- Assets are listed on the balance sheet in the order of their liquidity. Explain this statement.
- When is an adjusting entry for accrued interest generally recorded?
- Assume that on July 1, 2010, Big Corp. loaned Little Corp. \$12,000 for a period of one year at 6 percent interest. What amount of interest revenue will Big report for 2010? What amount of cash will Big receive upon maturity of the note?
- In which section of the statement of cash flows will Big report the cash collected in question 23?
- Why is it generally beneficial for a business to accept major credit cards as payment for goods and services even when the fee charged by the credit card company is substantial?
- What types of costs do businesses avoid when they accept major credit cards as compared with handling credit sales themselves?
- How is the accounts receivable turnover ratio computed? What information does the ratio provide?
- How is the average number of days to collect accounts receivable computed? What information does the ratio provide?
- Is accounting terminology standard in all countries? What term is used in the United Kingdom to refer to *sales*? What term is used to refer to *inventory*? What is a *gearing ratio*? Is it important to know about these differences?
- What is the operating cycle of a business?

## EXERCISES

All applicable Exercises are available with McGraw-Hill Connect Accounting.

connect  
ACCOUNTING

### Exercise 5-1 Accounting for uncollectible accounts: allowance method

LO 1

Gold's Carpet Cleaning began operation on January 1, 2012. The company experienced the following events for its first year of operations.

- Provided \$150,000 of cleaning services on account.
- Collected \$115,000 cash from accounts receivable.
- Paid salaries of \$42,000 for the year.
- Adjusted the accounts to reflect management's expectations that uncollectible accounts expense would be \$2,300.

**Required**

- Organize the transaction data in accounts under an accounting equation.
- Prepare an income statement, balance sheet, and statement of cash flows for 2012.

**LO 1****Exercise 5-2** *Analysis of financial statement effects of accounting for uncollectible accounts under the allowance method*

Businesses using the allowance method for the recognition of uncollectible accounts expense commonly experience four accounting events.

- Recognition of revenue on account.
- Collection of cash from accounts receivable.
- Recognition of uncollectible accounts expense through a year-end adjusting entry.
- Write-off of uncollectible accounts.

**Required**

Show the effect of each event on the elements of the financial statements, using a horizontal statements model like the one shown here. Use the following coding scheme to record your answers: increase is +, decrease is –, not affected is NA. In the cash flow column, indicate whether the item is an operating activity (OA), investing activity (IA), or financing activity (FA). The first transaction is entered as an example.

Event No.	Assets	=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
1	+		NA		+	+		NA		+	NA

**LO 2****Exercise 5-3** *Effect of recognizing uncollectible accounts expense on financial statements: percent of revenue allowance method*

Pete's Auto Service was started on January 1, 2010. The company experienced the following events during its first year of operation.

**Events affecting 2010**

- Provided \$50,000 of repair services on account.
- Collected \$35,000 cash from accounts receivable.
- Adjusted the accounting records to reflect the estimate that uncollectible accounts expense would be 1 percent of the service revenue on account.

**Events affecting 2011**

- Wrote off a \$350 account receivable that was determined to be uncollectible.
- Provided \$65,000 of repair services on account.
- Collected \$66,000 cash from accounts receivable.
- Adjusted the accounting records to reflect the estimate that uncollectible accounts expense would be 1 percent of the service revenue on account.

**Required**

- Organize the transaction data in accounts under an accounting equation.
- Determine the following amounts:
  - Net income for 2010.
  - Net cash flow from operating activities for 2010.
  - Balance of accounts receivable at the end of 2010.
  - Net realizable value of accounts receivable at the end of 2010.
- Repeat Requirement *b* for the 2011 accounting period.



**Exercise 5-4** *Analyzing financial statement effects of accounting for uncollectible accounts using the percent of revenue allowance method*

**LO 2**

Duffy Bros. uses the allowance method to account for bad debts expense. Duffy experienced the following four events in 2008.

1. Recognition of \$64,000 of service revenue on account.
2. Collection of \$56,000 cash from accounts receivable.
3. Determination that \$900 of its accounts were not collectible and wrote off these receivables.
4. Recognition of uncollectible accounts expense for the year. Duffy estimates that bad debts expense will be 2 percent of its sales.

**Required**

Show the effect of each of these events on the elements of the financial statements, using a horizontal statements model like the following one. Use + for increase, – for decrease, and NA for not affected. In the cash flow column, indicate whether the item is an operating activity (OA), investing activity (IA), or financing activity (FA).

Event No.	Assets					=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
	Cash	+	Accts. Rec.	–	Allow.	=			Ret. Earn.						

**Exercise 5-5** *Analyzing account balances for a company using the allowance method of accounting for uncollectible accounts*

**LO 1**

The following account balances come from the records of Springfield Company.

	Beginning Balance	Ending Balance
Accounts receivable	\$4,000	\$4,500
Allowance for doubtful accounts	550	600

During the accounting period, Springfield recorded \$32,000 of service revenue on account. The company also wrote off a \$300 account receivable.

**Required**

- a. Determine the amount of cash collected from receivables.
- b. Determine the amount of uncollectible accounts expense recognized during the period.

**Exercise 5-6** *Effect of recovering a receivable previously written off*

**LO 1, 2**

The accounts receivable balance for T&M Lumber at December 31, 2010, was \$96,000. Also on that date, the balance in the Allowance for Doubtful Accounts was \$3,600. During 2011, \$2,400 of accounts receivable were written off as uncollectible. In addition, T&M Lumber unexpectedly collected \$250 of receivables that had been written off in a previous accounting period. Sales on account during 2011 were \$265,000, and cash collections from receivables were \$275,000. Uncollectible accounts expense was estimated to be 1 percent of the sales on account for the period.



**Required**

- a. Organize the information in accounts under an accounting equation.
- b. Based on the preceding information, compute (after year-end adjustment):
  - (1) Balance of Allowance for Doubtful Accounts at December 31, 2010.
  - (2) Balance of Accounts Receivable at December 31, 2010.
  - (3) Net realizable value of Accounts Receivable at December 31, 2010.
- c. What amount of uncollectible accounts expense will T&M Lumber report for 2010?
- d. Explain how the \$250 recovery of receivables affected the accounting equation.



## LO 2

**Exercise 5-7** *Accounting for uncollectible accounts: percent of revenue allowance method*

Dixie Auto Parts sells new and used auto parts. Although a majority of its sales are cash sales, it makes a significant amount of credit sales. During 2012, its first year of operations, Dixie Auto Parts experienced the following.

Sales on account	\$175,000
Cash sales	550,000
Collections of accounts receivable	168,000
Uncollectible accounts charged off during the year	1,200

**Required**

Assume that Dixie Auto Parts uses the allowance method of accounting for uncollectible accounts and estimates that 1 percent of its sales on account will not be collected. Answer the following questions.

- What is the Accounts Receivable balance at December 31, 2012?
- What is the ending balance of the Allowance for Doubtful Accounts at December 31, 2012, after all entries and adjusting entries are posted?
- What is the amount of uncollectible accounts expense for 2012?
- What is the net realizable value of accounts receivable at December 31, 2012?

## LO 2

**Exercise 5-8** *Determining account balances: allowance method of accounting for uncollectible accounts*

During the first year of operation, 2010, Holt Appliance Co. recognized \$300,000 of service revenue on account. At the end of 2010, the accounts receivable balance was \$58,000. For this first year in business, the owner believes uncollectible accounts expense will be about 1 percent of sales on account.

**Required**

- What amount of cash did Holt collect from accounts receivable during 2010?
- Assuming Holt uses the allowance method to account for uncollectible accounts, what amount should Holt record as uncollectible accounts expense for 2010?
- What is the net realizable value of receivables at the end of 2010?
- Show the effects of the above transactions *c* on the financial statements by recording the appropriate amounts in a horizontal statements model like the one shown here. In the Cash Flow column, indicate whether the item is an operating activity (OA), investing activity (IA), or financing activity (FA). Use NA for not affected.

Assets				=	Liab.	+	Equity	Rev.	-	Exp.	=	Net Inc.	Cash Flow
Cash	+	Accts. Rec.	-	Allow.									

## LO 3

**Exercise 5-9** *Accounting for uncollectible accounts: percent of receivables allowance method*

Posey Service Co. experienced the following transactions for 2011, its first year of operations:

- Provided \$72,000 of services on account.
- Collected \$56,000 cash from accounts receivable.
- Paid \$30,000 of salaries expense for the year.
- Posey adjusted the accounts using the following information from an accounts receivable aging schedule.

Number of Days Past Due	Amount	Percent Likely to Be Uncollectible	Allowance Balance
Current	\$12,000	.01	
0–30	2,000	.05	
31–60	500	.10	
61–90	500	.30	
Over 90 days	1,000	.50	

### Required

- Organize the information in accounts under an accounting equation.
- Prepare the income statement for Posey Service Co. for 2011.
- What is the net realizable value of the accounts receivable at December 31, 2011?

### Exercise 5-10 *Effect of recognizing uncollectible accounts on the financial statements: percent of receivables allowance method*

LO 3

Guidry Inc. experienced the following events for the first two years of its operations.

#### 2012:

- Provided \$80,000 of services on account.
- Provided \$35,000 of services and received cash.
- Collected \$65,000 cash from accounts receivable.
- Paid \$21,000 of salaries expense for the year.
- Adjusted the accounting records to reflect uncollectible accounts expense for the year. Guidry estimates that 6 percent of the ending accounts receivable balance will be uncollectible.

#### 2013:

- Wrote off an uncollectible account of \$710.
- Provided \$95,000 of services on account.
- Provided \$45,000 of services and collected cash.
- Collected \$90,000 cash from accounts receivable.
- Paid \$35,000 of salaries expense for the year.
- Adjusted the accounts to reflect uncollectible accounts expense for the year. Guidry estimates that 6 percent of the ending accounts receivable balance will be uncollectible.

### Required

- Organize the transaction data in accounts under an accounting equation.
- Prepare the income statement, statement of changes in stockholders' equity, balance sheet, and statement of cash flows for 2011.
- What is the net realizable value of the accounts receivable at December 31, 2011?
- Repeat Requirements *a*, *b*, and *c* for 2012.

### Exercise 5-11 *Effect of credit card sales on financial statements*

LO 5

Carlos, Incorporated, provided \$86,000 of services during 2010. All customers paid for the services with major credit cards. Carlos turned the credit card receipts over to the credit card company immediately. The credit card company paid Carlos cash in the amount of face value less a 2 percent service charge.

### Required

- Record the credit card sales and the subsequent collection of accounts receivable in a horizontal statements model like the one shown below. In the Cash Flow column, indicate whether the item is an operating activity (OA), investing activity (IA), or financing activity (FA). Use NA to indicate that an element is not affected by the event.

Assets			=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Accts. Rec.										

b. Answer the following questions:

- (1) What is the amount of total assets at the end of the accounting period?
- (2) What is the amount of revenue reported on the income statement?
- (3) What is the amount of cash flow from operating activities reported on the statement of cash flows?
- (4) Why would Carlos, Incorporated, accept credit cards instead of providing credit directly to its customers? In other words, why would Carlos be willing to pay 2 percent of sales to have the credit card company handle its sales on account?

### LO 5

#### Exercise 5-12 Recording credit card sales

Taylor Company accepted credit cards in payment for \$7,250 of merchandise sold during March 2010. The credit card company charged Taylor a 3 percent service fee. The credit card company paid Taylor as soon as it received the invoices. Cost of goods sold amounted to \$4,100.

#### Required

Based on this information alone, what is the amount of net income earned during the month of March?

### LO 4

#### Exercise 5-13 Accounting for notes receivable

Morris Enterprises loaned \$60,000 to Faello Co. on October 1, 2012, for one year at 8 percent interest.

#### Required

Show the effects of the following transactions in a horizontal statements model like the one shown below.

- (1) The loan to Faello Co.
- (2) The adjusting entry at December 31, 2012.
- (3) The adjusting entry and collection of the note on September 1, 2013.

Assets			=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Date	Cash	+	Notes Rec.	+	Int. Rec.	=	Ret. Earn.					

### LO 4

#### Exercise 5-14 Notes receivable—accrued interest

On March 1, 2012, Sun Co. loaned \$12,000 to Silena Co. for one year at 6 percent interest.

#### Required

Answer the following questions.

- a. What is Sun Co.'s interest income for 2012?
- b. What is Sun Co.'s total amount of receivables at December 31, 2012?
- c. What amounts will be reported on Sun Co.'s 2012 statement of cash flows?
- d. What is Sun Co.'s interest income for 2013?
- e. What is the total amount of cash that Sun Co.'s will collect in 2013 from Silena Co.?
- f. What amounts will be reported on Sun Co.'s 2013 statement of cash flows?
- g. What is the total amount of interest Sun Co. earned from the loan to Silena Co.?

### Exercise 5-15 Comprehensive single-cycle problem

LO 2, 4

The following after-closing trial balance was drawn from the accounts of Oak Timber Co. as of December 31, 2011.

	Debit	Credit
Cash	\$26,000	
Accounts receivable	28,000	
Allowance for doubtful accounts		\$ 3,000
Inventory	25,000	
Accounts payable		19,200
Common stock		20,000
Retained earnings		36,800
Totals	<u>\$79,000</u>	<u>\$79,000</u>

#### Transactions for 2012

1. Acquired an additional \$20,000 cash from the issue of common stock.
2. Purchased \$80,000 of inventory on account.
3. Sold inventory that cost \$65,000 for \$110,000. Sales were made on account.
4. Wrote off \$1,400 of uncollectible accounts.
5. On September 1, Oak loaned \$12,000 to Pine Co. The note had a 8 percent interest rate and a one-year term.
6. Paid \$19,600 cash for salaries expense.
7. Collected \$96,000 cash from accounts receivable.
8. Paid \$91,000 cash on accounts payable.
9. Paid a \$5,000 cash dividend to the stockholders.
10. Estimated uncollectible accounts expense to be 1 percent of sales on account.
11. Recorded the accrued interest at December 31, 2012.

#### Required

- a. Organize the transaction data in accounts under an accounting equation.
- b. Prepare an income statement, statement of changes in stockholders' equity, balance sheet, and statement of cash flows for 2012.

### Exercise 5-16 Performing ratio analysis using real-world data

LO 6

The following data were taken from [Hershey Foods Corporation's](#) 2007 annual report. All dollar amounts are in thousands.

	Fiscal Years Ending	
	December 31, 2007	December 31, 2006
Sales	\$4,946,716	\$4,944,230
Accounts Receivable	487,285	522,673

#### Required

- a. Compute Hershey's accounts receivable ratios for 2007 and 2006.
- b. Compute Hershey's average days to collect accounts receivables for 2007 and 2006.
- c. Based on the ratios computed in Requirements *a* and *b*, did Hershey's performance get better or worse from 2006 to 2007?
- d. In 2007 the average interest rate on Hershey's long-term debt was approximately 6.4 percent. Assume it took Hershey 30 days to collect its receivables. Using an interest rate of 6.4 percent, calculate how much it cost Hershey to finance its receivables for 30 days in 2007.

## PROBLEMS



### LO 2

#### CHECK FIGURES

- c. Ending Accounts Receivable, 2010: \$13,000
- d. Net Income, 2011: \$33,035

All applicable Problems are available with McGraw-Hill Connect Accounting.

#### Problem 5-17 Accounting for uncollectible accounts—two cycles using the percent of revenue allowance method

The following transactions apply to Puretz Consulting for 2010, the first year of operation.

1. Recognized \$75,000 of service revenue earned on account.
2. Collected \$62,000 from accounts receivable.
3. Adjusted accounts to recognize uncollectible accounts expense. Puretz uses the allowance method of accounting for uncollectible accounts and estimates that uncollectible accounts expense will be 2 percent of sales on account.

The following transactions apply to Puretz Consulting for 2011.

1. Recognized \$86,500 of service revenue on account.
2. Collected \$85,000 from accounts receivable.
3. Determined that \$1,120 of the accounts receivable were uncollectible and wrote them off.
4. Collected \$500 of an account that had been previously written off.
5. Paid \$52,600 cash for operating expenses.
6. Adjusted accounts to recognize uncollectible accounts expense for 2011. Puretz estimates that uncollectible accounts expense will be 1 percent of sales on account.

#### Required

Complete all the following requirements for 2010 and 2011. Complete all requirements for 2010 prior to beginning the requirements for 2011.

- a. Identify the type of each transaction (asset source, asset use, asset exchange, or claims exchange).
- b. Show the effect of each transaction on the elements of the financial statements, using a horizontal statements model like the one shown here. Use + for increase, – for decrease, and NA for not affected. Also, in the Cash Flow column, indicate whether the item is an operating activity (OA), investing activity (IA), or financing activity (FA). The first transaction is entered as an example. (*Hint:* Closing entries do not affect the statements model.)

Event No.	Assets	=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
1	+		NA	+		+		NA		+	NA

- c. Organize the transaction data in accounts under an accounting equation.
- d. Prepare the income statement, statement of changes in stockholders' equity, balance sheet, and statement of cash flows.

### LO 2



#### Problem 5-18 Determining account balances: percent of revenue allowance method of accounting for uncollectible accounts

The following information pertains to Royal Carpet Company's sales on account and accounts receivable.

Accounts receivable balance, January 1, 2010	\$ 64,500
Allowance for doubtful accounts, January 1, 2010	2,800
Sales on account, 2010	756,000
Cost of goods sold, 2010	505,000
Collections of accounts receivable, 2010	782,000

#### CHECK FIGURE

- a. Net Realizable Value: \$31,920

After several collection attempts, Royal Carpet Company wrote off \$2,600 of accounts that could not be collected. Royal estimates that bad debts expense will be 0.5 percent of sales on account.

### Required

- Compute the following amounts.
  - Using the allowance method, the amount of uncollectible accounts expense for 2010.
  - Net realizable value of receivables at the end of 2010.
- Explain why the uncollectible accounts expense amount is different from the amount that was written off as uncollectible.

### Problem 5-19 *Accounting for uncollectible accounts: percent of receivables allowance method*

LO 3

Huggins Inc. experienced the following transactions for 2010, its first year of operations.

- Issued common stock for \$60,000 cash.
- Purchased \$210,000 of merchandise on account.
- Sold merchandise that cost \$130,000 for \$245,000 on account.
- Collected \$215,000 cash from accounts receivable.
- Paid \$196,000 on accounts payable.
- Paid \$38,000 of salaries expense for the year.
- Paid other operating expenses of \$28,000.
- Huggins adjusted the accounts using the following information from an accounts receivable aging schedule.

### CHECK FIGURES

- Net Income: \$46,910  
Total Assets: \$120,910

Number of Days Past Due	Amount	Percent Likely to Be Uncollectible	Allowance Balance
Current	\$19,000	.01	
0–30	3,000	.05	
31–60	4,500	.10	
61–90	1,500	.20	
Over 90 days	2,000	.50	

### Required

- Organize the transaction data in accounts under an accounting equation.
- Prepare the income statement, statement of changes in stockholders' equity, balance sheet, and statement of cash flows for Huggins Inc. for 2010.
- What is the net realizable value of the accounts receivable at December 31, 2010?

### Problem 5-20 *Determination of account balances—percent of receivables allowance method of accounting for uncollectible accounts*

LO 2

During the first year of operation, 2012, Steve's Garage recognized \$256,000 of service revenue on account. At the end of 2012, the accounts receivable balance was \$62,300. Even though this is his first year in business, the owner believes he will collect all but about 5 percent of the ending balance.

### Required

- What amount of cash was collected by Steve's during 2012?
- Assuming the use of an allowance system to account for uncollectible accounts, what amount should Steve record as uncollectible accounts expense in 2012?
- What is the net realizable value of receivables at the end of 2012?
- Show the effect of the above transactions *c* on the financial statements by recording the appropriate amounts in a horizontal statements model like the one shown here. When you record amounts in the Cash Flow column, indicate whether the item is an operating activity

### CHECK FIGURE

- Net Realizable Value \$59,185



(OA), investing activity (IA), or financing activity (FA). The letters NA indicate that an element is not affected by the event.

Assets				=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Accts. Rec.	–	Allow.									

LO 3, 5



## CHECK FIGURES

- b. Net Income: \$43,400  
Total Assets: \$93,400

### Problem 5-21 Accounting for credit card sales and uncollectible accounts: percent of receivables allowance method

Morris Supply Company had the following transactions in 2010.

1. Acquired \$50,000 cash from the issue of common stock.
2. Purchased \$210,000 of merchandise for cash in 2010.
3. Sold merchandise that cost \$140,000 for \$265,000 during the year under the following terms.

\$ 60,000	Cash sales
175,000	Credit card sales (The credit card company charges a 3 percent service fee.)
30,000	Sales on account

4. Collected all the amount receivable from the credit card company.
5. Collected \$23,000 of accounts receivable.
6. Paid selling and administrative expenses of \$76,000.
7. Determined that 5 percent of the ending accounts receivable balance would be uncollectible.

#### Required

- a. Record the above events in a horizontal statements model like the following one. When you record amounts in the Cash Flow column, indicate whether the item is an operating activity (OA), an investing activity (IA), or a financing activity (FA). The letters NA indicate that an element is not affected by the event.

Event	Balance Sheet										Income Statement					Statem. of Cash Flows	
	Assets					=	Equity					Rev.	–	Exp.	=		Net Inc.
	Cash	+	Accts. Rec.	–	Allow	+	Mdse. Inv.	=	Com. Stk.	+	Ret. Earn.						

- b. Prepare an income statement, statement of changes in stockholders' equity, balance sheet, and statement of cash flows for 2010.

LO 2, 4

### Problem 5-22 Accounting for notes receivable and uncollectible accounts using the percent of sales allowance method

The following transactions apply to Baker Co. for 2010, its first year of operations.

1. Issued \$60,000 of common stock for cash.
2. Provided \$128,000 of services on account.
3. Collected \$113,200 cash from accounts receivable.
4. Loaned \$12,000 to BBC on September 1, 2010. The note had a one-year term to maturity and an 8 percent interest rate.
5. Paid \$28,000 of salaries expense for the year.
6. Paid a \$2,000 dividend to the stockholders.

7. Recorded the accrued interest on December 31, 2010 (see item 4).
8. Uncollectible accounts expense is estimated to be 1 percent of sales on account.

### Required

- a. Show the effects of the above transactions in a horizontal statements model like the one shown below.

Event	Assets				Equity		Rev. — Exp. = Net Inc.	Cash Flows
	Cash +	Accts. Rec. — Allow. for Doubtful Accts.	+ Notes Rec.	+ Int. Rec.	= Com. Stk.	+ Ret. Earn.		

- b. Prepare the income statement, balance sheet, and statement of cash flows for 2010.

### Problem 5-23 Effect of transactions on the elements of financial statements

LO 1, 4, 5

### Required

Identify each of the following independent transactions as asset source (AS), asset use (AU), asset exchange (AE), or claims exchange (CE). Also explain how each event affects assets, liabilities, stockholders' equity, net income, and cash flow by placing a + for increase, – for decrease, or NA for not affected under each of the categories. The first event is recorded as an example.

Event	Type of Event	Assets	Liabilities	Common Stock	Retained Earnings	Net Income	Cash Flow
a	AE	+/-	NA	NA	NA	NA	—

- a. Paid cash for land.
- b. Sold merchandise at a price above cost. Accepted payment by credit card. The credit card company charges a service fee. The receipts have not yet been forwarded to the credit card company.
- c. Submitted receipts to the credit card company (see *b* above) and collected cash.
- d. Recovered an uncollectible account that was previously written off (assume direct write-off method was used).
- e. Provided services for cash.
- f. Paid cash for other operating expenses.
- g. Paid cash for salaries expense.
- h. Loaned Carl Maddox cash. The loan had a 5 percent interest rate and a one-year term to maturity.
- i. Paid cash to creditors on accounts payable.
- j. Provided services on account.
- k. Sold land for cash at its cost.
- l. Paid cash to satisfy salaries payable.
- m. Accrued three months' interest on the note receivable (see *h* above).
- n. Collected cash from customers paying their accounts.
- o. Wrote off an uncollectible account (use allowance method).

### Problem 5-24 Multistep income statement and balance sheet

LO 1, 4

### Required

Use the following information to prepare a multistep income statement and a classified balance sheet for Reza Equipment Co. for 2010. (*Hint:* Some of the items will *not* appear on either statement, and ending retained earnings must be calculated.)



**CHECK FIGURES**

Total Current Assets: \$250,300  
Total Current Liabilities: \$109,600

Salaries expense	\$ 96,000	Interest receivable (short term)	\$ 500
Common stock	40,000	Beginning retained earnings	18,100
Notes receivable (short term)	12,000	Operating expenses	70,000
Allowance for doubtful accounts	4,000	Cash flow from investing activities	80,000
Accumulated depreciation	30,000	Prepaid rent	9,600
Notes payable (long term)	103,600	Land	36,000
Salvage value of building	4,000	Cash	17,800
Interest payable (short term)	1,800	Inventory	122,800
Uncollectible accounts expense	10,800	Accounts payable	46,000
Supplies	1,600	Interest expense	24,000
Equipment	60,000	Salaries payable	9,200
Interest revenue	4,200	Unearned revenue	52,600
Sales revenue	396,000	Cost of goods sold	143,000
Dividends	8,000	Accounts receivable	90,000
Rent expense	3,400		

**LO 2, 4****CHECK FIGURES**

- a. Net Realizable Value: \$32,300  
b. Interest Revenue: \$2,400

**Problem 5-25 Missing information**

The following information comes from the accounts of Jersey Company.

Account Title	Beginning Balance	Ending Balance
Accounts receivable	\$30,000	\$34,000
Allowance for doubtful accounts	1,800	1,700
Notes receivable	40,000	40,000
Interest receivable	1,200	3,600

**Required**

- There were \$170,000 in sales on account during the accounting period. Write-offs of uncollectible accounts were \$1,400. What was the amount of cash collected from accounts receivable? What amount of uncollectible accounts expense was reported on the income statement? What was the net realizable value of receivables at the end of the accounting period?
- The note has a 6 percent interest rate and 24 months to maturity. What amount of interest revenue was recognized during the period? How much cash was collected for interest?

**LO 2, 4, 5****CHECK FIGURES**

Net Income: \$236,710  
Total Assets: \$1,142,950

**Problem 5-26 Comprehensive accounting cycle problem (uses percent of revenue allowance method)**

The following trial balance was prepared for Gifts, Etc., Inc., on December 31, 2010, after the closing entries were posted.

	Debit	Credit
Cash	\$110,000	
Accounts receivable	136,000	
Allowance for doubtful accounts		\$ 10,000
Inventory	690,000	
Accounts payable		98,000
Common stock		720,000
Retained earnings		108,000
Totals	<u>\$936,000</u>	<u>\$936,000</u>

Gifts, Etc. had the following transactions in 2011.

- Purchased merchandise on account for \$360,000.
- Sold merchandise that cost \$250,000 for \$465,000 on account.
- Sold for \$240,000 cash merchandise that had cost \$144,000.

4. Sold merchandise for \$180,000 to credit card customers. The merchandise had cost \$108,000. The credit card company charges a 3 percent fee.
5. Collected \$526,000 cash from accounts receivable.
6. Paid \$430,000 cash on accounts payable.
7. Paid \$134,000 cash for selling and administrative expenses.
8. Collected cash for the full amount due from the credit card company.
9. Issued a \$48,000 face value, interest-bearing note with an 8 percent interest rate and a one-year term to maturity.
10. Wrote off \$7,200 of accounts as uncollectible.
11. Made the following adjusting entries:
  - (a) Recorded uncollectible accounts expense estimated at 1 percent of sales on account.
  - (b) Recorded seven months of accrued interest on the note at December 31, 2011.

### Required

- a. Organize the transaction data in accounts under an accounting equation.
- b. Prepare an income statement, a statement of changes in stockholders' equity, a balance sheet, and a statement of cash flows for 2011.

### Problem 5-27 Performing ratio analysis using real-world data

**AutoZone, Inc.**, claims to be “the nation’s leading specialty retailer and a leading distributor of automotive replacement parts and accessories.” It sells replacement auto parts directly to the consumer. **BorgWarner, Inc.**, has over 17,000 employees and produces automobile parts, such as transmissions and cooling systems, for the world’s vehicle manufacturers. The following data were taken from these companies’ 2007 annual reports. All dollar amounts are in thousands.

LO 6



	AutoZone August 25, 2007	BorgWarner December 31, 2007
Sales	\$6,169,804	\$5,328,600
Accounts receivable	59,876	802,400

### Required

- a. Before performing any calculations, speculate as to which company will take the longest to collect its accounts receivables. Explain the rationale for your decision.
- b. Calculate the accounts receivable turnover ratios for AutoZone and BorgWarner.
- c. Calculate the average days to collect accounts receivables for AutoZone and BorgWarner.
- d. Do the calculations from Requirements b and c confirm your speculations in Requirement a?

## ANALYZE, THINK, COMMUNICATE

### ATC 5-1 Business Applications Case Understanding real-world annual reports

#### Required

Use the **Topps Company**’s annual report in Appendix B to answer the following questions.

- a. How long did it take Topps to collect accounts receivable during the year ended February 25, 2006?
- b. Approximately what percentage of accounts receivable, as of February 25, 2006, does the company think will not be collected (see Note 4)? Caution, “Reserve for returns,” also shown in Note 4, is not related to uncollectible accounts receivable.
- c. What do you think the balance in the Reserve for Returns account represents?

The Topps Company, Inc.

**ATC 5-2 Group Assignment** *Missing information*

The following selected financial information is available for three companies.

	<b>Bell</b>	<b>Card</b>	<b>Zore</b>
Total sales	\$125,000	\$210,000	?
Cash sales	?	26,000	\$120,000
Sales on account	40,000	?	75,000
Accounts receivable, January 1, 2012	6,200	42,000	?
Accounts receivable, December 31, 2012	5,600	48,000	7,500
Allowance for doubtful accounts, January 1, 2012	?	?	405
Allowance for doubtful accounts, December 31, 2012	224	1,680	?
Uncollectible accounts expense, 2012	242	1,200	395
Uncollectible accounts written off	204	1,360	365
Collections of accounts receivable, 2012	?	?	75,235

**Required**

- a. Divide the class into three sections and divide each section into groups of three to five students. Assign one of the companies to each of the sections.

**Group Tasks**

- (1) Determine the missing amounts for your company.
- (2) Determine the percentage of accounts receivable estimated to be uncollectible at the end of 2011 and 2012 for your company.
- (3) Determine the percentage of total sales that are sales on account for your company.
- (4) Determine the accounts receivable turnover for your company.

**Class Discussion**

- b. Have a representative of each section put the missing information on the board and explain how it was determined.
- c. Which company has the highest percentage of sales that are on account?
- d. Which company is doing the best job of collecting its accounts receivable? What procedures and policies can a company use to better collect its accounts receivable?

**ATC 5-3 Real-World Case** *Time needed to collect accounts receivable*

Presented here are the average days to collect accounts receivable for four companies in different industries. The data are for 2007.

<b>Company</b>	<b>Average Days to Collect Accounts Receivables</b>
Boeing (aircraft manufacturer)	32 days
Ford (automobile manufacturer—automotive operations only)	11
Haverty's (furniture retailer)	31
Whirlpool (household appliance manufacturer)	49

**Required**

Write a brief memorandum that provides answers to the following questions.

- a. Why would a company that manufactures large expensive items such as cars (Ford) collect its accounts receivables faster than a company that makes appliances (Whirlpool)?
- b. Why would a company that manufactures airplanes (Boeing) collect its accounts receivables as quickly as a company that sells furniture (Haverty's)?

**ATC 5-4 Business Applications Case** *Using average number of days to collect accounts receivable to make comparisons*

The following information was drawn from the accounting records of Hedges and Latour.



Account Title	Hedges	Latour
Accounts receivable (year end)	\$ 80,000	\$ 50,000
Sales on account	920,000	450,000

**Required**

- Determine the average number of days to collect accounts receivable for each company.
- Which company is likely to incur more costs associated with extending credit?
- Identify and discuss some of the costs associated with extending credit.
- Explain why a company would be willing to accept the costs of extending credit to its customers.

**ATC 5-5 Business Applications Case** *Using ratios to make comparisons*

The following accounting information exists for Anjou and Bartlett companies at the end of 2010.



	Anjou	Bartlett
Cash	\$ 25,000	\$ 70,000
Accounts receivable	105,000	260,000
Allowance for doubtful accounts	5,000	10,000
Merchandise inventory	75,000	150,000
Accounts payable	80,000	200,000
Cost of goods sold	475,000	630,000
Sales	650,000	1,000,000

**Required**

- For each company, compute the gross margin percentage and the average number of days to collect accounts receivable (use the net realizable value of receivables to compute the average days to collect accounts receivable).
- In relation to cost, which company is charging more for its merchandise?
- Which company is likely to incur higher financial costs associated with the granting of credit to customers? Explain.
- Which company appears to have more restrictive credit standards when authorizing credit to its customers? (*Hint:* There is no specific answer to this question. Use your judgment and general knowledge of ratios to answer.)

**ATC 5-6 Writing Assignment** *Cost of charge sales*

Paul Smith is opening a plumbing supply store in University City. He plans to sell plumbing parts and materials to both wholesale and retail customers. Since contractors (wholesale customers) prefer to charge parts and materials and pay at the end of the month, Paul expects he will have to offer charge accounts. He plans to offer charge sales to the wholesale customers only and to require retail customers to pay with either cash or credit cards. Paul wondered what expenses his business would incur relative to the charge sales and the credit cards.



**Required**

- What issues will Paul need to consider if he allows wholesale customers to buy plumbing supplies on account?
- Write a memo to Paul Smith outlining the potential cost of accepting charge customers. Discuss the difference between the allowance method for uncollectible accounts and the direct write-off method. Also discuss the cost of accepting credit cards.



**ATC 5-7 Corporate Governance** *How bad can it be?*

Alonzo Saunders owns a small training services company that is experiencing growing pains. The company has grown rapidly by offering liberal credit terms to its customers. Although his competitors require payment for services within 30 days, Saunders permits his customers to delay payment for up to 90 days. Saunders' customers thereby have time to fully evaluate the training that employees receive before they must pay for that training. Saunders guarantees satisfaction. If a customer is unhappy, the customer does not have to pay. Saunders works with reputable companies, provides top-quality training, and rarely encounters dissatisfied customers.

The long collection period, however, has created a cash flow problem. Saunders has a \$100,000 accounts receivable balance, but needs cash to pay current bills. He has recently negotiated a loan agreement with National Bank of Brighton County that should solve his cash flow problems. The loan agreement requires that Saunders pledge the accounts receivable as collateral for the loan. The bank agreed to loan Saunders 70 percent of the receivables balance, thereby giving him access to \$70,000 cash. Saunders is satisfied with this arrangement because he estimates he needs approximately \$60,000.

On the day Saunders was to execute the loan agreement, he heard a rumor that his biggest customer was experiencing financial problems and might declare bankruptcy. The customer owed Saunders \$45,000. Saunders promptly called the customer's chief accountant and learned "off the record" that the rumor was true. The accountant told Saunders that the company's net worth was negative and most of its assets were pledged as collateral for bank loans. In his opinion, Saunders was unlikely to collect the balance due. Saunders' immediate concern was the impact the circumstances would have on his loan agreement with the bank.

Saunders uses the direct write-off method to recognize uncollectible accounts expense. Removing the \$45,000 receivable from the collateral pool would leave only \$55,000 of receivables, reducing the available credit to \$38,500 ( $\$55,000 \times 0.70$ ). Even worse, recognizing the uncollectible accounts expense would so adversely affect his income statement that the bank might further reduce the available credit by reducing the percentage of receivables allowed under the loan agreement. Saunders will have to attest to the quality of the receivables at the date of the loan but reasons that since the information he obtained about the possible bankruptcy was "off the record" he is under no obligation to recognize the uncollectible accounts expense until the receivable is officially uncollectible.

**Required**

- How are income and assets affected by the decision not to act on the bankruptcy information?
- Review the AICPA's Articles of Professional Conduct (see Chapter 2) and comment on any of the standards that would be violated by the actions Saunders is contemplating.
- How do the elements of the fraud triangle (see Chapter 2) apply to this case?

**ATC 5-8 Research Assignment** *Comparing Toro Company's time to collect accounts receivable*

Using the most current annual reports or the Forms 10-K for **Toro Company**, complete the requirements below. To obtain the Forms 10-K use either the EDGAR system following the instructions in Appendix A or the companies' websites. The annual reports can be found on the companies' websites.

**Required**

- What was Toro's average days to collect accounts receivable? Show your computations.
- What percentage of accounts receivable did Toro estimate would not be collected?
- Did Toro provide any information about warranties that it provides to customers? If so, what information was provided? (*Hint:* Look at the accrued warranty footnote.)
- Does it appear that Toro's warranty costs have been decreasing or increasing?



## CHAPTER

# 6

# Accounting *for* Long-Term Operational Assets

## LEARNING OBJECTIVES

**After you have mastered the material in this chapter you will be able to:**

- 1** Identify different types of long-term operational assets.
- 2** Determine the cost of long-term operational assets.
- 3** Explain how different depreciation methods affect financial statements.
- 4** Determine how gains and losses on disposals of long-term operational assets affect financial statements.
- 5** Show how revising estimates affects financial statements.
- 6** Explain how continuing expenditures for operational assets affect financial statements.
- 7** Explain how expense recognition for natural resources (depletion) affects financial statements.
- 8** Explain how expense recognition for intangible assets (amortization) affects financial statements.
- 9** Understand how expense recognition choices and industry characteristics affect financial performance measures.

## CHAPTER OPENING

Companies use assets to produce revenue. Some assets, like inventory or office supplies, are called **current assets** because they are used relatively quickly (within a single accounting period). Other assets, like equipment or buildings, are used for extended periods of time (two or more accounting periods). These assets are called **long-term operational assets**.<sup>1</sup> Accounting for long-term assets raises several questions. For example, what is the cost of the asset? Is it the list price only or should the cost of transportation, transit insurance,

<sup>1</sup> Classifying assets as current versus long term is explained in more detail in Chapter 7.

setup, and so on be added to the list price? Should the cost of a long-term asset be recognized as expense in the period the asset is purchased or should the cost be expensed over the useful life of the asset? What happens in the accounting records when a long-term asset is retired from use? This chapter answers these questions. It explains accounting for long-term operational assets from the date of purchase through the date of disposal.

## The *Curious* Accountant

In the normal course of operations, most companies acquire long-term assets each year. The way in which a company hopes to make money with these assets varies according to the type of business and the asset acquired. During a recent accounting period, **Weyerhaeuser Company** made cash acquisitions of property and equipment of \$861 million and cash acquisitions of timber and timberlands of \$96 million.

Can you think of how Weyerhaeuser's use of trees to produce revenue differs from its use of trucks? Do you think the procedures used to account for timber should be similar to or different from those used to account for trucks, and if so, how? (Answers on page 213.)



**LO 1**

Identify different types of long-term operational assets.

## TANGIBLE VERSUS INTANGIBLE ASSETS

Long-term assets may be tangible or intangible. **Tangible assets** have a physical presence; they can be seen and touched. Tangible assets include equipment, machinery, natural resources, and land. In contrast, intangible assets have no physical form. Although they may be represented by physical documents, **intangible assets** are, in fact, rights or privileges. They cannot be seen or touched. For example, a patent represents an exclusive legal *privilege* to produce and sell a particular product. It protects inventors by making it illegal for others to profit by copying their inventions. Although a patent may be represented by legal documents, the privilege is the actual asset. Since the privilege cannot be seen or touched, the patent is an intangible asset.

### Tangible Long-Term Assets

Tangible long-term assets are classified as (1) property, plant, and equipment; (2) natural resources, or (3) land.

#### *Property, Plant, and Equipment*

**Property, plant, and equipment** is sometimes called *plant assets* or *fixed assets*. Examples of property, plant, and equipment include furniture, cash registers, machinery, delivery trucks, computers, mechanical robots, and buildings. The level of detail used to account for these assets varies. One company may include all office equipment in one account, whereas another company might divide office equipment into computers, desks, chairs, and so on. The term used to recognize expense for property, plant, and equipment is **depreciation**.

#### *Natural Resources*

Mineral deposits, oil and gas reserves, timber stands, coal mines, and stone quarries are examples of **natural resources**. Conceptually, natural resources are inventories. When sold, the cost of these assets is frequently expensed as *cost of goods sold*. Although inventories are usually classified as short-term assets, natural resources are normally classified as long term because the resource deposits generally have long lives. For example, it may take decades to extract all of the diamonds from a diamond mine. The term used to recognize expense for natural resources is **depletion**.

#### *Land*

Land is classified separately from other property because land is not subject to depreciation or depletion. Land has an infinite life. It is not worn out or consumed as it is used. When buildings or natural resources are purchased simultaneously with land, the amount paid must be divided between the land and the other assets because of the nondepreciable nature of the land.

### Intangible Assets

Intangible assets fall into two categories, those with *identifiable useful lives* and those with *indefinite useful lives*.

#### *Intangible Assets with Identifiable Useful Lives*

Intangible assets with identifiable useful lives include patents and copyrights. These assets may become obsolete (a patent may become worthless if new technology provides a superior product) or may reach the end of their legal lives. The term used when recognizing expense for intangible assets with identifiable useful lives is called **amortization**.

#### *Intangible Assets with Indefinite Useful Lives*

The benefits of some intangible assets may extend so far into the future that their useful lives cannot be estimated. For how many years will the **Coca-Cola** trademark

attract customers? When will the value of a **McDonald's** franchise end? There are no answers to these questions. Intangible assets such as renewable franchises, trademarks, and goodwill have indefinite useful lives. The costs of such assets are not expensed unless the value of the assets becomes impaired.

## DETERMINING THE COST OF LONG-TERM ASSETS

The **historical cost concept** requires that an asset be recorded at the amount paid for it. This amount includes the purchase price plus any costs necessary to get the asset in the location and condition for its intended use. Common cost components are:

- **Buildings:** (1) purchase price, (2) sales taxes, (3) title search and transfer document costs, (4) realtor's and attorney's fees, and (5) remodeling costs.
- **Land:** (1) purchase price, (2) sales taxes, (3) title search and transfer document costs, (4) realtor's and attorney's fees, (5) costs for removal of old buildings, and (6) grading costs.
- **Equipment:** (1) purchase price (less discounts), (2) sales taxes, (3) delivery costs, (4) installation costs, and (5) costs to adapt for intended use.

The cost of an asset does not include payments for fines, damages, and so on that could have been avoided.

### LO 2

Determine the cost of long-term operational assets.

## CHECK Yourself 6.1

Sheridan Construction Company purchased a new bulldozer that had a \$260,000 list price. The seller agreed to allow a 4 percent cash discount in exchange for immediate payment. The bulldozer was delivered FOB shipping point at a cost of \$1,200. Sheridan hired a new employee to operate the dozer for an annual salary of \$36,000. The employee was trained to operate the dozer for a one-time training fee of \$800. The cost of the company's theft insurance policy increased by \$300 per year as a result of adding the dozer to the policy. The dozer had a five-year useful life and an expected salvage value of \$26,000. Determine the asset's cost.

**Answer**

List price	\$260,000
Less: Cash discount ( $\$260,000 \times 0.04$ )	(10,400)
Shipping cost	1,200
Training cost	800
Total asset cost (amount capitalized)	<u>\$251,600</u>

## Basket Purchase Allocation

Acquiring a group of assets in a single transaction is known as a **basket purchase**. The total price of a basket purchase must be allocated among the assets acquired. Accountants commonly allocate the purchase price using the **relative fair market value method**. To illustrate, assume that Beatty Company purchased land and a building for \$240,000 cash. A real estate appraiser determined the fair market value of each asset to be

Building	\$270,000
Land	90,000
Total	<u>\$360,000</u>



The appraisal indicates that the land is worth 25 percent ( $\$90,000 \div \$360,000$ ) of the total value and the building is worth 75 percent ( $\$270,000 \div \$360,000$ ). Using these percentages, the actual purchase price is allocated as follows.

Building	$0.75 \times \$240,000 =$	\$180,000
Land	$0.25 \times \$240,000 =$	60,000
Total		<u>\$240,000</u>

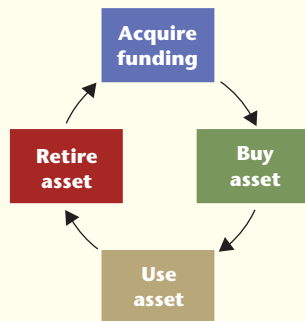
## METHODS OF RECOGNIZING DEPRECIATION EXPENSE

### LO 3

Explain how different depreciation methods affect financial statements.

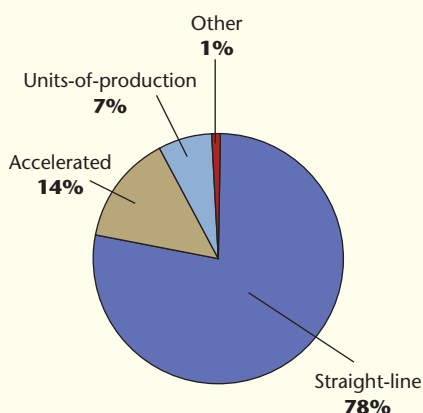
#### EXHIBIT 6.1

##### Life Cycle of an Operational Asset



#### EXHIBIT 6.2

##### Depreciation Methods Used by U.S. Companies



Data Source: AICPA Accounting Trends and Techniques.

The life cycle of an operational asset involves (1) acquiring the funds to buy the asset, (2) purchasing the asset, (3) using the asset, and (4) retiring (disposing of) the asset. These stages are illustrated in Exhibit 6.1. The stages involving (1) acquiring funds and (2) purchasing assets have been discussed previously. This section of the chapter describes how accountants recognize the *use* of assets (Stage 3). As they are used, assets suffer from wear and tear called *depreciation*. Ultimately, assets depreciate to the point that they are no longer useful in the process of earning revenue. This process usually takes several years. The amount of an asset's cost that is allocated to expense during an accounting period is called **depreciation expense**.

An asset that is fully depreciated by one company may still be useful to another company. For example, a rental car that is no longer useful to Hertz may still be useful to a local delivery company. As a result, companies are frequently able to sell their fully depreciated assets to other companies or individuals. The expected market value of a fully depreciated asset is called its **salvage value**. The total amount of depreciation a company recognizes for an asset, its **depreciable cost**, is the difference between its original cost and its salvage value.

For example, assume a company purchases an asset for \$5,000. The company expects to use the asset for 5 years (the **estimated useful life**) and then to sell it for \$1,000 (salvage value). The depreciable cost of the asset is \$4,000 ( $\$5,000 - \$1,000$ ). The portion of the depreciable cost (\$4,000) that represents its annual usage is recognized as depreciation expense.

Accountants must exercise judgment to estimate the amount of depreciation expense to recognize each period. For example, suppose you own a personal computer. You know how much the computer cost, and you know you will eventually need to replace it. How would you determine the amount the computer depreciates each year you use it? Businesses may use any of several acceptable methods to estimate the amount of depreciation expense to recognize each year.

The method used to recognize depreciation expense should match the asset's usage pattern. More expense should be recognized in periods when the asset is used more and less in periods when the asset is used less. Since assets are used to produce revenue, matching expense recognition with asset usage also matches expense recognition with revenue recognition. Three alternative methods for recognizing depreciation expense are (1) straight-line, (2) double-declining-balance, and (3) units-of-production.

The *straight-line* method produces the same amount of depreciation expense each accounting period. *Double-declining-balance*, an accelerated method, produces more depreciation expense in the early years of an asset's life, with a declining amount of expense in later years. *Units-of-production* produces varying amounts of depreciation expense in different accounting periods (more in some accounting periods and less in others). Exhibit 6.2 contrasts the different depreciation methods that U.S. companies use.

## Answers to The *Curious* Accountant

Equipment is a long-term asset used for the purpose of producing revenue. A portion of the equipment's cost is recognized as depreciation expense

each accounting period. The expense recognition for the cost of equipment is therefore spread over the useful life of the asset. Timber, however, is not used until the trees are grown. Conceptually, the costs of the trees should be treated as inventories and expensed as cost of goods sold at the time the products made from trees are sold. Even so, some timber companies recognize a periodic charge called *depletion* in a manner similar to that used for depreciation.

Accounting for unusual long-term assets such as timber requires an understanding of specialized "industry practice" accounting rules that are beyond the scope of this course. Many industries have unique accounting problems, and business managers in such industries must understand specialized accounting rules that relate to their companies.

### Dryden Enterprises Illustration

To illustrate the different depreciation methods, consider a van purchased by Dryden Enterprises. Dryden plans to use the van as rental property. The van had a list price of \$23,500. Dryden obtained a 10 percent cash discount from the dealer. The van was delivered FOB shipping point, and Dryden paid an additional \$250 for transportation costs. Dryden also paid \$2,600 for a custom accessory package to increase the van's appeal as a rental vehicle. The cost of the van is computed as follows.

List price	\$23,500	
Less: Cash discount	(2,350)	$\$23,500 \times 0.10$
Plus: Transportation costs	250	
Plus: Cost of customization	2,600	
Total	<u>\$24,000</u>	

The van has an estimated *salvage value* of \$4,000 and an *estimated useful life* of four years. The following section examines three different patterns of expense recognition for this van.

### Straight-Line Depreciation

The first scenario assumes the van is used evenly over its four-year life. The revenue from renting the van is assumed to be \$8,000 per year. The matching concept calls for the expense recognition pattern to match the revenue stream. Since the same amount of revenue is recognized in each accounting period, Dryden should use **straight-line depreciation** because it produces equal amounts of depreciation expense each year.

**Life Cycle Phase 1**

The first phase of the asset life cycle is to acquire funds to purchase the asset. Assume Dryden acquired \$25,000 cash on January 1, 2008, by issuing common stock. The effects on the financial statements follow.

Assets					=	Equity			Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Van	–	Acc. Dep.	=	Com. Stk.	+	Ret. Earn.						
25,000	+	NA	–	NA	=	25,000	+	NA	NA	–	NA	=	NA	25,000 FA

**Life Cycle Phase 2**

The second phase of the life cycle is to purchase the van. Assume Dryden bought the van on January 1, 2008, using funds from the stock issue. The cost of the van, previously computed, was \$24,000 cash. The effects on the financial statements are:

Assets					=	Equity			Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Van	–	Acc. Dep.	=	Com. Stk.	+	Ret. Earn.						
(24,000)	+	24,000	–	NA	=	NA	+	NA	NA	–	NA	=	NA	(24,000) IA

**Life Cycle Phase 3**

Dryden used the van by renting it to customers. The rent revenue each year is \$8,000 cash. The effects on the financial statements are shown next.

Assets					=	Equity			Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Van	–	Acc. Dep.	=	Com. Stk.	+	Ret. Earn.						
8,000	+	NA	–	NA	=	NA	+	8,000	8,000	–	NA	=	8,000	8,000 OA

Although illustrated only once, these effects occur four times—once for each year Dryden earns revenue by renting the van.

At the end of each year, Dryden adjusts its accounts to recognize depreciation expense. The amount of depreciation recognized using the straight-line method is calculated as follows.

$$(\text{Asset cost} - \text{Salvage value}) \div \text{Useful life} = \text{Depreciation expense}$$

$$(\$24,000 - \$4,000) \div 4 \text{ years} = \$5,000 \text{ per year}$$

Recognizing depreciation expense is an asset use transaction that reduces assets and equity. The asset reduction is reported using a **contra asset account** called **Accumulated Depreciation**. Recognizing depreciation expense *does not affect cash flow*. The entire cash outflow for this asset occurred in January 2008 when Dryden purchased the van. Depreciation reflects *using* tangible assets, not spending cash to purchase them. The effects on the financial statements are as follows.

Assets					=	Equity			Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Van	–	Acc. Dep.	=	Com. Stk.	+	Ret. Earn.						
NA	+	NA	–	5,000	=	NA	+	(5,000)	NA	–	5,000	=	(5,000)	NA

The Depreciation *Expense* account, like other expense accounts, is closed to the Retained Earnings account at the end of each year. The *Accumulated* Depreciation account, in contrast, increases each year, *accumulating* the total amount of depreciation recognized on the asset to date.

### Life Cycle Phase 4

The final stage in the life cycle of a tangible asset is its disposal and removal from the company's records. Dryden retired the van from service on January 1, 2012, selling it for \$4,500 cash. The van's **book value** (cost – accumulated depreciation) when it was sold was \$4,000 (\$24,000 cost – \$20,000 accumulated depreciation), so Dryden recognized a \$500 gain (\$4,500 – \$4,000) on the sale.

Gains are *like* revenues in that they increase assets or decrease liabilities. Gains are *unlike* revenues in that gains result from peripheral (incidental) transactions rather than routine operating activities. Dryden is not in the business of selling vans. Dryden's normal business activity is renting vans. Since selling vans is incidental to Dryden's normal operations, gains are reported separately, after operating income, on the income statement.

If Dryden had sold the asset for less than book value, the company would have recognized a loss on the asset disposal. Losses are similar to expenses in that they decrease assets or increase liabilities. However, like gains, losses result from peripheral transactions. Losses are also reported as nonoperating items on the income statement.

The effects of the asset disposal on the financial statements are shown next.

## LO 4

Determine how gains and losses on disposals of long-term operational assets affect financial statements.

Assets								=	Equity			Rev. or Gain	–	Exp. or Loss	=	Net Inc.	Cash Flow
Cash	+	Van	–	Acc. Dep.	=	Com. Stk.	+	Ret. Earn.									
4,500	+	(24,000)	–	(20,000)	=	NA	+	500				500	–	NA	=	500	4,500 IA

Although the gain reported on the 2012 income statement is \$500, the cash inflow from selling the van is \$4,500. Gains and losses are not reported on the statement of cash flows. Instead they are included in the total amount of cash collected from the sale of the asset. In this case, the entire \$4,500 is shown in the cash flow from investing activities section of the 2012 statement of cash flows.

## Financial Statements

Exhibit 6.3 displays a vertical statements model that shows the financial results for the Dryden illustration from 2008 through 2012. Study the exhibit until you understand how all the figures were derived. The amount of depreciation expense (\$5,000) reported on the income statement is constant each year from 2008 through 2011. The amount of accumulated depreciation reported on the balance sheet grows from \$5,000 to \$10,000, to \$15,000, and finally to \$20,000. The Accumulated Depreciation account is a *contra asset account* that is subtracted from the Van account in determining total assets.

Study the timing differences between cash flow and net income. Dryden spent \$24,000 cash to acquire the van. Over the van's life cycle, Dryden collected \$36,500 [(\$8,000 revenue × 4 years = \$32,000) plus (\$4,500 from the asset disposal) = \$36,500]. The \$12,500 difference between the cash collected and the cash paid (\$36,500 – \$24,000) equals the total net income earned during the van's life cycle.

Although the amounts are the same, the timing of the cash flows and the income recognition are different. For example, in 2008 there was a \$24,000 cash outflow to purchase the van and an \$8,000 cash inflow from customers. In contrast, the income statement reports net income of \$3,000. In 2012, Dryden reported a \$500 gain on the asset disposal, but the amount of operating income and the cash flow from operating

**EXHIBIT 6.3**

## Financial Statements under Straight-Line Depreciation

<b>DRYDEN ENTERPRISES</b> Financial Statements					
	2008	2009	2010	2011	2012
<b>Income Statements</b>					
Rent revenue	\$ 8,000	\$ 8,000	\$ 8,000	\$ 8,000	\$ 0
Depreciation expense	(5,000)	(5,000)	(5,000)	(5,000)	0
Operating income	3,000	3,000	3,000	3,000	0
Gain on sale of van	0	0	0	0	500
Net income	<u>\$ 3,000</u>	<u>\$ 3,000</u>	<u>\$ 3,000</u>	<u>\$ 3,000</u>	<u>\$ 500</u>
<b>Balance Sheets</b>					
<b>Assets</b>					
Cash	\$ 9,000	\$17,000	\$25,000	\$33,000	\$37,500
Van	24,000	24,000	24,000	24,000	0
Accumulated depreciation	(5,000)	(10,000)	(15,000)	(20,000)	0
Total assets	<u>\$28,000</u>	<u>\$31,000</u>	<u>\$34,000</u>	<u>\$37,000</u>	<u>\$37,500</u>
<b>Stockholders' equity</b>					
Common stock	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Retained earnings	3,000	6,000	9,000	12,000	12,500
Total stockholders' equity	<u>\$28,000</u>	<u>\$31,000</u>	<u>\$34,000</u>	<u>\$37,000</u>	<u>\$37,500</u>
<b>Statements of Cash Flows</b>					
<b>Operating Activities</b>					
Inflow from customers	\$ 8,000	\$ 8,000	\$ 8,000	\$ 8,000	\$ 0
<b>Investing Activities</b>					
Outflow to purchase van	(24,000)				
Inflow from sale of van					4,500
<b>Financing Activities</b>					
Inflow from stock issue	25,000				
<b>Net Change in Cash</b>	9,000	8,000	8,000	8,000	4,500
Beginning cash balance	0	9,000	17,000	25,000	33,000
Ending cash balance	<u>\$ 9,000</u>	<u>\$17,000</u>	<u>\$25,000</u>	<u>\$33,000</u>	<u>\$37,500</u>

activities is zero for that year. The gain is only indirectly related to cash flows. The \$4,500 of cash received on disposal is reported as a cash inflow from investing activities. Since gains and losses result from peripheral transactions, they do not affect operating income or cash flow from operating activities.

## Double-Declining-Balance Depreciation

For the second scenario, assume demand for the van is strong when it is new, but fewer people rent the van as it ages. As a result, the van produces smaller amounts of revenue as time goes by. To match expenses with revenues, it is reasonable to recognize more depreciation expense in the van's early years and less as it ages.

**Double-declining-balance depreciation** produces a large amount of depreciation in the first year of an asset's life and progressively smaller levels of expense in each succeeding year. Since the double-declining-balance method recognizes depreciation expense more rapidly than the straight-line method does, it is called an **accelerated**

### LO 3

Explain how different depreciation methods affect financial statements.

**depreciation method.** Depreciation expense recognized using double-declining-balance is computed in three steps.

1. *Determine the straight-line rate.* Divide one by the asset's useful life. Since the estimated useful life of Dryden's van is four years, the straight-line rate is 25 percent ( $1 \div 4$ ) per year.
2. *Determine the double-declining-balance rate.* Multiply the straight-line rate by 2 (*double* the rate). The double-declining-balance rate for the van is 50 percent ( $25 \text{ percent} \times 2$ ).
3. *Determine the depreciation expense.* Multiply the double-declining-balance rate by the book value of the asset *at the beginning of the period* (recall that book value is historical cost minus *accumulated depreciation*). The following table shows the amount of depreciation expense Dryden will recognize over the van's useful life (2008–2011).

Year	Book Value at Beginning of Period	×	Double the Straight-Line Rate	=	Annual Depreciation Expense
2008	(\$24,000 – \$ 0)	×	0.50	=	\$12,000
2009	( 24,000 – 12,000)	×	0.50	=	6,000
2010	( 24,000 – 18,000)	×	0.50	=	<del>3,000</del> 2,000
2011	( 24,000 – 20,000)	×	0.50	=	<del>2,000</del> 0

Regardless of the depreciation method used, *an asset cannot be depreciated below its salvage value*. This restriction affects depreciation computations for the third and fourth years. Because the van had a cost of \$24,000 and a salvage value of \$4,000, the total amount of depreciable cost (historical cost – salvage value) is \$20,000 (\$24,000 – \$4,000). Since \$18,000 (\$12,000 + \$6,000) of the depreciable cost is recognized in the first two years, only \$2,000 (\$20,000 – \$18,000) remains to be recognized after the second year. Depreciation expense recognized in the third year is therefore \$2,000 even though double-declining-balance computations suggest that \$3,000 should be recognized. Similarly, zero depreciation expense is recognized in the fourth year even though the computations indicate a \$2,000 charge.

## CHECK Yourself 6.2

Olds Company purchased an asset that cost \$36,000 on January 1, 2010. The asset had an expected useful life of five years and an estimated salvage value of \$5,000. Assuming Olds uses the double-declining-balance method, determine the amount of depreciation expense and the amount of accumulated depreciation Olds would report on the 2012 financial statements.

**Answer**

Year	Book Value at Beginning of Period	×	Double the Straight-Line Rate*	=	Annual Depreciation Expense
2010	(\$36,000 – \$ 0)	×	0.40	=	\$14,400
2011	( 36,000 – 14,400)	×	0.40	=	8,640
2012	( 36,000 – 23,040)	×	0.40	=	5,184
Total accumulated depreciation at December 31, 2012					<u>\$28,224</u>

\*Double-declining-balance rate =  $2 \times \text{Straight-line rate} = 2 \times (1 \div 5 \text{ years}) = 0.40$



**EXHIBIT 6.4****Financial Statements under Double-Declining-Balance Depreciation**

<b>DRYDEN ENTERPRISES</b> Financial Statements					
	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
<b>Income Statements</b>					
Rent revenue	\$15,000	\$ 9,000	\$ 5,000	\$ 3,000	\$ 0
Depreciation expense	(12,000)	(6,000)	(2,000)	0	0
Operating income	3,000	3,000	3,000	3,000	0
Gain on sale of van	0	0	0	0	500
Net income	<u>\$ 3,000</u>	<u>\$ 3,000</u>	<u>\$ 3,000</u>	<u>\$ 3,000</u>	<u>\$ 500</u>
<b>Balance Sheets</b>					
<b>Assets</b>					
Cash	\$16,000	\$25,000	\$30,000	\$33,000	\$37,500
Van	24,000	24,000	24,000	24,000	0
Accumulated depreciation	(12,000)	(18,000)	(20,000)	(20,000)	0
Total assets	<u>\$28,000</u>	<u>\$31,000</u>	<u>\$34,000</u>	<u>\$37,000</u>	<u>\$37,500</u>
<b>Stockholders' equity</b>					
Common stock	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Retained earnings	3,000	6,000	9,000	12,000	12,500
Total stockholders' equity	<u>\$28,000</u>	<u>\$31,000</u>	<u>\$34,000</u>	<u>\$37,000</u>	<u>\$37,500</u>
<b>Statements of Cash Flows</b>					
<b>Operating Activities</b>					
Inflow from customers	\$15,000	\$ 9,000	\$ 5,000	\$ 3,000	\$ 0
<b>Investing Activities</b>					
Outflow to purchase van	(24,000)				
Inflow from sale of van					4,500
<b>Financing Activities</b>					
Inflow from stock issue	25,000				
<b>Net Change in Cash</b>	16,000	9,000	5,000	3,000	4,500
Beginning cash balance	0	16,000	25,000	30,000	33,000
Ending cash balance	<u>\$16,000</u>	<u>\$25,000</u>	<u>\$30,000</u>	<u>\$33,000</u>	<u>\$37,500</u>

**Effects on the Financial Statements**

Exhibit 6.4 displays financial statements for the life of the asset assuming Dryden uses double-declining-balance depreciation. The illustration assumes a cash revenue stream of \$15,000, \$9,000, \$5,000, and \$3,000 for the years 2008, 2009, 2010, and 2011, respectively. Trace the depreciation expense from the table above to the income statements. Reported depreciation expense is greater in the earlier years and smaller in the later years of the asset's life.

The double-declining-balance method smooths the amount of net income reported over the asset's useful life. In the early years, when heavy asset use produces higher revenue, depreciation expense is also higher. Similarly, in the later years, lower levels of revenue are matched with lower levels of depreciation expense. Net income is constant at \$3,000 per year.

The depreciation method a company uses *does not* affect how it acquires the financing, invests the funds, and retires the asset. For Dryden's van, the accounting

effects of these life cycle phases are the same as under the straight-line approach. Similarly, the *recording procedures* are not affected by the depreciation method. Different depreciation methods affect only the amounts of depreciation expense recorded each year, not which accounts are used.

## Units-of-Production Depreciation

Suppose rental demand for Dryden's van depends on general economic conditions. In a robust economy, travel increases, and demand for renting vans is high. In a stagnant economy, demand for van rentals declines. In such circumstances, revenues fluctuate from year to year. To accomplish the matching objective, depreciation should also fluctuate from year to year. A method of depreciation known as **units-of-production depreciation** accomplishes this goal by basing depreciation expense on actual asset usage.

Computing depreciation expense using units-of-production begins with identifying a measure of the asset's productive capacity. For example, the number of miles Dryden expects its van to be driven may be a reasonable measure of its productive capacity. If the depreciable asset were a saw, an appropriate measure of productive capacity could be the number of board feet the saw was expected to cut during its useful life. In other words, the basis for measuring production depends on the nature of the depreciable asset.

To illustrate computing depreciation using the units-of-production depreciation method, assume that Dryden measures productive capacity based on the total number of miles the van will be driven over its useful life. Assume Dryden estimates this productive capacity to be 100,000 miles. The first step in determining depreciation expense is to compute the cost per unit of production. For Dryden's van, this amount is total depreciable cost (historical cost – salvage value) divided by total units of expected productive capacity (100,000 miles). The depreciation cost per mile is therefore \$0.20  $[(\$24,000 \text{ cost} - \$4,000 \text{ salvage}) \div 100,000 \text{ miles}]$ . Annual depreciation expense is computed by multiplying the cost per mile by the number of miles driven. Odometer readings indicate the van was driven 40,000 miles, 20,000 miles, 30,000 miles, and 15,000 miles in 2008, 2009, 2010, and 2011, respectively. Dryden developed the following schedule of depreciation charges.

Year	Cost per Mile (a)	Miles Driven (b)	Depreciation Expense (a × b)
2008	\$0.20	40,000	\$8,000
2009	.20	20,000	4,000
2010	.20	30,000	6,000
2011	.20	15,000	<del>3,000</del> 2,000

As pointed out in the discussion of the double-declining-balance method, an asset cannot be depreciated below its salvage value. Since \$18,000 of the \$20,000 (\$24,000 cost – \$4,000 salvage) depreciable cost is recognized in the first three years of using the van, only \$2,000 (\$20,000 – \$18,000) remains to be charged to depreciation in the fourth year, even though the depreciation computations suggest the charge should be \$3,000. As the preceding table indicates, the general formula for computing units-of-production depreciation is

$$\frac{\text{Cost} - \text{Salvage value}}{\text{Total estimated units of production}} \times \frac{\text{Units of production in current year}}{1} = \text{Annual depreciation expense}$$

### LO 3

Explain how different depreciation methods affect financial statements.

**EXHIBIT 6.5**

## Financial Statements under Units-of-Production Depreciation

<b>DRYDEN ENTERPRISES</b>					
Financial Statements					
	2008	2009	2010	2011	2012
<b>Income Statements</b>					
Rent revenue	\$11,000	\$ 7,000	\$ 9,000	\$ 5,000	\$ 0
Depreciation expense	(8,000)	(4,000)	(6,000)	(2,000)	0
Operating income	3,000	3,000	3,000	3,000	0
Gain on sale of van	0	0	0	0	500
Net income	<u>\$ 3,000</u>	<u>\$ 3,000</u>	<u>\$ 3,000</u>	<u>\$ 3,000</u>	<u>\$ 500</u>
<b>Balance Sheets</b>					
<b>Assets</b>					
Cash	\$12,000	\$19,000	\$28,000	\$33,000	\$37,500
Van	24,000	24,000	24,000	24,000	0
Accumulated depreciation	(8,000)	(12,000)	(18,000)	(20,000)	0
Total assets	<u>\$28,000</u>	<u>\$31,000</u>	<u>\$34,000</u>	<u>\$37,000</u>	<u>\$37,500</u>
<b>Stockholders' equity</b>					
Common stock	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Retained earnings	3,000	6,000	9,000	12,000	12,500
Total stockholders' equity	<u>\$28,000</u>	<u>\$31,000</u>	<u>\$34,000</u>	<u>\$37,000</u>	<u>\$37,500</u>
<b>Statements of Cash Flows</b>					
<b>Operating Activities</b>					
Inflow from customers	\$11,000	\$ 7,000	\$ 9,000	\$ 5,000	\$ 0
<b>Investing Activities</b>					
Outflow to purchase van	(24,000)				
Inflow from sale of van					4,500
<b>Financing Activities</b>					
Inflow from stock issue	25,000				
<b>Net Change in Cash</b>	12,000	7,000	9,000	5,000	4,500
Beginning cash balance	0	12,000	19,000	28,000	33,000
Ending cash balance	<u>\$12,000</u>	<u>\$19,000</u>	<u>\$28,000</u>	<u>\$33,000</u>	<u>\$37,500</u>

Exhibit 6.5 displays financial statements that assume Dryden uses units-of-production depreciation. The exhibit assumes a cash revenue stream of \$11,000, \$7,000, \$9,000, and \$5,000 for 2008, 2009, 2010, and 2011, respectively. Trace the depreciation expense from the schedule above to the income statements. Depreciation expense is greater in years the van is driven more and smaller in years the van is driven less, providing a reasonable matching of depreciation expense with revenue produced. Net income is again constant at \$3,000 per year.

### Comparing the Depreciation Methods

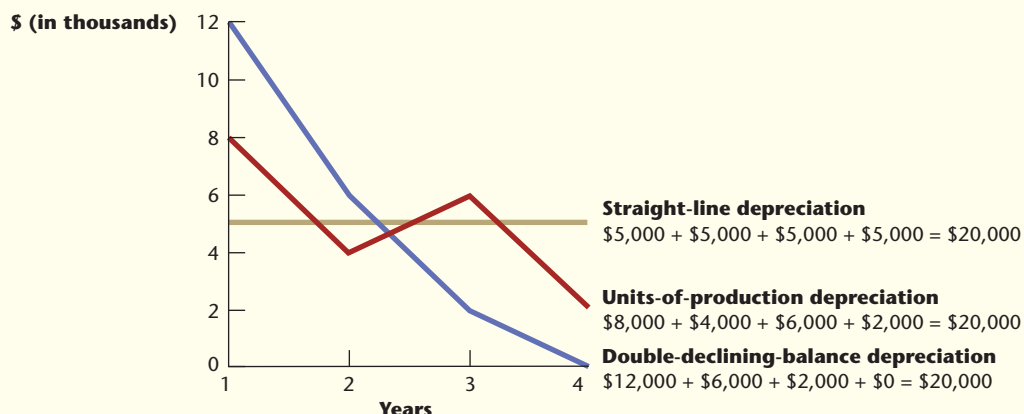
The total amount of depreciation expense Dryden recognized using each of the three methods was \$20,000 (\$24,000 cost – \$4,000 salvage value). The different methods affect the *timing*, but not the *total amount*, of expense recognized. The different methods simply assign the \$20,000 to different accounting periods. Exhibit 6.6 presents graphically the differences among the three depreciation methods discussed above. A company should use the method that most closely matches expenses with revenues.

#### LO 3

Explain how different depreciation methods affect financial statements.

## EXHIBIT 6.6

### Depreciation Expense under Different Depreciation Methods



## REVISION OF ESTIMATES

In order to report useful financial information on a timely basis, accountants must make many estimates of future results, such as the salvage value and useful life of depreciable assets and uncollectible accounts expense. Estimates are frequently revised when new information surfaces. Because revisions of estimates are common, generally accepted accounting principles call for incorporating the revised information into present and future calculations. Prior reports are not corrected.

To illustrate, assume that McGraw Company purchased a machine on January 1, 2010, for \$50,000. McGraw estimated the machine would have a useful life of 8 years and a salvage value of \$3,000. Using the straight-line method, McGraw determined the annual depreciation charge as follows:

$$(\$50,000 - \$3,000) \div 8 \text{ years} = \$5,875 \text{ per year}$$

At the beginning of the fifth year, accumulated depreciation on the machine is \$23,500 (\$5,875  $\times$  4). The machine's book value is \$26,500 (\$50,000 - \$23,500). At this point, what happens if McGraw changes its estimates of useful life or the salvage value? Consider the following revision examples independently of each other.

### Revision of Life

Assume McGraw revises the expected life to 14, rather than 8, years. The machine's *remaining* life would then be 10 more years instead of 4 more years. Assume salvage value remains \$3,000. Depreciation for each remaining year is:

$$(\$26,500 \text{ book value} - \$3,000 \text{ salvage}) \div 10\text{-year remaining life} = \$2,350$$

### Revision of Salvage

Alternatively, assume the original expected life remained 8 years, but McGraw revised its estimate of salvage value to \$6,000. Depreciation for each of the remaining four years would be

$$(\$26,500 \text{ book value} - \$6,000 \text{ salvage}) \div 4\text{-year remaining life} = \$5,125$$

The revised amounts are determined for the full year, regardless of when McGraw revised its estimates. For example, if McGraw decides to change the estimated useful life on October 1, 2015, the change would be effective as of January 1, 2015. The year-end adjusting entry for depreciation would include a full year's depreciation calculated on the basis of the revised estimated useful life.

## LO 5

Show how revising estimates affects financial statements.

## LO 6

Explain how continuing expenditures for operational assets affect financial statements.

## CONTINUING EXPENDITURES FOR PLANT ASSETS

Most plant assets require additional expenditures for maintenance or improvement during their useful lives. Accountants must determine if these expenditures should be expensed or capitalized (recorded as assets).

### Costs That Are Expensed

The costs of routine maintenance and minor repairs that are incurred to *keep* an asset in good working order are expensed in the period in which they are incurred. Because they reduce net income when incurred, accountants often call repair and maintenance costs **revenue expenditures** (companies subtract them from revenue).

With respect to the previous example, assume McGraw spent \$500 for routine lubrication and to replace minor parts. The effects on the financial statements follow.

Assets				=	Equity			Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash				=	Com. Stk.	+	Ret. Earn.				=		
(500)				=	NA	+	(500)	NA	–	500	=	(500)	(500) OA

### Costs That Are Capitalized

Substantial amounts spent to improve the quality or extend the life of an asset are described as **capital expenditures**. Capital expenditures are accounted for in one of two ways, depending on whether the cost incurred *improves the quality* or *extends the life* of the asset.

#### Improving Quality

Expenditures such as adding air conditioning to an existing building or installing a trailer hitch on a vehicle improve the quality of service these assets provide. If a capital expenditure improves an asset's quality, the amount is added to the historical cost of the asset. The additional cost is expensed through higher depreciation charges over the asset's remaining useful life.

To demonstrate, return to the McGraw Company example. Recall that the machine originally cost \$50,000, had an estimated salvage of \$3,000, and had a predicted life of 8 years. Recall further that accumulated depreciation at the beginning of the fifth year is \$23,500 ( $\$5,875 \times 4$ ) so the book value is \$26,500 ( $\$50,000 - \$23,500$ ). Assume McGraw makes a major expenditure of \$4,000 in the machine's fifth year to improve its productive capacity. The effects on the financial statements follow.

Assets				=	Equity			Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Mach.	–	Acc. Dep.	=	Com. Stk.	+	Ret. Earn.				=	
(4,000)	+	4,000	–	NA	=	NA	+	NA	NA	–	NA	=	NA
													(4,000) IA

After recording the expenditure, the machine account balance is \$54,000 and the asset's book value is \$30,500 ( $\$54,000 - \$23,500$ ). The depreciation charges for each of the remaining four years are

$$(\$30,500 \text{ book value} - \$3,000 \text{ salvage}) \div 4\text{-year remaining life} = \$6,875$$

#### Extending Life

Expenditures such as replacing the roof of an existing building or putting a new engine in an older vehicle extend the useful life of these assets. If a capital expenditure

extends the life of an asset rather than improving the asset's quality of service, accountants view the expenditure as canceling some of the depreciation previously charged to expense. The event is still an asset exchange; cash decreases, and the book value of the machine increases. However, the increase in the book value of the machine results from reducing the balance in the contra asset account, Accumulated Depreciation.

To illustrate, assume that instead of increasing productive capacity, McGraw's \$4,000 expenditure had extended the useful life of the machine by two years. The effects of the expenditure on the financial statements follow.

Assets					=	Equity			Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Mach.	–	Acc. Dep.	=	Com. Stk.	+	Ret. Earn.						
(4,000)	+	NA	–	(4,000)	=	NA	+	NA	NA	–	NA	=	NA	(4,000) IA

After the expenditure is recognized, the book value is the same as if the \$4,000 had been added to the Machine account (\$50,000 cost – \$19,500 adjusted balance in Accumulated Depreciation = \$30,500). Depreciation expense for each of the remaining six years follows.

$$(\$30,500 \text{ book value} - \$3,000 \text{ salvage}) \div 6\text{-year remaining life} = \$4,583$$

## CHECK Yourself 6.3

On January 1, 2010, Dager Inc. purchased an asset that cost \$18,000. It had a five-year useful life and a \$3,000 salvage value. Dager uses straight-line depreciation. On January 1, 2012, it incurred a \$1,200 cost related to the asset. With respect to this asset, determine the amount of expense and accumulated depreciation Dager would report in the 2012 financial statements under each of the following assumptions.

1. The \$1,200 cost was incurred to repair damage resulting from an accident.
2. The \$1,200 cost improved the operating capacity of the asset. The total useful life and salvage value remained unchanged.
3. The \$1,200 cost extended the useful life of the asset by one year. The salvage value remained unchanged.

### Answer

1. Dager would report the \$1,200 repair cost as an expense. Dager would also report depreciation expense of \$3,000  $(\$18,000 - \$3,000) \div 5$ . Total expenses related to this asset in 2012 would be \$4,200 (\$1,200 repair expense + \$3,000 depreciation expense). Accumulated depreciation at the end of 2012 would be \$9,000 (\$3,000 depreciation expense  $\times$  3 years).
2. The \$1,200 cost would be capitalized in the asset account, increasing both the book value of the asset and the annual depreciation expense.

After Effects of Capital Improvement	
Amount in asset account $(\$18,000 + \$1,200)$	\$19,200
Less: Salvage value	(3,000)
Accumulated depreciation on January 1, 2012	(6,000)
Remaining depreciable cost before recording 2012 depreciation	<u>\$10,200</u>
Depreciation for 2012 $(\$10,200 \div 3 \text{ years})$	\$ 3,400
Accumulated depreciation at December 31, 2012 $(\$6,000 + \$3,400)$	\$ 9,400

(continued)



3. The \$1,200 cost would be subtracted from the Accumulated Depreciation account, increasing the book value of the asset. The remaining useful life would increase to four years, which would decrease the depreciation expense.

		After Effects of Capital Improvement
Amount in asset account		\$18,000
Less: Salvage value		(3,000)
Accumulated depreciation on January 1, 2012 (\$6,000 – \$1,200)		(4,800)
Remaining depreciable cost before recording 2012 depreciation		<u>\$10,200</u>
Depreciation for 2012 (\$10,200 ÷ 4 years)		\$ 2,550
Accumulated depreciation at December 31, 2012 (\$4,800 + \$2,550)		\$ 7,350

## NATURAL RESOURCES

### LO 7

Explain how expense recognition for natural resources (depletion) affects financial statements.

The cost of natural resources includes not only the purchase price but also related items such as the cost of exploration, geographic surveys, and estimates. The process of expensing natural resources is commonly called depletion.<sup>2</sup> The most common method used to calculate depletion is units-of-production.

To illustrate, assume Apex Coal Mining paid \$4,000,000 cash to purchase a mine with an estimated 16,000,000 tons of coal. The unit depletion charge is

$$\$4,000,000 \div 16,000,000 \text{ tons} = \$0.25 \text{ per ton}$$

If Apex mines 360,000 tons of coal in the first year, the depletion charge is:

$$360,000 \text{ tons} \times \$0.25 \text{ per ton} = \$90,000$$

The depletion of a natural resource has the same effect on the accounting equation as other expense recognition events. Assets (in this case, a *coal mine*) and stockholders' equity decrease. The depletion expense reduces net income. The effects on the financial statements follow.

Assets			=	Equity			Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Coal Mine	=	Com. Stk.	+	Ret. Earn.						
(4,000,000)	+	4,000,000	=	NA	+	NA	NA	–	NA	=	NA	(4,000,000) IA
NA	+	(90,000)	=	NA	+	(90,000)	NA	–	90,000	=	(90,000)	NA

## INTANGIBLE ASSETS

### LO 8

Explain how expense recognition for intangible assets (amortization) affects financial statements.

Intangible assets provide rights, privileges, and special opportunities to businesses. Common intangible assets include trademarks, patents, copyrights, franchises, and goodwill. Some of the unique characteristics of these intangible assets are described in the following sections.

### Trademarks

A **trademark** is a name or symbol that identifies a company or a product. Familiar trademarks include the **Polo** emblem, the name **Coca-Cola**, and the **Nike** slogan, “Just

<sup>2</sup>In practice, the depletion charge is considered a product cost and allocated between inventory and cost of goods sold. This text uses the simplifying assumption that all resources are sold in the same accounting period in which they are extracted. The full depletion charge is therefore expensed in the period in which the resources are extracted.

do it.” Trademarks are registered with the federal government and have an indefinite legal lifetime.

The costs incurred to design, purchase, or defend a trademark are capitalized in an asset account called Trademarks. Companies want their trademarks to become familiar but also face the risk of a trademark being used as the generic name for a product. To protect a trademark, companies in this predicament spend large sums on legal fees and extensive advertising programs to educate consumers. Well-known trademarks that have been subject to this problem include **Coke**, **Xerox**, **Kleenex**, and **Vaseline**.

## Patents

A **patent** grants its owner an exclusive legal right to produce and sell a product that has one or more unique features. Patents issued by the U.S. Patent Office have a legal life of 20 years. Companies may obtain patents through purchase, lease, or internal development. The costs capitalized in the Patent account are usually limited to the purchase price and legal fees to obtain and defend the patent. The research and development costs that are incurred to develop patentable products are usually expensed in the period in which they are incurred.

## *Focus On* INTERNATIONAL ISSUES

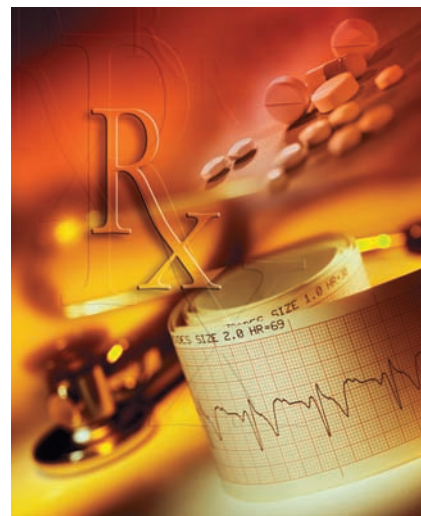
### U.S. GAAP: A COMPETITIVE DISADVANTAGE?

As discussed earlier in this textbook, the diversity of accounting rules is decreasing among industrialized nations. This is due in large part to the fact that so many countries require their publicly listed companies to follow the accounting rules of the International Accounting Standards Board (IASB) and the efforts between the FASB and the IASB to bring their rules into closer agreement. However, there continue to be areas where significant differences exist between the accounting rules for companies in the United States and companies in other countries. Furthermore, in the opinion of the managers of some companies involved in global competition, these differences put U.S. companies at a competitive disadvantage. Accounting for research and development costs (R&D) is a good example of this situation.

Suppose that Microbiotech, Inc., is a pharmaceutical company that spent \$10 million in 2011 on R&D of a new drug. If Microbiotech is a U.S. company, it is required to expense the \$10 million immediately under U.S. GAAP. However, if Microbiotech is a Japanese company, using Japanese GAAP, it is allowed to capitalize the costs in an asset account and then expense it gradually, through amortization, over the useful life of the asset. As a result, in the year the R&D costs are incurred a U.S. company reports more expense, and less earnings, than its Japanese counterpart.

Some businesspeople believe that U.S. GAAP can put U.S. companies at a competitive disadvantage in the search for capital. Certainly the rules pertaining to R&D demonstrate how Microbiotech, as a U.S. company, may be required to report lower earnings in 2011 than if it had been a Japanese company, even though each company is in the same economic position. South Korea, whose companies present significant competition to U.S. companies, also permits R&D costs to be capitalized.

Keep in mind that well-informed business professionals know how different accounting rules affect a company's financial statements. If they believe that U.S. GAAP cause a company's earnings to be understated, they can take this into consideration when making business decisions.



## Copyrights

A **copyright** protects writings, musical compositions, works of art, and other intellectual property for the exclusive benefit of the creator or persons assigned the right

by the creator. The cost of a copyright includes the purchase price and any legal costs associated with obtaining and defending the copyright. Copyrights granted by the federal government extend for the life of the creator plus 70 years. A radio commercial could legally use a Bach composition as background music; it could not, however, use the theme song from the movie, *The Matrix*, without obtaining permission from the copyright owner. The cost of a copyright is often expensed early because future royalties may be uncertain.

## Franchises

**Franchises** grant exclusive rights to sell products or perform services in certain geographic areas. Franchises may be granted by governments or private businesses. Franchises granted by governments include federal broadcasting licenses. Private business franchises include fast-food restaurant chains and brand labels such as **Healthy Choice**. The legal and useful lives of a franchise are frequently difficult to determine. Judgment is often crucial to establishing the estimated useful life for franchises.

## Reality BYTES

On July 24, 2006, a group of three private equity investors offered to pay approximately \$21 billion to acquire **HCA**, one of the nation's largest hospital concerns. At the time, HCA's balance sheet showed net assets (assets minus liabilities) of approximately \$4.9 billion. Why would the investors offer to pay the owners of HCA four times the value of the assets shown on the company's balance sheet?

They were willing to pay four times the book value of the assets for at least two reasons. First, the value of the assets on HCA's balance sheet represented the historical cost of the assets. The current market value of many of these assets was probably higher than their historical cost. Second, the investors probably believed that HCA had *goodwill*, which enables a company to generate above-average earnings from using its assets. In other words, they were agreeing to pay for a hidden asset not shown on HCA's balance sheet.



## Goodwill

**Goodwill** is the value attributable to favorable factors such as reputation, location, and superior products. Consider the most popular restaurant in your town. If the owner sold the restaurant, do you think the purchase price would be simply the total value of the chairs, tables, kitchen equipment, and building? Certainly not, because much of the restaurant's value lies in its popularity; in other words, its ability to generate a high return is based on the goodwill (reputation) of the business.

Calculating goodwill can be complex; here we present a simple example to illustrate how it is determined. Suppose the accounting records of a restaurant named Bendigo's show

$$\begin{array}{rcl} \text{Assets} & = & \text{Liabilities} + \text{Stockholders' Equity} \\ \$200,000 & = & \$50,000 + \$150,000 \end{array}$$

Assume a buyer agrees to purchase the restaurant by paying the owner \$300,000 cash and assuming the existing liabilities. In other words, the restaurant is purchased at a price of \$350,000 (\$300,000 cash + \$50,000 assumed liabilities). Now assume that the assets of the business (tables, chairs, kitchen equipment, etc.) have a fair market value of only \$280,000. Why would the buyer pay \$350,000 to purchase assets with a market value of \$280,000? Obviously, the buyer is purchasing more than just the assets. The buyer is purchasing the business's goodwill. The amount of the goodwill

is the difference between the purchase price and the fair market value of the assets. In this case, the goodwill is \$70,000 (\$350,000 – \$280,000). The effects of the purchase on the financial statements of the buyer follow.

Assets					=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Rest. Assets	+	Goodwill										
(300,000)	+	280,000	+	70,000	=	50,000	+	NA	NA	–	NA	=	NA	(300,000) IA

The fair market value of the restaurant assets represents the historical cost to the new owner. It becomes the basis for future depreciation charges.

## EXPENSE RECOGNITION FOR INTANGIBLE ASSETS

As mentioned earlier, intangible assets fall into two categories, those with *identifiable useful lives* and those with *indefinite useful lives*. Expense recognition for intangible assets depends on which classification applies.

### Expensing Intangible Assets with Identifiable Useful Lives

The costs of intangible assets with identifiable useful lives are normally expensed on a straight-line basis using a process called *amortization*. An intangible asset should be amortized over the shorter of two possible time periods: (1) its legal life or (2) its useful life.

To illustrate, assume that Flowers Industries purchased a newly granted patent for \$44,000 cash. Although the patent has a legal life of 20 years, Flowers estimates that it will be useful for only 11 years. The annual amortization charge is therefore \$4,000 (\$44,000 ÷ 11 years). The effects on the financial statements follow.

Assets					=	Equity			Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Patent	=	Com. Stk.	+	Ret. Earn.								
(44,000)	+	44,000	=	NA	+	NA			NA	–	NA	=	NA	(44,000) IA
NA	+	(4,000)	=	NA	+	(4,000)			NA	–	4,000	=	(4,000)	NA

### Impairment Losses for Intangible Assets with Indefinite Useful Lives

Intangible assets with indefinite useful lives must be tested for impairment annually. The impairment test consists of comparing the fair value of the intangible asset to its carrying value (book value). If the fair value is less than the book value, an impairment loss must be recognized.

To illustrate, return to the example of the Bendigo's restaurant purchase. Recall that the buyer of Bendigo's paid \$70,000 for goodwill. Assume the restaurant experiences a significant decline in revenue because many of its former regular customers are dissatisfied with the food prepared by the new chef. Suppose the decline in revenue is so substantial that the new owner believes the Bendigo's name is permanently impaired. The owner decides to hire a different chef and change the name of the restaurant. In this case, the business has suffered a permanent decline in value of goodwill. The company must recognize an impairment loss.

The restaurant's name has lost its value, but the owner believes the location continues to provide the opportunity to produce above-average earnings. Some, but not all, of the goodwill has been lost. Assume the fair value of the remaining goodwill is

determined to be \$40,000. The impairment loss to recognize is \$30,000 (\$70,000 – \$40,000). The loss reduces the intangible asset (goodwill), stockholder's equity (retained earnings), and net income. The statement of cash flows would not be affected. The effects on the financial statements follow.

Assets	=	Liab.	+	Equity	Rev.	–	Exp./Loss	=	Net Inc.	Cash Flow
Goodwill	=			Ret. Earn.						
(30,000)	=	NA	+	(30,000)	NA	–	30,000	=	(30,000)	NA

## BALANCE SHEET PRESENTATION

This chapter has explained accounting for the acquisition, expense recognition, and disposal of a wide range of long-term assets. Exhibit 6.7 illustrates typical balance sheet presentation of many of the assets discussed.

### EXHIBIT 6.7

#### Balance Sheet Presentation of Operational Assets

#### Partial Balance Sheet

##### Long-Term Assets

##### Plant and equipment

##### Buildings

\$4,000,000

##### Less: Accumulated depreciation

(2,500,000)

\$1,500,000

##### Equipment

1,750,000

##### Less: Accumulated depreciation

(1,200,000)

550,000

##### Total plant and equipment

\$2,050,000

##### Land

850,000

##### Natural resources

##### Mineral deposits (Less: Depletion)

2,100,000

##### Oil reserves (Less: Depletion)

890,000

##### Total natural resources

2,990,000

##### Intangibles

##### Patents (Less: Amortization)

38,000

##### Goodwill

175,000

##### Total intangible assets

213,000

##### Total long-term assets

\$6,103,000

## THE FINANCIAL

## ANALYST

### LO 9

Understand how expense recognition choices and industry characteristics affect financial performance measures.

Managers may have differing opinions about which allocation method (straight-line, accelerated, or units-of-production) best matches expenses with revenues. As a result, one company may use straight-line depreciation while another company in similar circumstances uses double-declining-balance. Since the allocation method a company uses affects the amount of expense it recognizes, analysts reviewing financial statements must consider the accounting procedures companies use in preparing the statements.

## EFFECT OF JUDGMENT AND ESTIMATION

Assume that two companies, Alpha and Zeta, experience identical economic events in 2009 and 2010. Both generate revenue of \$50,000 and incur cost of goods sold of \$30,000 during each year. In 2009, each company pays \$20,000 for an asset with an expected useful life of five years and no salvage value. How will the companies' financial statements differ if one uses straight-line depreciation and the other uses the double-declining-balance method? To answer this question, first compute the depreciation expense for both companies for 2009 and 2010.

If Alpha Company uses the straight-line method, depreciation for 2009 and 2010 is

$$(\text{Cost} - \text{Salvage}) \div \text{Useful life} = \text{Depreciation expense per year}$$

$$(\$20,000 - \$0) \div 5 \text{ years} = \$4,000$$

In contrast, if Zeta Company uses the double-declining-balance method, Zeta recognizes the following amounts of depreciation expense for 2009 and 2010.

	(Cost – Accumulated Depreciation)	×	2 × (Straight-Line Rate)	=	Depreciation Expense
2009	(\$20,000 – \$ 0)	×	[2 × (1 ÷ 5)]	=	\$8,000
2010	(\$20,000 – \$8,000)	×	[2 × (1 ÷ 5)]	=	\$4,800

Based on these computations, the income statements for the two companies are:

Income Statements				
	2009		2010	
	Alpha Co.	Zeta Co.	Alpha Co.	Zeta Co.
Sales	\$50,000	\$50,000	\$50,000	\$50,000
Cost of goods sold	(30,000)	(30,000)	(30,000)	(30,000)
Gross margin	20,000	20,000	20,000	20,000
Depreciation expense	(4,000)	(8,000)	(4,000)	(4,800)
Net income	<u>\$16,000</u>	<u>\$12,000</u>	<u>\$16,000</u>	<u>\$15,200</u>

The relevant sections of the balance sheets are

Plant Assets				
	2009		2010	
	Alpha Co.	Zeta Co.	Alpha Co.	Zeta Co.
Assets	\$20,000	\$20,000	\$20,000	\$20,000
Accumulated depreciation	(4,000)	(8,000)	(8,000)	(12,800)
Book value	<u>\$16,000</u>	<u>\$12,000</u>	<u>\$12,000</u>	<u>\$ 7,200</u>

The depreciation method is not the only aspect of expense recognition that can vary between companies. Companies may also make different assumptions about the useful lives and salvage values of long-term operational assets. Thus, even if the same depreciation method is used, depreciation expense may still differ.



Since the depreciation method and the underlying assumptions regarding useful life and salvage value affect the determination of depreciation expense, they also affect the amounts of net income, retained earnings, and total assets. Financial statement analysis is affected if it is based on ratios that include these items. Previously defined ratios that are affected include the (1) debt to assets ratio, (2) return on assets ratio, (3) return on equity ratio, and (4) return on sales ratio.

To promote meaningful analysis, public companies are required to disclose all significant accounting policies used to prepare their financial statements. This disclosure is usually provided in the footnotes that accompany the financial statements.

## EFFECT OF INDUSTRY CHARACTERISTICS

As indicated in previous chapters, industry characteristics affect financial performance measures. For example, companies in manufacturing industries invest heavily in machinery while insurance companies rely more on human capital. Manufacturing companies therefore have relatively higher depreciation charges than insurance companies. To illustrate how the type of industry affects financial reporting, examine Exhibit 6.8. This exhibit compares the ratio of sales to property, plant, and equipment for two companies in each of three different industries.

The table indicates that for every \$1.00 invested in property, plant, and equipment, **Kelly Services** produced \$31.91 of sales. In contrast, **Cox Communications** and **United Airlines** produced only \$0.73 and \$1.31, respectively, for each \$1.00 they invested in operational assets. Does this mean the management of Kelly is doing a better job than the management of Cox Communications or United Airlines? Not necessarily. It means that these companies operate in different economic environments. In other words, it takes significantly more equipment to operate a cable company or an airline than it takes to operate an employment agency.

Effective financial analysis requires careful consideration of industry characteristics, accounting policies, and the reasonableness of assumptions such as useful life and salvage value.

### EXHIBIT 6.8

#### Industry Data Reflecting the Use of Long-Term Tangible Assets

Industry	Company	Sales ÷ Property, Plant, and Equipment
Cable Companies	<b>Charter Communications</b>	0.90
	<b>Cox Communications</b>	0.73
Airlines	<b>American</b>	1.35
	<b>United</b>	1.31
Employment Agencies	<b>Kelly Services</b>	31.91
	<b>Robert Half</b>	30.20



## A Look Back

This chapter explains that the primary objective of recognizing depreciation is to match the cost of a long-term tangible asset with the revenues the asset is expected to generate. The matching concept also applies to natural resources (depletion) and intangible assets (amortization). The chapter explains how alternative methods can be used to account for the same event (e.g., straight-line versus double-declining-balance depreciation).

Companies experiencing exactly the same business events could produce different financial statements. The alternative accounting methods for depreciating, depleting, or amortizing assets include the (1) straight-line, (2) double-declining-balance, and (3) units-of-production methods.

The *straight-line method* produces equal amounts of expense in each accounting period. The amount of the expense recognized is determined using the formula  $[(\text{cost} - \text{salvage}) \div \text{number of years of useful life}]$ . The *double-declining-balance method* produces proportionately larger amounts of expense in the early years of an asset's useful life and increasingly smaller amounts of expense in the later years of the asset's useful life. The formula for calculating double-declining-balance depreciation is  $[\text{book value at beginning of period} \times (2 \times \text{the straight-line rate})]$ . The *units-of-production method* produces expense in direct proportion to the number of units produced during an accounting period. The formula for the amount of expense recognized each period is  $[(\text{cost} - \text{salvage}) \div \text{total estimated units of production} = \text{allocation rate} \times \text{units of production in current accounting period}]$ .

This chapter showed how to account for *changes in estimates* such as the useful life or the salvage value of a depreciable asset. Changes in estimates do not affect the amount of depreciation recognized previously. Instead, the remaining book value of the asset is expensed over its remaining useful life.

After an asset has been placed into service, companies typically incur further costs for maintenance, quality improvement, and extensions of useful life. *Maintenance costs* are expensed in the period in which they are incurred. *Costs that improve the quality* of an asset are added to the cost of the asset, increasing the book value and the amount of future depreciation charges. *Costs that extend the useful life* of an asset are subtracted from the asset's Accumulated Depreciation account, increasing the book value and the amount of future depreciation charges.

## A Look Forward



In Chapter 7 we move from the assets section of the balance sheet to issues in accounting for liabilities.



### SELF-STUDY REVIEW PROBLEM

The following information pertains to a machine purchased by Bakersfield Company on January 1, 2010.

Purchase price	\$ 63,000
Delivery cost	\$ 2,000
Installation charge	\$ 3,000
Estimated useful life	8 years
Estimated units the machine will produce	130,000
Estimated salvage value	\$ 3,000

The machine produced 14,400 units during 2010 and 17,000 units during 2011.

#### Required

Determine the depreciation expense Bakersfield would report for 2010 and 2011 using each of the following methods.

- Straight-line.
- Double-declining-balance.
- Units-of-production.

**Solution to Requirements a–c.****a. Straight-line**

Purchase price	\$63,000
Delivery cost	2,000
Installation charge	3,000
Total cost of machine	68,000
Less: Salvage value	(3,000)
	<u>\$65,000</u> ÷ 8 = \$8,125 Depreciation per year
2010	\$ 8,125
2011	\$ 8,125

**b. Double-declining-balance**

Year	Cost	—	Accumulated Depreciation at Beginning of Year	×	2 × S-L Rate	=	Annual Depreciation
2010	\$68,000	—	\$ 0	×	(2 × 0.125)	=	\$17,000
2011	68,000	—	17,000	×	(2 × 0.125)	=	12,750

**c. Units-of-production**

- (1)  $(\text{Cost} - \text{Salvage value}) \div \text{Estimated units of production} = \text{Depreciation cost per unit produced}$

$$\frac{\$68,000 - \$3,000}{130,000} = \$0.50 \text{ per unit}$$

- (2)  $\text{Cost per unit} \times \text{Annual units produced} = \text{Annual depreciation expense}$

$$2005 \quad \$0.50 \times 14,400 = \$7,200$$

$$2006 \quad 0.50 \times 17,000 = 8,500$$

**KEY TERMS**

Accelerated depreciation method 216	Current assets 208	Goodwill 226	Relative fair market value method 211
Accumulated Depreciation 214	Depletion 210	Historical cost concept 211	Revenue expenditures 222
Amortization 210	Depreciable cost 212	Intangible assets 210	Salvage value 212
Basket purchase 211	Depreciation 210	Long-term operational assets 208	Straight-line depreciation 213
Book value 215	Depreciation expense 212	Natural resources 210	Tangible assets 210
Capital expenditures 222	Double-declining-balance depreciation 216	Patent 225	Trademark 224
Contra asset account 214	Estimated useful life 212	Property, plant, and equipment 210	Units-of-production depreciation 219
Copyright 225	Franchise 226		

**QUESTIONS**

- What is the difference between the functions of long-term operational assets and investments?
- What is the difference between tangible and intangible assets? Give an example of each.
- What is the difference between goodwill and specifically identifiable intangible assets?
- Define *depreciation*. What kind of asset depreciates?
- Why are natural resources called *wasting assets*?
- Is land a depreciable asset? Why or why not?
- Define *amortization*. What kind of assets are *amortized*?
- Explain the historical cost concept as it applies to long-term operational assets. Why is the book value of an asset likely to be different from the current market value of the asset?

9. What different kinds of expenditures might be included in the recorded cost of a building?
10. What is a basket purchase of assets? When a basket purchase is made, how is cost assigned to individual assets?
11. What are the stages in the life cycle of a long-term operational asset?
12. Explain straight-line, units-of-production, and double-declining-balance depreciation. When is it appropriate to use each of these depreciation methods?
13. What effect does the recognition of depreciation expense have on total assets? On total equity?
14. Does the recognition of depreciation expense affect cash flows? Why or why not?
15. MalMax purchased a depreciable asset. What would be the difference in total assets at the end of the first year if MalMax chooses straight-line depreciation versus double-declining-balance depreciation?
16. John Smith mistakenly expensed the cost of a long-term tangible fixed asset. Specifically, he charged the cost of a truck to a delivery expense account. How will this error affect the income statement and the balance sheet in the year in which the mistake is made?
17. What is *salvage value*?
18. What type of account (classification) is Accumulated Depreciation?
19. How is the book value of an asset determined?
20. Why is depreciation that has been recognized over the life of an asset shown in a contra account? Why not just reduce the asset account?
21. Assume that a piece of equipment cost \$5,000 and had accumulated depreciation recorded of \$3,000. What is the book value of the equipment? Is the book value equal to the fair market value of the equipment? Explain.
22. Why would a company choose to depreciate one piece of equipment using the double-declining-balance method and another piece of equipment using straight-line depreciation?
23. Why may it be necessary to revise the estimated life of a plant asset? When the estimated life is revised, does it affect the amount of depreciation per year? Why or why not?
24. How are capital expenditures made to improve the quality of a capital asset accounted for? Would the answer change if the expenditure extended the life of the asset but did not improve quality? Explain.
25. When a long-term operational asset is sold at a gain, how is the balance sheet affected? Is the statement of cash flows affected? If so, how?
26. Define *depletion*. What is the most commonly used method of computing depletion?
27. List several common intangible assets. How is the life determined that is to be used to compute amortization?
28. List some differences between U.S. GAAP and GAAP of other countries.
29. How do differences in expense recognition and industry characteristics affect financial performance measures?

## EXERCISES

All applicable Exercises are available with McGraw-Hill *Connect Accounting*.

connect  
ACCOUNTING

Unless specifically included, ignore income tax considerations in all exercises and problems.

### Exercise 6-1 Long-term operational assets used in a business

LO 1

#### Required

Give some examples of long-term operational assets that each of the following companies is likely to own: (a) Chico's, (b) John Deere, (c) Amtrak, and (d) Malco Theatre.

### Exercise 6-2 Identifying long-term operational assets

LO 1

#### Required

Which of the following items should be classified as long-term operational assets?

- |                                  |                             |
|----------------------------------|-----------------------------|
| a. Prepaid insurance             | g. Delivery van             |
| b. Coal mine                     | h. Land held for investment |
| c. Office equipment              | i. 10-year treasury note    |
| d. Notes receivable (short-term) | j. Cash                     |
| e. Supplies                      | k. Filing cabinet           |
| f. Copyright                     | l. Inventory                |

## LO 1

**Exercise 6-3** *Classifying tangible and intangible assets***Required**

Identify each of the following long-term operational assets as either tangible (T) or intangible (I).

- |                   |                    |
|-------------------|--------------------|
| a. Pizza oven     | g. Office building |
| b. Land           | h. Drill press     |
| c. Franchise      | i. Patent          |
| d. Filing cabinet | j. Oil well        |
| e. Copyright      | k. Desk            |
| f. Silver mine    | l. Goodwill        |

## LO 2

**Exercise 6-4** *Determining the cost of an asset*

Pine Logging Co. purchased an electronic saw to cut various types and sizes of logs. The saw had a list price of \$160,000. The seller agreed to allow a 5 percent discount because Pine paid cash. Delivery terms were FOB shipping point. Freight cost amounted to \$4,200. Pine had to hire an individual to operate the saw. Pine had to build a special platform to mount the saw. The cost of the platform was \$2,500. The saw operator was paid an annual salary of \$65,000. The cost of the company's theft insurance policy increased by \$2,000 per year as a result of the acquisition of the saw. The saw had a four-year useful life and an expected salvage value of \$10,000.

**Required**

Determine the amount to be capitalized in an asset account for the purchase of the saw.

## LO 2

**Exercise 6-5** *Allocating costs on the basis of relative market values*

Illinois Company purchased a building and the land on which the building is situated for a total cost of \$1,200,000 cash. The land was appraised at \$600,000 and the building at \$1,000,000.

**Required**

- What is the accounting term for this type of acquisition?
- Determine the amount of the purchase cost to allocate to the land and the amount to allocate to the building.
- Would Illinois Company recognize a gain on the purchase? Why or why not?
- Record the purchase in a statements model like the following one.

Assets			=	Liab.	+	Equity	Rev.	-	Exp.	=	Net Inc.	Cash Flow
Cash	+	Land	+	Building								

## LO 2

**Exercise 6-6** *Allocating costs for a basket purchase*

Keenum Company purchased a restaurant building, land, and equipment for \$900,000. Keenum paid \$100,000 in cash and issued a 20-year, 8 percent note to First Bank for the balance. The appraised value of the assets was as follows.

Land	\$ 240,000
Building	600,000
Equipment	360,000
Total	<u>\$1,200,000</u>

### Required

- Compute the amount to be recorded on the books for each of the assets.
- Record the purchase in a horizontal statements model like the following one.

Assets					=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Land	+	Building	+	Equip.		N. Payable						

### Exercise 6-7 *Effect of depreciation on the accounting equation and financial statements*

LO 3

The following events apply to R&L Logging Company for the 2010 fiscal year.

- The company started when it acquired \$80,000 cash from the issue of common stock.
- Purchased a new skidder that cost \$75,000 cash.
- Earned \$98,000 in cash revenue.
- Paid \$52,000 cash for salaries expense.
- Paid \$12,000 cash for operating expenses.
- Adjusted the records to reflect the use of the skidder. The skidder, purchased on January 1, 2010, has an expected useful life of five years and an estimated salvage value of \$5,000. Use straight-line depreciation. The adjusting entry was made as of December 31, 2010.

### Required

- Record the above transactions in a horizontal statements model like the following one.

Event	Balance Sheet									Income Statement					Statem. of Cash Flows	
	Assets					=	Equity				Rev.	–	Exp.	=		Net Inc.
	Cash	+	Equip.	–	A. Depr.	=	Com. Stock	+	Ret. Earn.							

- What amount of depreciation expense would R&L Logging Co. report on the 2011 income statement?
- What amount of accumulated depreciation would R&L Logging Co. report on the December 31, 2011, balance sheet?
- Would the cash flow from operating activities be affected by depreciation in 2011?

### Exercise 6-8 *Effect of double-declining-balance depreciation on financial statements*

LO 3

Miller Company started operations by acquiring \$200,000 cash from the issue of common stock. The company purchased equipment that cost \$200,000 cash on January 1, 2010. The equipment had an expected useful life of five years and an estimated salvage value of \$20,000. Miller Company earned \$92,000 and \$76,000 of cash revenue during 2010 and 2011, respectively. Miller Company uses double-declining-balance depreciation.

### Required

- Record the above transactions in a horizontal statements model like the following one.

Event	Balance Sheet								Income Statement					Statem. of Cash Flows	
	Assets				=	Equity				Rev.	–	Exp.	=		Net Inc.
	Cash	+	Equip.	–	A. Depr.	=	Com. Stock	+	Ret. Earn.						



- b. Prepare income statements, balance sheets, and statements of cash flows for 2010 and 2011. Use a vertical statements format.

**LO 3, 4****Exercise 6-9** *Events related to the acquisition, use, and disposal of a tangible plant asset: straight-line depreciation*

Cook Wrecker Co. purchased a truck on January 1, 2010, for \$37,000. In addition, Cook paid sales tax and title fees of \$2,000 for the truck. The truck is expected to have a four-year life and a salvage value of \$7,000.

**Required**

- a. Using the straight-line method, compute the depreciation expense for 2010 and 2011.  
b. Assume the truck was sold on January 1, 2013, for \$15,000. Determine the amount of gain or loss that would be recognized on the asset disposal.

**LO 3****Exercise 6-10** *Computing and recording straight-line versus double-declining-balance depreciation*

At the beginning of 2009, Expert Manufacturing purchased a new computerized drill press for \$65,000. It is expected to have a five-year life and a \$5,000 salvage value.

**Required**

- a. Compute the depreciation for each of the five years, assuming that the company uses  
(1) Straight-line depreciation.  
(2) Double-declining-balance depreciation.  
b. Record the purchase of the drill press and the depreciation expense for the first year under the straight-line and double-declining-balance methods in a financial statements model like the following one.

Assets				=	Equity	Rev.	—	Exp.	=	Net Inc.	Cash Flow
Cash	+	Drill Press	—	Acc. Dep.	=	Ret. Earn					

**LO 4****Exercise 6-11** *Effect of the disposal of plant assets on the financial statements*

A plant asset with a cost of \$50,000 and accumulated depreciation of \$42,000 is sold for \$6,000.

**Required**

- a. What is the book value of the asset at the time of sale?  
b. What is the amount of gain or loss on the disposal?  
c. How would the sale affect net income (increase, decrease, no effect) and by how much?  
d. How would the sale affect the amount of total assets shown on the balance sheet (increase, decrease, no effect) and by how much?  
e. How would the event affect the statement of cash flows (inflow, outflow, no effect) and in what section?

**LO 4****Exercise 6-12** *Effect of gains and losses on the accounting equation and financial statements*

On January 1, 2010, Reese Enterprises purchased a parcel of land for \$22,000 cash. At the time of purchase, the company planned to use the land for future expansion. In 2011, Reese Enterprises changed its plans and sold the land.

### Required

- a. Assume that the land was sold for \$25,000 in 2010.
  - (1) Show the effect of the sale on the accounting equation.
  - (2) What amount would Reese report on the income statement related to the sale of the land?
  - (3) What amount would Reese report on the statement of cash flows related to the sale of the land?
- b. Assume that the land was sold for \$21,500 in 2011.
  - (1) Show the effect of the sale on the accounting equation.
  - (2) What amount would Reese report on the income statement related to the sale of the land?
  - (3) What amount would Reese report on the statement of cash flows related to the sale of the land?

### Exercise 6-13 *Double-declining-balance and units-of-production depreciation: gain or loss on disposal*

LO 3, 4

Copy Service Co. purchased a new color copier at the beginning of 2010 for \$42,000. The copier is expected to have a five-year useful life and a \$6,000 salvage value. The expected copy production was estimated at 2,000,000 copies. Actual copy production for the five years was as follows.

2010	550,000
2011	480,000
2012	380,000
2013	390,000
2014	240,000
Total	<u>2,040,000</u>

The copier was sold at the end of 2014 for \$5,200.

### Required

- a. Compute the depreciation expense for each of the five years, using double-declining-balance depreciation.
- b. Compute the depreciation expense for each of the five years, using units-of-production depreciation. (Round cost per unit to three decimal places.)
- c. Calculate the amount of gain or loss from the sale of the asset under each of the depreciation methods.

### Exercise 6-14 *Revision of estimated useful life*

LO 5

On January 1, 2010, Miller Machining Co. purchased a compressor and related installation equipment for \$56,000. The equipment had a three-year estimated life with a \$5,000 salvage value. Straight-line depreciation was used. At the beginning of 2012, Miller revised the expected life of the asset to four years rather than three years. The salvage value was revised to \$4,000.

### Required

Compute the depreciation expense for each of the four years.

### Exercise 6-15 *Distinguishing between revenue expenditures and capital expenditures*

LO 6

Uber's Shredding Service has just completed a minor repair on a shredding machine. The repair cost was \$1,200, and the book value prior to the repair was \$5,000. In addition, the company spent \$9,000 to replace the roof on a building. The new roof extended the life of the building

by five years. Prior to the roof replacement, the general ledger reflected the Building account at \$90,000 and related Accumulated Depreciation account at \$36,000.

### Required

After the work was completed, what book value should Uber's report on the balance sheet for the shredding machine and the building?

## LO 6

### Exercise 6-16 *Effect of revenue expenditures versus capital expenditures on financial statements*

Commercial Construction Company purchased a forklift for \$115,000 cash. It had an estimated useful life of four years and a \$5,000 salvage value. At the beginning of the third year of use, the company spent an additional \$10,000 that was related to the forklift. The company's financial condition just prior to this expenditure is shown in the following statements model.

Assets				=	Equity				Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Forklift	–	Acc. Dep.	=	Com. Stk.	+	Ret. Earn.						
12,000	+	115,000	–	55,000	=	24,000	+	48,000	NA	–	NA	=	NA	NA

### Required

Record the \$10,000 expenditure in the statements model under each of the following *independent* assumptions.

- The expenditure was for routine maintenance.
- The expenditure extended the forklift's life.
- The expenditure improved the forklift's operating capacity.

## LO 6

### Exercise 6-17 *Effect of revenue expenditures versus capital expenditures on financial statements*

On January 1, 2010, Grayson Construction Company overhauled four cranes resulting in a slight increase in the life of the cranes. Such overhauls occur regularly at two-year intervals and have been treated as maintenance expense in the past. Management is considering whether to capitalize this year's \$26,000 cash cost in the Cranes asset account or to expense it as a maintenance expense. Assume that the cranes have a remaining useful life of two years and no expected salvage value. Assume straight-line depreciation.

### Required

- Determine the amount of additional depreciation expense Grayson would recognize in 2010 and 2011 if the cost were capitalized in the Cranes account.
- Determine the amount of expense Grayson would recognize in 2010 and 2011 if the cost were recognized as maintenance expense.
- Determine the effect of the overhaul on cash flow from operating activities for 2010 and 2011 if the cost were capitalized and expensed through depreciation charges.
- Determine the effect of the overhaul on cash flow from operating activities for 2010 and 2011 if the cost were recognized as maintenance expense.

## LO 7

### Exercise 6-18 *Computing and recording depletion expense*

Southwest Sand and Gravel paid \$800,000 to acquire 1,000,000 cubic yards of sand reserves. The following statements model reflects Southwest's financial condition just prior to purchasing the sand reserves. The company extracted 420,000 cubic yards of sand in year 1 and 360,000 cubic yards in year 2.

Assets			=	Equity			Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Sand Res.	=	Com. Stk.	+	Ret. Earn.						
900,000	+	NA	=	900,000	+	NA	NA	–	NA	=	NA	NA

### Required

- Compute the depletion charge per unit.
- Record the acquisition of the sand reserves and the depletion expense for years 1 and 2 in a financial statements model like the preceding one.

### Exercise 6-19 Computing and recording the amortization of intangibles

LO 8

Nevada's Manufacturing paid cash to purchase the assets of an existing company. Among the assets purchased were the following items.

Patent with 5 remaining years of legal life	\$32,000
Goodwill	36,000

Nevada's financial condition just prior to the purchase of these assets is shown in the following statements model:

Assets				=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Patent	+	Goodwill									
94,000	+	NA	+	NA	=	NA	+	94,000	NA	–	NA	=	NA

### Required

- Compute the annual amortization expense for these items if applicable.
- Record the purchase of the intangible assets and the related amortization expense for year 1 in a horizontal statements model like the preceding one.

### Exercise 6-20 Computing and recording goodwill

LO 8

Ben Sands purchased the business Regional Supply Co. for \$285,000 cash and assumed all liabilities at the date of purchase. Regional's books showed assets of \$280,000, liabilities of \$40,000, and equity of \$240,000. An appraiser assessed the fair market value of the tangible assets at \$270,000 at the date of purchase. Sands's financial condition just prior to the purchase is shown in the following statements model.

Assets				=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Assets	+	Goodwill									
325,000	+	NA	+	NA	=	NA	+	325,000	NA	–	NA	=	NA

### Required

- Compute the amount of goodwill purchased.
- Record the purchase in a financial statements model like the preceding one.

## LO 9

**Exercise 6-21** *Performing ratio analysis using real-world data*

**American Greetings Corporation** manufactures and sells greeting cards and related items such as gift wrapping paper. **CSX Corporation** is one of the largest railway networks in the nation. The following data were taken from one of the companies' December 28, 2007, annual report and from the other's February 28, 2007, annual report. Revealing which data relate to which company was intentionally omitted. For one company, the dollar amounts are in thousands, while for the other they are in millions.

	Company 1	Company 2
Sales	\$10,030	\$1,744,603
Depreciation costs	883	46,975
Net earnings	1,336	42,378
Current assets	2,491	799,281
Property, plant, and equipment	21,780	285,072
Total assets	<u>\$25,534</u>	<u>\$1,778,214</u>

**Required**

- Calculate depreciation costs as a percentage of sales for each company.
- Calculate property, plant, and equipment as a percentage of total assets for each company.
- Based on the information now available to you, decide which data relate to which company. Explain the rationale for your decision.
- Which company appears to be using its assets most efficiently? Explain your answer.

**PROBLEMS**

## LO 2

**CHECK FIGURES**

Total cost of equipment: \$62,600  
Cost allocated to copier: \$7,500

**All applicable Problems are available with McGraw-Hill Connect Accounting.**

**Problem 6-22** *Accounting for acquisition of assets including a basket purchase*

Moon Co., Inc., made several purchases of long-term assets in 2010. The details of each purchase are presented here.

**New Office Equipment**

- List price: \$60,000; terms: 2/10 n/30; paid within discount period.
- Transportation-in: \$1,600.
- Installation: \$2,200.
- Cost to repair damage during unloading: \$1,000.
- Routine maintenance cost after six months: \$300.

**Basket Purchase of Copier, Computer, and Scanner for \$15,000 with Fair Market Values**

- Copier, \$10,000.
- Computer, \$6,000.
- Scanner, \$4,000.

**Land for New Warehouse with an Old Building Torn Down**

- Purchase price, \$200,000.
- Demolition of building, \$10,000.
- Lumber sold from old building, \$7,000.
- Grading in preparation for new building, \$14,000.
- Construction of new building, \$500,000.

**Required**

In each of these cases, determine the amount of cost to be capitalized in the asset accounts.

**Problem 6-23** *Accounting for depreciation over multiple accounting cycles: straight-line depreciation*

LO 3, 4



**CHECK FIGURES**

Net Income, 2008: \$1,250  
Total Assets, 2012: \$65,900

NEC Company began operations when it acquired \$60,000 cash from the issue of common stock on January 1, 2008. The cash acquired was immediately used to purchase equipment for \$60,000 that had a \$5,000 salvage value and an expected useful life of four years. The equipment was used to produce the following revenue stream (assume all revenue transactions are for cash). At the beginning of the fifth year, the equipment was sold for \$4,500 cash. NEC uses straight-line depreciation.

	2008	2009	2010	2011	2012
Revenue	\$15,000	\$16,000	\$16,400	\$14,000	\$0

**Required**

Prepare income statements, statements of changes in stockholders' equity, balance sheets, and statements of cash flows for each of the five years.

**Problem 6-24** *Purchase and use of tangible asset: three accounting cycles, double-declining-balance depreciation*

LO 2, 3, 5, 6

**CHECK FIGURES**

b. Net Income, 2010: \$25,400  
Total Assets, 2012: \$127,860

The following transactions pertain to ALFA Solutions, Inc. Assume the transactions for the purchase of the computer and any capital improvements occur on January 1 each year.

**2010**

1. Acquired \$50,000 cash from the issue of common stock.
2. Purchased a computer system for \$30,000. It has an estimated useful life of five years and a \$5,000 salvage value.
3. Paid \$2,000 sales tax on the computer system.
4. Collected \$40,000 in data entry fees from clients.
5. Paid \$1,800 in fees to service the computers.
6. Recorded double-declining-balance depreciation on the computer system for 2010.

**2011**

1. Paid 1,000 for repairs to the computer system.
2. Bought a case of toner cartridges for the printers that are part of the computer system, \$1,500.
3. Collected \$38,000 in data entry fees from clients.
4. Paid \$1,100 in fees to service the computers.
5. Recorded double-declining-balance depreciation for 2011.

**2012**

1. Paid \$4,800 to upgrade the computer system, which extended the total life of the system to six years.
2. Paid \$1,100 in fees to service the computers.
3. Collected \$35,000 in data entry fees from clients.
4. Recorded double-declining-balance depreciation for 2012.

**Required**

- a. Record the above transactions in a horizontal statements model like the following one.

Event	Balance Sheet									Income Statement					Statemt. of Cash Flows	
	Assets					=	Equity				Rev.	–	Exp.	=		Net Inc.
	Cash	+	Equip.	–	A. Depr.	=	Com. Stock	+	Ret. Earn.							

- b. Use a vertical model to present financial statements for 2010, 2011, and 2012.



## LO 3



## CHECK FIGURES

- b. Depreciation Expense, 2011:  
\$4,600
- c. Depreciation Expense, 2012:  
\$4,625

## LO 3, 4



## CHECK FIGURES

- a. Depreciation Expense, Year 2:  
\$8,000
- b. Depreciation Expense, Year 2:  
\$10,800

## LO 3, 4

**Problem 6-25** *Calculating depreciation expense using three different methods*

Swanson Service Company purchased a copier on January 1, 2011, for \$18,000 and paid an additional \$500 for delivery charges. The copier was estimated to have a life of four years or 800,000 copies. Salvage was estimated at \$2,500. The copier produced 230,000 copies in 2011 and 250,000 copies in 2012.

**Required**

Compute the amount of depreciation expense for the copier for calendar years 2011 and 2012, using these methods.

- Straight-line.
- Units-of-production.
- Double-declining-balance.

**Problem 6-26** *Effect of straight-line versus double-declining-balance depreciation on the recognition of expense and gains or losses*

One Hour Laundry Services purchased a new steam press machine on January 1, for \$45,000. It is expected to have a five-year useful life and a \$5,000 salvage value. One Hour expects to use the equipment more extensively in the early years.

**Required**

- Calculate the depreciation expense for each of the five years, assuming the use of straight-line depreciation.
- Calculate the depreciation expense for each of the five years, assuming the use of double-declining-balance depreciation.
- Would the choice of one depreciation method over another produce a different amount of annual cash flow for any year? Why or why not?
- Assume that One Hour Laundry Services sold the steam press machine at the end of the third year for \$26,000. Compute the amount of gain or loss using each depreciation method.

**Problem 6-27** *Computing and recording units-of-production depreciation*

Brees Corporation purchased a delivery van for \$35,500 in 2010. The firm's financial condition immediately prior to the purchase is shown in the following horizontal statements model.

Assets					=	Equity			Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Van	–	Acc. Dep.	=	Com. Stk.	+	Ret. Earn.						
50,000	+	NA	–	NA	=	50,000	+	NA	NA	–	NA	=	NA	NA

## CHECK FIGURES

- a. Depreciation Expense, 2010:  
\$10,000
- c. Loss on Sale: \$(1,500)

The van was expected to have a useful life of 150,000 miles and a salvage value of \$5,500. Actual mileage was as follows.

2010	50,000
2011	70,000
2012	58,000

**Required**

- Compute the depreciation for each of the three years, assuming the use of units-of-production depreciation.
- Assume that Brees earns \$21,000 of cash revenue during 2010. Record the purchase of the van and the recognition of the revenue and the depreciation expense for the first year in a financial statements model like the preceding one.
- Assume that Brees sold the van at the end of the third year for \$4,000. Calculate the amount of gain or loss from the sale.

### Problem 6-28 *Determining the effect of depreciation expense on financial statements*

LO 3

Three different companies each purchased a machine on January 1, 2008, for \$42,000. Each machine was expected to last five years or 200,000 hours. Salvage value was estimated to be \$2,000. All three machines were operated for 50,000 hours in 2008, 55,000 hours in 2009, 40,000 hours in 2010, 44,000 hours in 2011, and 31,000 hours in 2012. Each of the three companies earned \$30,000 of cash revenue during each of the five years. Company A uses straight-line depreciation, company B uses double-declining-balance depreciation, and company C uses units-of-production depreciation.

#### Required

Answer each of the following questions. Ignore the effects of income taxes.

- Which company will report the highest amount of net income for 2008?
- Which company will report the lowest amount of net income for 2010?
- Which company will report the highest book value on the December 31, 2010, balance sheet?
- Which company will report the highest amount of retained earnings on the December 31, 2011, balance sheet?
- Which company will report the lowest amount of cash flow from operating activities on the 2010 statement of cash flows?

### Problem 6-29 *Accounting for depletion*

LO 7

Favre Exploration Corporation engages in the exploration and development of many types of natural resources. The company has engaged in the following activities:

- |              |   |
|--------------|---|
| Jan. 1, 2010 | Purchased a coal mine estimated to contain 200,000 tons of coal for \$900,000.  |
| Feb. 1, 2010 | Purchased a silver mine estimated to contain 30,000 tons of silver for \$750,000.   |
| July 1, 2010 | Purchased for \$2,500,000 a tract of timber estimated to yield 3,000,000 board feet of lumber and to have a residual land value of \$250,000. |
| Aug. 1, 2010 | Purchased for \$720,000 oil reserves estimated to contain 380,000 barrels of oil, of which 20,000 would be unprofitable to pump.              |

#### Required

- Determine the amount of depletion expense to recognize on the 2010 income statement for each of the four reserves, assuming 62,000 tons of coal, 1,200,000 board feet of lumber, 9,000 tons of silver, and 80,000 barrels of oil are extracted.
- Prepare the portion of the December 31, 2010, balance sheet that reports natural resources.

### Problem 6-30 *Recognizing continuing expenditures for plant assets*

LO 3, 4, 5, 6

Sam's Outdoor, Inc., recorded the following transactions over the life of a piece of equipment purchased in 2010.

- |               |  |
|---------------|--|
| Jan. 1, 2010  | Purchased the equipment for \$39,000 cash. The equipment is estimated to have a five-year life and \$4,000 salvage value and was to be depreciated using the straight-line method. |
| Dec. 31, 2010 | Recorded depreciation expense for 2010.  |
| May 5, 2011   | Undertook routine repairs costing \$800.   |
| Dec. 31, 2011 | Recorded depreciation expense for 2011.  |
| Jan. 1, 2012  | Made an adjustment costing \$3,000 to the equipment. It improved the quality of the output but did not affect the life estimate.   |
| Dec. 31, 2012 | Recorded depreciation expense for 2012.  |
| Mar. 1, 2013  | Incurred \$520 cost to oil and clean the equipment.  |
| Dec. 31, 2013 | Recorded depreciation expense for 2013.  |
| Jan. 1, 2014  | Had the equipment completely overhauled at a cost of \$9,000. The overhaul was estimated to extend the total life to seven years and revised the salvage value to \$3,000.         |
| Dec. 31, 2014 | Recorded depreciation expense for 2014.  |
| July 1, 2015  | Sold the equipment for \$8,000 cash.   |

#### CHECK FIGURES

- Company A, Net Income: \$22,000
- Company A, Highest Book Value: \$18,000

#### CHECK FIGURES

- Coal Mine Depletion, 2010: \$279,000
- Total Natural Resources: \$3,056,000

#### CHECK FIGURES

- 2012 Depreciation Expense: \$8,000
- Loss on Sale: \$4,000

**Required**

- a. Use a horizontal statements model like the following one to show the effects of these transactions on the elements of the financial statements. Use + for increase, – for decrease, and NA for not affected. The first event is recorded as an example.

Date	Assets	=	Liabilities	+	Equity	Net Inc.	Cash Flow
Jan. 1, 2010	+ –		NA		NA	NA	– IA

- b. Determine the amount of depreciation expense Sam's will report on the income statements for the years 2010 through 2014.
- c. Determine the book value (cost – accumulated depreciation) Sam's will report on the balance sheets at the end of the years 2010 through 2014.
- d. Determine the amount of the gain or loss Sam's will report on the disposal of the equipment on July 1, 2015.

**LO 5, 6, 7****CHECK FIGURE**

Depreciation Expense: \$8,500

**Problem 6-31** *Accounting for continuing expenditures*

Shaw Manufacturing paid \$62,000 to purchase a computerized assembly machine on January 1, 2008. The machine had an estimated life of eight years and a \$2,000 salvage value. Shaw's financial condition as of January 1, 2011, is shown in the following financial statements model. Shaw uses the straight-line method for depreciation.

Assets					=	Equity			Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Mach.	–	Acc. Dep.	=	Com. Stk.	+	Ret. Earn.						
15,000	+	62,000	–	22,500	=	8,000	+	46,500	NA	–	NA	=	NA	NA

Shaw Manufacturing made the following expenditures on the computerized assembly machine in 2011.

- Jan. 2 Added an overdrive mechanism for \$6,000 that would improve the overall quality of the performance of the machine but would not extend its life. The salvage value was revised to \$3,000.
- Aug. 1 Performed routine maintenance, \$1,150.
- Oct. 2 Replaced some computer chips (considered routine), \$950.
- Dec. 31 Recognized 2011 depreciation expense.

**Required**

Record the 2011 transactions in a statements model like the preceding one.

**LO 8****Problem 6-32** *Accounting for intangible assets***CHECK FIGURE**

Goodwill Purchased: \$210,000

Le Gormet Company purchased a fast-food restaurant for \$1,700,000. The fair market values of the assets purchased were as follows. No liabilities were assumed.

Equipment	\$420,000
Land	300,000
Building	650,000
Franchise (5-year life)	120,000

**Required**

Calculate the amount of goodwill purchased.

### Problem 6-33 Accounting for goodwill

LO 8

Green Leaf purchased the assets of Flower Co. for \$1,200,000 in 2010. The estimated fair market value of the assets at the purchase date was \$1,000,000. Goodwill of \$200,000 was recorded at purchase. In 2012, because of negative publicity, one-half of the goodwill purchased from Flower Co. was judged to be permanently impaired.

#### CHECK FIGURE

Impairment Loss: \$100,000

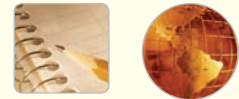
#### Required

Explain how the recognition of the impairment of the goodwill will affect the 2012 balance sheet, income statement, and statement of cash flows.

### Problem 6-34 Performing ratio analysis using real-world data

LO 9

**Cooper Tire Rubber Company** claims to be the fourth largest tire manufacturer in North America. **Goodyear Tire & Rubber Company** is the largest tire manufacturer in North America. The following information was taken from these companies' December 31, 2007, annual reports. All dollar amounts are in thousands.



	Cooper Tire	Goodyear Tire
Sales	\$2,932,575	\$19,644,000
Depreciation costs	131,007	610,000
Buildings, machinery, and equipment (net of accumulated depreciation)	949,458	4,383,000
Total assets	2,296,868	17,028,000
Depreciation method	"Straight-line or accelerated"	Straight-line
Estimated life of assets:		
Buildings	10 to 40 years	8 to 45 years
Machinery and equipment	4 to 14 years	3 to 30 years

#### Required

- Calculate depreciation costs as a percentage of sales for each company.
- Calculate buildings, machinery, and equipment as a percentage of total assets for each company.
- Which company appears to be using its assets most efficiently? Explain your answer.
- Identify some of the problems a financial analyst encounters when trying to compare the use of long-term assets of Cooper versus Goodyear.

## ANALYZE, THINK, COMMUNICATE

### ATC 6-1 Business Applications Case Understanding real-world annual reports

#### Required

Use the **Topps Company's** annual report in Appendix B to answer the following questions.

The Topps Company, Inc.

- What method of depreciation does Topps use?
- What types of intangible assets does Topps have?
- What are the estimated lives that Topps uses for the various types of long-term assets?
- As of February 25, 2006, what is the original cost of Topps': Land; Buildings and improvements; and Machinery, equipment and software (see the footnotes)?
- What was Topps' depreciation expense and amortization expense for 2006 (see the footnotes)?



### ATC 6-2 Group Assignment *Different depreciation methods*

Sweet's Bakery makes cakes, pies, and other pastries that it sells to local grocery stores. The company experienced the following transactions during 2010.

1. Started business by acquiring \$60,000 cash from the issue of common stock.
2. Purchased bakery equipment for \$46,000.
3. Had sales in 2010 amounting to \$42,000.
4. Paid \$8,200 of cash for supplies which were all used during the year to make baked goods.
5. Incurred other operating expenses of \$12,000 for 2010.

#### Required

- a. Organize the class into two sections and divide each section into groups of three to five students. Assign each section a depreciation method: straight-line or double-declining-balance.

#### Group Task

Prepare an income statement and balance sheet using the preceding information and the depreciation method assigned to your group.

#### Class Discussion

- b. Have a representative of each section put its income statement on the board. Are there differences in net income? In the amount of income tax paid? How will these differences in the amount of depreciation expense change over the life of the equipment?

### ATC 6-3 Real-World Case *Different numbers for different industries*



The following ratios are for four companies in different industries. Some of these ratios have been discussed in the textbook; others have not, but their names explain how the ratio was computed. The four sets of ratios, presented randomly, are

Ratio	Company 1	Company 2	Company 3	Company 4
Current assets ÷ total assets	12%	18%	20%	72%
Operating cycle	42 days	35 days	19 days	409 days
Return on assets	12%	19%	5%	5%
Gross margin	35%	55%	46%	24%
Sales ÷ property, plant and equipment	1.89 times	38.97 times	1.97 times	6.08 times
Sales ÷ number of full-time employees	\$540,883	\$29,942	\$55,687	\$413,252

The four companies to which these ratios relate, listed in alphabetical order, are

1. **Anheuser Bush Companies, Inc.**, is a company that produces beer and related products. Its fiscal year-end was December 31, 2007.
2. **Wendy's International, Inc.**, operates 1,414 of the 6,645 Wendy's restaurants in the United States and 19 other countries. Its fiscal year-end was December 30, 2007.
3. **Deere & Company** is a company that manufactures heavy construction equipment. Its fiscal year-end was December 31, 2007.
4. **Weight Watchers International, Inc.**, is a company that provides weight loss services and products. Its fiscal year-end was December 31, 2007.

#### Required

Determine which company should be matched with each set of ratios. Write a memorandum explaining the rationale for your decisions.

#### ATC 6-4 Business Applications Case *Effect of depreciation on the return on assets ratio*

Campus Video Games (CVG) was started on January 1, 2010, when it acquired \$62,500 cash from the issue of common stock. The company immediately purchased video games that cost \$62,500 cash. The games had an estimated salvage value of \$7,500 and an expected useful life of five years. CVG used the games during 2010 to produce \$25,000 of cash revenue. Assume that these were the only events affecting CVG during 2010.

##### Required

(Hint: Prepare an income statement and a balance sheet prior to completing the following requirements.)

- Compute the return on assets ratio as of December 31, 2010, assuming CVG uses the straight-line depreciation method.
- Recompute the ratio assuming CVG uses the double-declining-balance method.
- Which depreciation method makes it *appear* that CVG is utilizing its assets more effectively?

#### ATC 6-5 Business Applications Case *Effect of depreciation on financial statement analysis: straight-line versus double-declining-balance*

Rucky Company and Stone Company experienced the exact same set of economic events during 2010. Both companies purchased machines on January 1, 2010. Except for the effects of this purchase, the accounting records of both companies had the following accounts and balances.

As of January 1, 2010	
Total Assets	\$400,000
Total Liabilities	160,000
Total Stockholders' Equity	240,000
During 2010	
Total Sales Revenue	200,000
Total Expenses (not including depreciation)	120,000
Liabilities were not affected by transactions in 2010.	

The machines purchased by the companies each cost \$80,000 cash. The machines had expected useful lives of five years and estimated salvage values of \$8,000. Rucky uses straight-line depreciation. Stone uses double-declining-balance depreciation.

##### Required

- For both companies, calculate the balances in the preceding accounts on December 31, 2010, after the effects of the purchase and depreciation of the machines have been applied. [Hint: The purchases of the machines are asset exchange transactions that do not affect total assets. However, the effect of depreciating the machines changes the amounts in total assets, expense, and equity (retained earnings).]
- Based on the revised account balances determined in Requirement *a*, calculate the following ratios for both companies.
  - Debt to assets ratio.
  - Return on assets ratio.
  - Return on equity ratio.
- Disregarding the effects of income taxes, which company produced the higher increase in real economic wealth during 2010?



**ATC 6-6 Writing Assignment** *Impact of historical cost on asset presentation on the balance sheet*

Assume that you are examining the balance sheets of two companies and note the following information.

	Company A	Company B
Equipment	\$1,130,000	\$900,000
Accumulated Depreciation	(730,000)	(500,000)
Book Value	<u>\$ 400,000</u>	<u>\$400,000</u>

Maxie Smith, a student who has had no accounting courses, remarks that Company A and Company B have the same amount of equipment.

**Required**

In a short paragraph, explain to Maxie that the two companies do not have equal amounts of equipment. You may want to include in your discussion comments regarding the possible age of each company's equipment, the impact of the historical cost concept on balance sheet information, and the impact of different depreciation methods on book value.

**ATC 6-7 Corporate Governance** *What's an expense?*

Several years ago, Wilson Blowhard founded a communications company. The company became successful and grew by expanding its customer base and acquiring some of its competitors. In fact, most of its growth resulted from acquiring other companies. Mr. Blowhard is adamant about continuing the company's growth and increasing its net worth. To achieve these goals, the business's net income must continue to increase at a rapid pace.

If the company's net worth continues to rise, Mr. Blowhard plans to sell the company and retire. He is, therefore, focused on improving the company's profit any way he can.

In the communications business, companies often use the lines of other communications companies. This line usage is a significant operating expense for Mr. Blowhard's company. Generally accepted accounting principles require operating costs like line use to be expensed as they are incurred each year. Each dollar of line cost reduces net income by a dollar.

After reviewing the company's operations, Mr. Blowhard concluded that the company did not currently need all of the line use it was paying for. It was really paying the owner of the lines now so that the line use would be available in the future for all of Mr. Blowhard's expected new customers. Mr. Blowhard instructed his accountant to capitalize all of the line cost charges and depreciate them over 10 years. The accountant reluctantly followed Mr. Blowhard's instructions and the company's net income for the current year showed a significant increase over the prior year's net income. Mr. Blowhard had found a way to report continued growth in the company's net income and increase the value of the company.

**Required**

- How does Mr. Blowhard's scheme affect the amount of income that the company would otherwise report in its financial statements and how does the scheme affect the company's balance sheet? Explain your answer.
- Review the AICPA's Articles of Professional Conduct (see Chapter 2) and comment on any of the standards that were violated.
- Review the fraud triangle discussed in Chapter 2 and comment on which of the features are evident in this case.

**ATC 6-8 Research Assignment** *Comparing Microsoft's and Intel's operational assets*

This chapter discussed how companies in different industries often use different proportions of current versus long-term assets to accomplish their business objective. The technology revolution resulting from the silicon microchip has often been led by two well-known companies: **Microsoft** and **Intel**. Although often thought of together, these companies are really very different. Using either the most current Forms 10-K or annual reports for Microsoft Corporation and Intel Corporation, complete the requirements below. To obtain the Forms 10-K, use either the

EDGAR system following the instructions in Appendix A or the company's website. Microsoft's annual report is available on its website; Intel's annual report is its Form 10-K.

**Required**

- a. Fill in the missing data in the following table. The percentages must be computed; they are not included in the companies 10-Ks. (*Note:* The percentages for current assets and property, plant, and equipment will not sum to 100.)

	Current Assets	Property, Plant, and Equipment	Total Assets
<b>Microsoft</b>			
Dollar Amount	\$ _____	\$ _____	\$ _____
% of Total Assets	_____ %	_____ %	100%
<b>Intel</b>			
Dollar Amount	\$ _____	\$ _____	\$ _____
% of Total Assets	_____ %	_____ %	100%

- b. Briefly explain why these two companies have different percentages of their assets in current assets versus property, plant, and equipment.

# CHAPTER 7

## Accounting *for* Liabilities

### LEARNING OBJECTIVES

**After you have mastered the material in this chapter you will be able to:**

- 1** Show how notes payable and related interest expense affect financial statements.
- 2** Show how sales tax liabilities affect financial statements.
- 3** Define contingent liabilities and explain how they are reported in financial statements.
- 4** Explain how warranty obligations affect financial statements.
- 5** Show how installment notes affect financial statements.
- 6** Show how a line of credit affects financial statements.
- 7** Explain how to account for bonds and their related interest costs.
- 8** Distinguish between current and noncurrent assets and liabilities.
- 9** Prepare a classified balance sheet.
- 10** Use the current and debt to assets ratios to assess the level of liquidity.

### CHAPTER OPENING

Chapter 5 explained the need to estimate the net realizable value of receivables (the amount of receivables a company expects to actually collect). Do companies also estimate the net realizable value of payables (the amount they expect to actually pay)? The answer is no. Unless there is evidence to the contrary, companies are assumed to be going concerns that will continue to operate. Under this **going concern assumption**, companies expect to pay their obligations in full. Accounts and notes payable are therefore reported at face value. In addition to reporting liabilities for which the amounts due are known, companies report liabilities for which the amounts due are uncertain. Liabilities that are uncertain as to amount are contingent liabilities.

Chapter 2 discussed several types of liabilities with known amounts due, including accounts payable, salaries payable, and unearned revenue. This chapter introduces other liabilities with known amounts due: notes payable, sales taxes payable, lines of credit, and bond liabilities. We also discuss a contingent liability called warranties payable. We begin with a discussion of **current liabilities**, those that are payable within one year or the operating cycle, whichever is longer.

## The *Curious* Accountant

**CBS Corporation** recently reported a net loss of \$7.1 billion. The previous year it had reported an even greater loss, \$17.5 billion. The company had \$721 million of interest expense in recent period and \$694 million in the previous year.

With such huge losses on its income statements, do you think CBS was able to make the interest payments on its debt? If so, how? (Answers on page 259.)



## ACCOUNTING FOR CURRENT LIABILITIES

### Accounting for Notes Payable

#### LO 1

Show how notes payable and related interest expense affect financial statements.

Our discussion of promissory notes in Chapter 5 focused on the payee, the company with a note receivable on its books. In this chapter we focus on the maker of the note, the company with a note payable on its books. Since the maker of the note issues (gives) the note to the payee, the maker is sometimes called the **issuer**.

To illustrate, assume that on September 1, 2010, Herrera Supply Company (HSC) borrowed \$90,000 from the National Bank. As evidence of the debt, Herrera issued a **note payable** that had a one-year term and an annual interest rate of 9 percent.

Issuing the note is an asset source transaction. The asset account Cash increases and the liability account Notes Payable increases. The income statement is not affected. The statement of cash flows shows a \$90,000 cash inflow from financing activities. The effects on the financial statements are as follows.

	Assets	=	Liabilities	+	Stockholders' Equity		Rev.	-	Exp.	=	Net Inc.	Cash Flow
Date	Cash	=	Notes Pay.	+	Int. Pay.	+	Com. Stk.	+	Ret. Earn.			
09/01/10	90,000	=	90,000	+	NA	+	NA	+	NA		NA	90,000 FA

On December 31, 2010, HSC would recognize four months (September 1 through December 31) of accrued interest expense. The accrued interest is \$2,700 [ $\$90,000 \times 0.09 \times (4 \div 12)$ ]. Recognizing the accrued interest expense increases the liability account Interest Payable and decreases retained earnings. It is a claims exchange event. The income statement would report interest expense although HSC had not paid any cash for interest in 2010. The effects on the financial statements are as follows.

	Assets	=	Liabilities	+	Stockholders' Equity		Rev.	-	Exp.	=	Net Inc.	Cash Flow
Date	Cash	=	Notes Pay.	+	Int. Pay.	+	Com. Stk.	+	Ret. Earn.			
12/31/10	NA	=	NA	+	2,700	+	NA	+	(2,700)		NA	NA

HSC would record three events on August 31, 2011 (the maturity date). The first event recognizes \$5,400 of interest expense that accrued in 2011 from January 1 through August 31 [ $\$90,000 \times 0.09 \times (8 \div 12)$ ]. The effects on the financial statements are as follows.

	Assets	=	Liabilities	+	Stockholders' Equity		Rev.	-	Exp.	=	Net Inc.	Cash Flow
Date	Cash	=	Notes Pay.	+	Int. Pay.	+	Com. Stk.	+	Ret. Earn.			
08/31/11	NA	=	NA	+	5,400	+	NA	+	(5,400)		NA	NA

The second event recognizes HSC's cash payment for interest on August 31, 2011. This event is an asset use transaction that reduces both the Cash and Interest Payable accounts for the total amount of interest due, \$8,100 [ $\$90,000 \times 0.09 \times (12 \div 12)$ ]. The interest payment includes the four months' interest accrued in 2010 and the eight months accrued in 2011 ( $\$2,700 + \$5,400 = \$8,100$ ). There is no effect on the income statement because HSC recognized the interest expense in two previous journal entries.

The statement of cash flows would report an \$8,100 cash outflow from operating activities. The effects on the financial statements follow.

	Assets	=	Liabilities	+	Stockholders' Equity		Rev.	–	Exp.	=	Net Inc.	Cash Flow
Date	Cash	=	Notes Pay.	+	Int. Pay.	+	Com. Stk.	+	Ret. Earn.			
08/31/11	(8,100)	=	NA	+	(8,100)	+	NA	+	NA	=	NA	(8,100) OA

The third event on August 31, 2011, reflects repaying the principal. This event is an asset use transaction. The Cash account and the Notes Payable account each decrease by \$90,000. There is no effect on the income statement. The statement of cash flows would show a \$90,000 cash outflow from financing activities. Recall that paying interest is classified as an operating activity even though repaying the principal is a financing activity. The effects on the financial statements are as follows.

	Assets	=	Liabilities	+	Stockholders' Equity		Rev.	–	Exp.	=	Net Inc.	Cash Flow
Date	Cash	=	Notes Pay.	+	Int. Pay.	+	Com. Stk.	+	Ret. Earn.			
08/31/11	(90,000)	=	(90,000)	+	NA	+	NA	+	NA	=	NA	(90,000) FA

## CHECK Yourself 7.1

On October 1, 2010, Mellon Company issued an interest-bearing note payable to Better Banks Inc. The note had a \$24,000 principal amount, a four-month term, and an annual interest rate of 4 percent. Determine the amount of interest expense and the cash outflow from operating activities Mellon will report in its 2010 and 2011 financial statements.

**Answer** The computation of accrued interest expense is shown below. Unless otherwise specified, the interest rate is stated in annual terms even though the term of the note is only four months. Interest rates are commonly expressed as an annual percentage regardless of the term of the note. The *time outstanding* in the following formulas is therefore expressed as a fraction of a year. Mellon paid interest at an annual rate of 4 percent, but the note was outstanding for only 3/12 of a year in 2010 and 1/12 of a year in 2011.

2010

$$\text{Principal} \times \text{Annual interest rate} \times \text{Time outstanding} = \text{Interest expense}$$

$$\$24,000 \times 0.04 \times (3/12) = \$240$$

2011

$$\text{Principal} \times \text{Annual interest rate} \times \text{Time outstanding} = \text{Interest expense}$$

$$\$24,000 \times 0.04 \times (1/12) = \$80$$

Mellon will report a \$320 (\$240 + \$80) cash outflow from operating activities for interest in 2011.

## Accounting for Sales Tax

Most states require retail companies to collect a sales tax on items sold to their customers. The retailer collects the tax from its customers and remits the tax to the state at regular intervals. The retailer has a current liability for the amount of sales tax collected but not yet paid to the state.

LO 2

Show how sales tax liabilities affect financial statements.



To illustrate, assume Herrera Supply Company (HSC) sells merchandise to a customer for \$2,000 cash in a state where the sales tax rate is 6 percent. The effects on the financial statements are shown below.<sup>1</sup>

Assets	=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	=	Sales Tax Pay.	+	Com. Stk.	+	Ret. Earn.				
2,120	=	120	+	NA	+	2,000			2,000 – NA = 2,000	2,120 OA

Remitting the tax (paying cash to the tax authority) is an asset use transaction. Both the Cash account and the Sales Tax Payable account decrease. The effects on the financial statements are as follows.

Assets	=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	=	Sales Tax Pay.	+	Com. Stk.	+	Ret. Earn.				
(120)	=	(120)	+	NA	+	NA			NA – NA = NA	(120) OA

## Contingent Liabilities

### LO 3

Define contingent liabilities and explain how they are reported in financial statements.

A **contingent liability** is a potential obligation arising from a past event. The amount or existence of the obligation depends on some future event. A pending lawsuit, for example, is a contingent liability. Depending on the outcome, a defendant company could be required to pay a large monetary settlement or could be relieved of any obligation. Generally accepted accounting principles require that companies classify contingent liabilities into three different categories depending on the likelihood of their becoming actual liabilities. The categories and the accounting for each are described below.

1. If the likelihood of a future obligation arising is *probable* (likely) and its amount can be *reasonably estimated*, a liability is recognized in the financial statements. Contingent liabilities in this category include warranties, vacation pay, and sick leave.
2. If the likelihood of a future obligation arising is *reasonably possible* but not likely or if it is probable but *cannot be reasonably estimated*, no liability is reported on the balance sheet. The potential liability is, however, disclosed in the footnotes to the financial statements. Contingent liabilities in this category include legal challenges, environmental damages, and government investigations.
3. If the likelihood of a future obligation arising is *remote*, no liability need be recognized in the financial statements or disclosed in the footnotes to the statements.<sup>2</sup>

Determining whether a contingent liability is probable, reasonably possible, or remote requires professional judgment. Even seasoned accountants seek the advice of attorneys, engineers, insurance agents, and government regulators before classifying significant contingent liabilities. Professional judgment is also required to distinguish between contingent liabilities and **general uncertainties**. All businesses face uncertainties such as competition and damage from floods or storms. Such uncertainties are not contingent liabilities, however, because they do not arise from past events.

<sup>1</sup>The entry to record cost of goods sold for this sale is intentionally omitted.

<sup>2</sup>Companies may, if desired, voluntarily disclose contingent liabilities classified as remote.

## EXHIBIT 7.1

### Reporting Contingent Liabilities

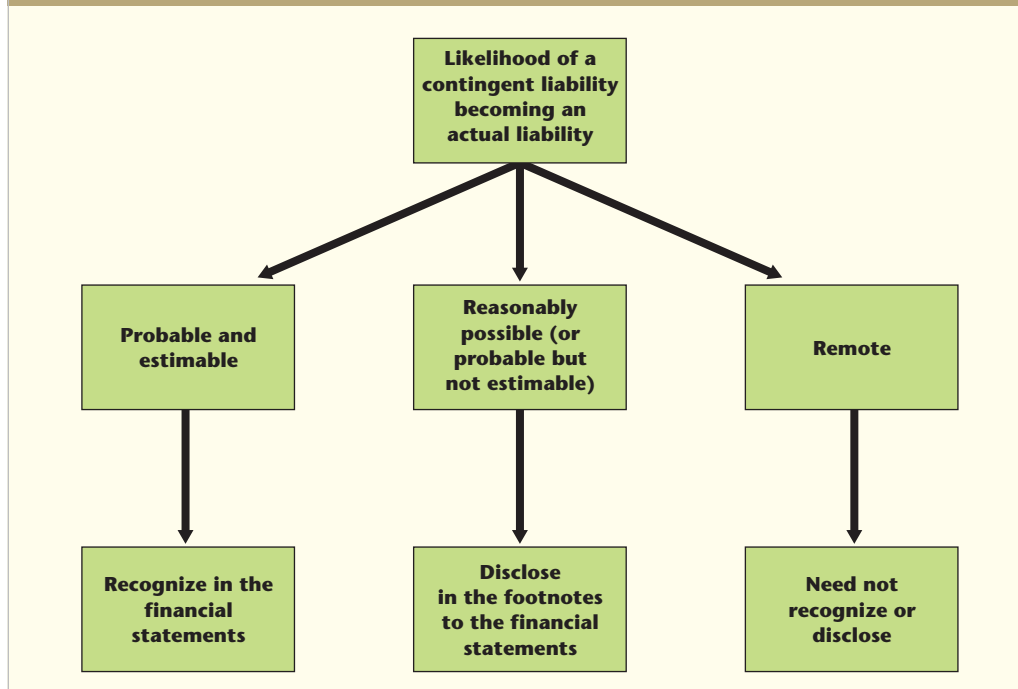


Exhibit 7.1 summarizes the three categories of contingent liabilities and the accounting for each category.

## Warranty Obligations

To attract customers, many companies guarantee their products or services. Such guarantees are called **warranties**. Warranties take many forms. Usually, they extend for a specified period of time. Within this period, the seller promises to replace or repair defective products without charge. Although the amount and timing of warranty obligations are uncertain, warranties usually represent liabilities that must be reported in the financial statements.

To illustrate accounting for warranty obligations, assume Herrera Supply Company (HSC) had cash of \$2,000, inventory of \$6,000, common stock of \$5,000, and retained earnings of \$3,000 on January 1, 2009. The 2009 accounting period is affected by three accounting events: (1) sale of merchandise under warranty; (2) recognition of warranty obligations to customers who purchased the merchandise; and (3) settlement of a customer's warranty claim.

### EVENT 1 Sale of Merchandise

*HSC sold for \$7,000 cash merchandise that had cost \$4,000.*

In the following statements model, revenue from the sale is referenced as 1a and the cost of the sale as 1b. The effects of the sales transaction on the financial statements are shown below.

Event No.	Assets			=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
	Cash	+	Inventory	=			Ret. Earn.						
1a	7,000	+	NA	=	NA	+	7,000	7,000	–	NA	=	7,000	7,000 OA
1b	NA	+	(4,000)	=	NA	+	(4,000)	NA	–	4,000	=	(4,000)	NA

## LO 4

Explain how warranty obligations affect financial statements.

**EVENT 2 Recognition of Warranty Expense**

*HSC guaranteed the merchandise sold in Event 1 to be free from defects for one year following the date of sale.*

Although the exact amount of future warranty claims is unknown, HSC must inform financial statement users of the company's obligation. HSC must estimate the amount of the warranty liability and report the estimate in the 2009 financial statements. Assume the warranty obligation is estimated to be \$100. Recognizing this obligation increases liabilities (warranties payable) and reduces stockholders' equity (retained earnings). Recognizing the warranty expense reduces net income. The statement of cash flows is not affected when the obligation and the corresponding expense are recognized. The effects on the financial statements follow.

Event No.	Assets	=	Liab.	+	Equity	Rev.	-	Exp.	=	Net Inc.	Cash Flow
			Warr. Pay.	+	Ret. Earn.						
2	NA	=	100	+	(100)	NA	-	100	=	(100)	NA

**EVENT 3 Settlement of Warranty Obligation**

*HSC paid \$40 cash to repair defective merchandise returned by a customer.*

The cash payment for the repair is not an expense. Warranty expense was recognized in the period in which the sale was made (when the Warranties Payable account was credited). The payment reduces an asset (cash) and a liability (warranties payable). The income statement is not affected by the repairs payment. However, there is a \$40 cash outflow reported in the operating activities section of the statement of cash flows. The effects on the financial statements follow.

Event No.	Assets	=	Liab.	+	Equity	Rev.	-	Exp.	=	Net Inc.	Cash Flow
	Cash	=	Warr. Pay.	+	Ret. Earn.						
3	(40)	=	(40)	+	NA	NA	-	NA	=	NA	(40) OA

**Financial Statements**

The financial statements for HSC's 2009 accounting period are shown in Exhibit 7.2.

**EXHIBIT 7.2****Financial Statements for 2009**

Income Statement		Balance Sheet		Statement of Cash Flows	
Sales revenue	\$7,000	Assets		<b>Operating Activities</b>	
Cost of goods sold	(4,000)	Cash	\$ 8,960	Inflow from customers	\$7,000
Gross margin	3,000	Inventory	2,000	Outflow for warranty	(40)
Warranty expense	(100)	Total assets	<u>\$10,960</u>	Net inflow from operating activities	6,960
Net income	<u>\$2,900</u>	Liabilities		<b>Investing Activities</b>	0
		Warranties payable	\$ 60	<b>Financing Activities</b>	0
		Stockholders' equity		Net change in cash	6,960
		Common stock	5,000	Plus: Beginning cash balance	2,000
		Retained earnings	5,900	Ending cash balance	<u>\$8,960</u>
		Total liab. and stockholders' equity	<u>\$10,960</u>		

## CHECK Yourself 7.2

Flotation Systems, Inc. (FSI) began operations in 2010. Its sales were \$360,000 in 2010 and \$410,000 in 2011. FSI estimates the cost of its one-year product warranty will be 2 percent of sales. Actual cash payments for warranty claims amounted to \$5,400 during 2010 and \$8,500 during 2011. Determine the amount of warranty expense that FSI would report on its 2010 and 2011 year-end income statements. Also, determine the amount of warranties payable FSI would report on its 2010 and 2011 year-end balance sheet.

**Answer** FSI would report Warranty Expense on the December 31, 2010, income statement of \$7,200 ( $\$360,000 \times .02$ ). Warranty Expense on the December 31, 2011, income statement is \$8,200 ( $\$410,000 \times .02$ ).

FSI would report Warranties Payable on the December 31, 2010, balance sheet of \$1,800 ( $\$7,200 - \$5,400$ ). Warranties Payable on the December 31, 2011, balance sheet is \$1,500 ( $\$1,800 + \$8,200 - \$8,500$ ).

## Reality BYTES

Most electrical appliances come with a manufacturer's warranty that obligates the manufacturer to pay for defects that occur during some designated period of time after the point of sale. Why would **Circuit City** issue warranties that obligate it to pay for defects that occur after the manufacturer's warranty has expired? Warranties are in fact insurance policies that generate profits. Circuit City recently reported that the gross dollar sales from extended warranty programs were 3.8 percent of its total sales. Even more important, Circuit City notes that gross profit margins on products sold with extended warranties are higher than the gross profit margins on products sold without extended warranties. Warranties produce revenues for manufacturers as well as retailers. The only difference is that the revenues generated from manufacturer's warranties are embedded in the sales price. Products with longer, more comprehensive warranties usually sell at higher prices than products with shorter, less extensive warranties.



## ACCOUNTING FOR LONG-TERM DEBT

Most businesses finance their investing activities with long-term debt. Recall that current liabilities mature within one year or a company's operating cycle, whichever is longer. Other liabilities are **long-term liabilities**. Long-term debt agreements vary with respect to requirements for paying interest charges and repaying principal (the amount borrowed). Interest payments may be due monthly, annually, at some other interval, or at the maturity date. Interest charges may be based on a **fixed interest rate** that remains constant during the term of the loan or may be based on a **variable interest rate** that fluctuates up or down during the loan period.

Principal repayment is generally required either in one lump sum at the maturity date or in installments that are spread over the life of the loan. For example, each monthly payment on your car loan probably includes both paying interest and repaying some of the principal. Repaying a portion of the principal with regular payments that also include interest is often called loan **amortization**.<sup>3</sup> This section explains accounting for interest and principal with respect to the major forms of long-term debt financing.

## Installment Notes Payable

### LO 5

Show how installment notes affect financial statements.

Loans that require payments of principal and interest at regular intervals (amortizing loans) are typically represented by **installment notes**. The terms of installment notes usually range from two to five years. To illustrate accounting for installment notes, assume Blair Company was started on January 1, 2010, when it borrowed \$100,000 cash from the National Bank. In exchange for the money, Blair issued the bank a five-year installment note with a 9 percent fixed interest rate. The effects on the financial statements are as follows.

	Assets	=	Liab.	+	Equity		Rev.	–	Exp.	=	Net Inc.	Cash Flow
Date	Cash	=	Note Pay.	+	Com. Stk.	+ Ret. Earn.						
2010 Jan. 1	100,000	=	100,000	+	NA	+ NA	NA	–	NA	=	NA	100,000 FA

The loan agreement required Blair to pay five equal installments of \$25,709<sup>4</sup> on December 31 of each year from 2010 through 2014. Exhibit 7.3 shows the allocation of each payment between principal and interest. When Blair pays the final installment, both

### EXHIBIT 7.3

#### Amortization Schedule for Installment Note Payable

Accounting Period Column A	Principal Balance on Jan. 1 Column B	Cash Payment on Dec. 31 Column C	Interest Expense Column D	Principal Repayment Column E	Principal Balance on Dec. 31 Column F
2010	\$100,000	\$25,709	\$9,000	\$16,709	\$83,291
2011	83,291	25,709	7,496	18,213	65,078
2012	65,078	25,709	5,857	19,852	45,226
2013	45,226	25,709	4,070	21,639	23,587
2014	23,587	25,710*	2,123	23,587	0

\*All computations are rounded to the nearest dollar. To fully liquidate the liability, the final payment is one dollar more than the others because of rounding differences.

<sup>3</sup>In Chapter 6 the term *amortization* described the expense recognized when the *cost of an intangible asset* is systematically allocated to expense over the useful life of the asset. This chapter shows that the term amortization refers more broadly to a variety of allocation processes. Here it means the systematic process of allocating the *principal repayment* over the life of a loan.

<sup>4</sup>The amount of the annual payment is determined using the present value concepts presented in a later chapter. Usually the lender (bank or other financial institution) calculates the amount of the payment for the customer. In this chapter we provide the amount of the annual payment.

## Answers to The *Curious* Accountant

**CBS Corporation** was able to make its interest payments for two reasons.

(1) Remember that interest is paid with cash, not accrual earnings. Many of

the expenses on the company's income statement did not require the use of cash. Indeed, the company's statement of cash flows shows that net cash flows from operating activities, *after making interest payments*, was a positive \$3.5 billion in the recent report and \$3.6 billion in the previous report. (2) The net loss the company incurred was *after* interest expense had been deducted. The capacity of operations to support interest payments is measured by the amount of earnings before interest deductions. For example, look at the 2008 income statement for Blair in Exhibit 7.4. This statement shows only \$3,000 of net income, but \$12,000 of cash revenue was available for the payment of interest. Similarly, CBS's net losses are not an indication of the company's ability to pay interest in the short run.

the principal and interest will be paid in full. The amounts shown in Exhibit 7.3 are computed as follows.

1. The Interest Expense (Column D) is computed by multiplying the Principal Balance on Jan. 1 (Column B) by the interest rate. For example, interest expense for 2010 is  $\$100,000 \times .09 = \$9,000$ ; for 2011 it is  $\$83,291 \times .09 = \$7,496$ ; and so on.
2. The Principal Repayment (Column E) is computed by subtracting the Interest Expense (Column D) from the Cash Payment on Dec. 31 (Column C). For example, the Principal Repayment for 2010 is  $\$25,709 - \$9,000 = \$16,709$ ; for 2011 it is  $\$25,709 - \$7,496 = \$18,213$ ; and so on.
3. The Principal Balance on Dec. 31 (Column F) is computed by subtracting the Principal Repayment (Column E) from the Principal Balance on Jan. 1 (Column B). For example, the Principal Balance on Dec. 31 for 2010 is  $\$100,000 - \$16,709 = \$83,291$ ; on December 31, 2011, the principal balance is  $\$83,291 - \$18,213 = \$65,078$ ; and so on. The Principal Balance on Dec. 31 (ending balance) for 2010 (\$83,291) is also the Principal Balance on Jan. 1 (beginning balance) for 2011; the principal balance on December 31, 2011, is the principal balance on January 1, 2012; and so on.

Although the amounts for interest expense and principal repayment differ each year, the effects of the annual payment on the financial statements are the same. On the balance sheet, assets (cash) decrease by the total amount of the payment; liabilities (note payable) decrease by the amount of the principal repayment; and stockholders' equity (retained earnings) decreases by the amount of interest expense. Net income decreases from recognizing interest expense. On the statement of cash flows, the portion of the cash payment applied to interest is reported in the operating activities section and the portion applied to principal is reported in the financing activities section. The effects on the financial statements are as follows.

	Assets	=	Liab.	+	Equity		Rev.	-	Exp.	=	Net Inc.	Cash Flow
Date	Cash	=	Note Pay.	+	Com. Stk.	+ Ret. Earn.						
2010												
Dec. 31	(25,709)	=	(16,709)	+	NA	+ (9,000)	NA	-	9,000	=	(9,000)	(9,000) OA (16,709) FA



**EXHIBIT 7.4**

<b>BLAIR COMPANY</b> Financial Statements					
	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
<b>Income Statements</b>					
Rent revenue	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Interest expense	(9,000)	(7,496)	(5,857)	(4,070)	(2,123)
Net income	<u>\$ 3,000</u>	<u>\$ 4,504</u>	<u>\$ 6,143</u>	<u>\$ 7,930</u>	<u>\$ 9,877</u>
<b>Balance Sheets</b>					
Assets					
Cash	<u>\$86,291</u>	<u>\$72,582</u>	<u>\$58,873</u>	<u>\$45,164</u>	<u>\$31,454</u>
Liabilities					
Note payable	\$83,291	\$65,078	\$45,226	\$23,587	\$ 0
Stockholders' equity					
Retained earnings	<u>3,000</u>	<u>7,504</u>	<u>13,647</u>	<u>21,577</u>	<u>31,454</u>
Total liabilities and stk. equity	<u>\$86,291</u>	<u>\$72,582</u>	<u>\$58,873</u>	<u>\$45,164</u>	<u>\$31,454</u>
<b>Statements of Cash Flows</b>					
<b>Operating Activities</b>					
Inflow from customers	\$ 12,000	\$12,000	\$12,000	\$12,000	\$12,000
Outflow for interest	(9,000)	(7,496)	(5,857)	(4,070)	(2,123)
<b>Investing Activities</b>	0	0	0	0	0
<b>Financing Activities</b>					
Inflow from note issue	100,000	0	0	0	0
Outflow to repay note	(16,709)	(18,213)	(19,852)	(21,639)	(23,587)
Net change in cash	86,291	(13,709)	(13,709)	(13,709)	(13,710)
Plus: Beginning cash balance	0	86,291	72,582	58,873	45,164
Ending cash balance	<u>\$ 86,291</u>	<u>\$72,582</u>	<u>\$58,873</u>	<u>\$45,164</u>	<u>\$31,454</u>

Exhibit 7.4 displays income statements, balance sheets, and statements of cash flows for Blair Company for the accounting periods 2010 through 2014. The illustration assumes that Blair earned \$12,000 of rent revenue each year. Since some of the principal

### CHECK *Yourself* 7.3

On January 1, 2009, Krueger Company issued a \$50,000 installment note to State Bank. The note had a 10-year term and an 8 percent interest rate. Krueger agreed to repay the principal and interest in 10 annual payments of \$7,451.47 at the end of each year. Determine the amount of principal and interest Krueger paid during the first and second year that the note was outstanding.

#### Answer

<b>Accounting Period</b>	<b>Principal Balance January 1 A</b>	<b>Cash Payment December 31 B</b>	<b>Applied to Interest C = A × 0.08</b>	<b>Applied to Principal B – C</b>
2009	\$50,000.00	\$7,451.47	\$4,000.00	\$3,451.47
2010	46,548.53	7,451.47	3,723.88	3,727.59

is repaid each year, the note payable amount reported on the balance sheet and the amount of the interest expense on the income statement both decline each year.

## Line of Credit

A **line of credit** enables a company to borrow or repay funds as needed. For example, a business may borrow \$50,000 one month and make a partial repayment of \$10,000 the next month. Credit agreements usually specify a limit on the amount that can be borrowed. Exhibit 7.5 shows that credit agreements are widely used.

Interest rates on lines of credit normally vary with fluctuations in some designated interest rate benchmark such as the rate paid on U.S. Treasury bills. For example, a company may pay 4 percent interest one month and 4.5 percent the next month, even if the principal balance remains constant.

Lines of credit typically have one-year terms. Although they are classified on the balance sheet as short-term liabilities, lines of credit are frequently extended indefinitely by simply renewing the credit agreement.

To illustrate accounting for a line of credit, assume Lagoon Company owns a wholesale jet-ski distributorship. In the spring, Lagoon borrows money using a line of credit to finance building up its inventory. Lagoon repays the loan over the summer months using cash generated from jet-ski sales. Borrowing or repaying events occur on the first of the month. Interest payments occur at the end of each month. Exhibit 7.6 presents all 2011 line of credit events.

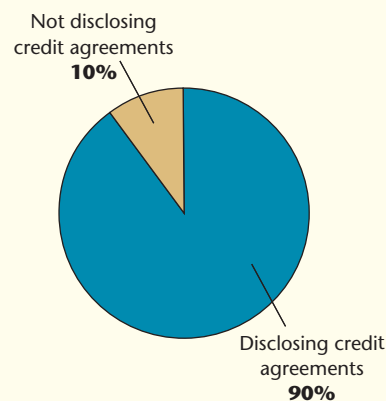
Each borrowing event (March 1, April 1, and May 1) is an asset source transaction. Both cash and the line of credit liability increase. Each repayment (June 1, July 1, and August 1) is an asset use transaction. Both cash and the line of credit liability decrease. Each month's interest expense recognition and payment is an asset use transaction. Assets (cash) and stockholders' equity (retained earnings) decrease, as does net income. The effects of the events on the financial statements are shown in Exhibit 7.7.

### LO 6

Show how a line of credit affects financial statements.

### EXHIBIT 7.5

#### Percentage of U.S. Companies Disclosing Credit Agreements



Data source: AICPA, *Accounting Trends and Techniques*, 2006.

### EXHIBIT 7.6

#### Summary of 2011 Line of Credit Events

Date	Amount Borrowed (Repaid)	Loan Balance at End of Month	Effective Interest Rate per Month (%)	Interest Expense (rounded to nearest \$1)
Mar. 1	\$20,000	\$ 20,000	$0.09 \div 12$	\$150
Apr. 1	30,000	50,000	$0.09 \div 12$	375
May 1	50,000	100,000	$0.105 \div 12$	875
June 1	(10,000)	90,000	$0.10 \div 12$	750
July 1	(40,000)	50,000	$0.09 \div 12$	375
Aug. 1	(50,000)	0	$0.09 \div 12$	0

## Bond Liabilities

Many companies borrow money directly from the public by selling **bond certificates**, otherwise called *issuing* bonds. Bond certificates describe a company's obligation to pay interest and to repay the principal. The seller, or **issuer**, of a bond is the borrower; the buyer of a bond, or **bondholder**, is the lender.

From the issuer's point of view, a bond represents an obligation to pay a sum of money to the bondholder on the bond's maturity date. The amount due at maturity

### LO 7

Explain how to account for bonds and their related interest costs.

## EXHIBIT 7.7

Date	Assets	=	Liabilities	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Mar. 1	20,000	=	20,000	+	NA	NA	–	NA	=	NA	20,000 FA
31	(150)	=	NA	+	(150)	NA	–	150	=	(150)	(150) OA
Apr. 1	30,000	=	30,000	+	NA	NA	–	NA	=	NA	30,000 FA
30	(375)	=	NA	+	(375)	NA	–	375	=	(375)	(375) OA
May 1	50,000	=	50,000	+	NA	NA	–	NA	=	NA	50,000 FA
31	(875)	=	NA	+	(875)	NA	–	875	=	(875)	(875) OA
June 1	(10,000)	=	(10,000)	+	NA	NA	–	NA	=	NA	(10,000) FA
30	(750)	=	NA	+	(750)	NA	–	750	=	(750)	(750) OA
July 1	(40,000)	=	(40,000)	+	NA	NA	–	NA	=	NA	(40,000) FA
31	(375)	=	NA	+	(375)	NA	–	375	=	(375)	(375) OA
Aug. 1	(50,000)	=	(50,000)	+	NA	NA	–	NA	=	NA	(50,000) FA
31	NA	=	NA	+	NA	NA	–	NA	=	NA	NA

is the **face value** of the bond. Most bonds also require the issuer to make cash interest payments based on a **stated interest rate** at regular intervals over the life of the bond. Exhibit 7.8 shows a typical bond certificate.

## EXHIBIT 7.8

## Bond Certificate



## Advantages of Issuing Bonds

Bond financing offers companies the following advantages.

1. Bonds usually have longer terms than notes issued to banks. While typical bank loan terms range from 2 to 5 years, bonds normally have 20-year terms to maturity. Longer terms to maturity allow companies to implement long-term strategic plans without having to worry about frequent refinancing arrangements.
2. Bond interest rates may be lower than bank interest rates. Banks earn profits by borrowing money from the public (depositors) at low interest rates, then loaning that money to companies at higher rates. By issuing bonds directly to the public, companies can pay lower interest costs by eliminating the middle man (banks).

## Fixed-Rate, Fixed-Term, Annual Interest Bonds

Assume Marsha Mason needs cash in order to seize a business opportunity. Mason knows of a company seeking a plot of land on which to store its inventory of crushed stone. Mason also knows of a suitable tract of land she could purchase for \$100,000. The company has agreed to lease the land it needs from Mason for \$12,000 per year. Mason lacks the funds to buy the land.

Some of Mason's friends recently complained about the low interest rates banks were paying on certificates of deposit. Mason suggested that her friends invest in bonds instead of CDs. She offered to sell them bonds with a 9 percent stated interest

## Reality BYTES

On November 8, 2001, **Enron Corporation** announced that it would have to reduce its stockholders' equity by approximately \$1.2 billion. On December 2, 2001, the company filed for Chapter 11 bankruptcy protection.

When covering this story, most of the media's attention focused on the overstatement of earnings that resulted from Enron's improper use of a form of partnerships called "special purpose entities." However, these entities were also used to improperly keep as much as \$1 billion of debt off of Enron's balance sheet. Why did this matter to Enron? Enron was a very rapidly growing company and it used lots of debt to finance this growth. From 1999 to 2000 its assets grew from \$33.4 billion to \$65.5 billion, but its debt grew from \$23.8 billion to \$54.0 billion. This caused its debt to assets ratio to rise from 71.3 percent to 82.4 percent. The higher debt burden put Enron at risk of having to pay higher interest rates, an unattractive option for a company with this much debt.

rate. The terms specified in the bond agreement Mason drafted included making interest payments in cash on December 31 of each year, a five-year term to maturity, and pledging the land as collateral for the bonds.<sup>5</sup> Her friends were favorably impressed, and Mason issued the bonds to them in exchange for cash on January 1, 2011.

Mason used the bond proceeds to purchase the land and immediately contracted to lease it for five years. On December 31, 2015, the maturity date of the bonds, Mason sold the land for its \$100,000 book value and used the proceeds from the sale to repay the bond liability.

Mason's business venture involved six distinct accounting events.

1. Received \$100,000 cash from issuing five-year bonds at face value.
2. Invested proceeds from the bond issue to purchase land for \$100,000 cash.
3. Earned \$12,000 cash revenue annually from leasing the land.
4. Paid \$9,000 annual interest on December 31 of each year.
5. Sold the land for \$100,000 cash.
6. Repaid the bond principal to bondholders.

### Effect of Events on Financial Statements

#### EVENT 1 Issue Bonds for Cash

*Issuing bonds is an asset source transaction.*

Assets (cash) and liabilities (bonds payable) increase. Net income is not affected. The \$100,000 cash inflow is reported in the financing activities section of the statement of cash flows. These effects are shown here.

Assets	=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	=	Bonds Pay.								
100,000	=	100,000	+	NA	NA	–	NA	=	NA	100,000 FA

<sup>5</sup>In practice, bonds are usually issued for much larger sums of money, often hundreds of millions of dollars. Also, terms to maturity are normally long, with 20 years being common. Using such large amounts for such long terms is unnecessarily cumbersome for instructional purposes. The effects of bond issues can be illustrated efficiently by using smaller amounts of debt with shorter maturities, as assumed in the case of Marsha Mason.

**EVENT 2 Investment in Land**

*Paying \$100,000 cash to purchase land is an asset exchange transaction.*

The asset cash decreases and the asset land increases. The income statement is not affected. The cash outflow is reported in the investing activities section of the statement of cash flows. These effects are illustrated below.

Assets			=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Land										
(100,000)	+	100,000	=	NA	+	NA	NA	–	NA	=	NA	(100,000) IA

**EVENT 3 Revenue Recognition**

*Recognizing \$12,000 cash revenue from renting the property is an asset source transaction.*

This event is repeated each year from 2011 through 2015. The event increases assets and stockholders' equity. Recognizing revenue increases net income. The cash inflow is reported in the operating activities section of the statement of cash flows. These effects follow.

Assets			=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	=					Ret. Earn.						
12,000	=	NA	+			12,000	12,000	–	NA	=	12,000	12,000 OA

**EVENT 4 Expense Recognition**

*Mason's \$9,000 ( $\$100,000 \times 0.09$ ) cash payment represents interest expense.*

This event is also repeated each year from 2011 through 2015. The interest payment is an asset use transaction. Cash and stockholders' equity (retained earnings) decrease. The expense recognition decreases net income. The cash outflow is reported in the operating activities section of the statement of cash flows. These effects follow.

Assets			=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	=					Ret. Earn.						
(9,000)	=	NA	+			(9,000)	NA	–	9,000	=	(9,000)	(9,000) OA

**EVENT 5 Sale of Investment in Land**

*Selling the land for cash equal to its \$100,000 book value is an asset exchange transaction.*

Cash increases and land decreases. Since there was no gain or loss on the sale, the income statement is not affected. The cash inflow is reported in the investing activities section of the statement of cash flows. These effects follow.

Assets			=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Land										
100,000	+	(100,000)	=	NA	+	NA	NA	–	NA	=	NA	100,000 IA

## EVENT 6 Payoff of Bond Liability

*Repaying the face value of the bond liability is an asset use transaction.*

Cash and bonds payable decrease. The income statement is not affected. The cash outflow is reported in the financing activities section of the statement of cash flows.

Assets	=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	=	Bonds Pay.								
(100,000)	=	(100,000)	+	NA	NA	–	NA	=	NA	(100,000) FA

## Financial Statements

Exhibit 7.9 displays Mason Company's financial statements. For simplicity, the income statement does not distinguish between operating and nonoperating items. Rent revenue and interest expense are constant across all accounting periods, so Mason recognizes

### EXHIBIT 7.9

#### Mason Company Financial Statements

#### Bonds Issued at Face Value

2011 2012 2013 2014 2015

#### Income Statements

Rent revenue	\$ 12,000	\$ 12,000	\$ 12,000	\$ 12,000	\$ 12,000
Interest expense	(9,000)	(9,000)	(9,000)	(9,000)	(9,000)
Net income	<u>\$ 3,000</u>	<u>\$ 3,000</u>	<u>\$ 3,000</u>	<u>\$ 3,000</u>	<u>\$ 3,000</u>

#### Balance Sheets

Assets					
Cash	\$ 3,000	\$ 6,000	\$ 9,000	\$ 12,000	\$ 15,000
Land	<u>100,000</u>	<u>100,000</u>	<u>100,000</u>	<u>100,000</u>	<u>0</u>
Total assets	<u>\$103,000</u>	<u>\$106,000</u>	<u>\$109,000</u>	<u>\$112,000</u>	<u>\$ 15,000</u>
Liabilities					
Bonds payable	\$100,000	\$100,000	\$100,000	\$100,000	\$ 0
Stockholders' equity					
Retained earnings	<u>3,000</u>	<u>6,000</u>	<u>9,000</u>	<u>12,000</u>	<u>15,000</u>
Total liabilities and stockholders' equity	<u>\$103,000</u>	<u>\$106,000</u>	<u>\$109,000</u>	<u>\$112,000</u>	<u>\$ 15,000</u>

#### Statements of Cash Flows

#### Operating Activities

Inflow from customers	\$ 12,000	\$ 12,000	\$ 12,000	\$ 12,000	\$ 12,000
Outflow for interest	(9,000)	(9,000)	(9,000)	(9,000)	(9,000)

#### Investing Activities

Outflow to purchase land	(100,000)				
Inflow from sale of land					100,000

#### Financing Activities

Inflow from bond issue	100,000				
Outflow to repay bond liab.					(100,000)

Net change in cash	<u>3,000</u>	<u>3,000</u>	<u>3,000</u>	<u>3,000</u>	<u>3,000</u>
Plus: Beginning cash balance	<u>0</u>	<u>3,000</u>	<u>6,000</u>	<u>9,000</u>	<u>12,000</u>
Ending cash balance	<u>\$ 3,000</u>	<u>\$ 6,000</u>	<u>\$ 9,000</u>	<u>\$ 12,000</u>	<u>\$ 15,000</u>



\$3,000 of net income in each accounting period. On the balance sheet, cash increases by \$3,000 each year because cash revenue exceeds cash paid for interest. Land remains constant each year at its \$100,000 historical cost until it is sold in 2015. Similarly, the bonds payable liability is reported at \$100,000 from the date the bonds were issued in 2011 until they are paid off on December 31, 2015.

Compare Blair Company's income statements in Exhibit 7.4 with Mason Company's income statements in Exhibit 7.9. Both Blair and Mason borrowed \$100,000 cash at a 9 percent stated interest rate for five-year terms. Blair, however, repaid its liability under the terms of an installment note while Mason did not repay any principal until the end of the five-year bond term. Because Blair repaid part of the principal balance on the installment loan each year, Blair's interest expense declined each year. The interest expense on Mason's bond liability, however, remained constant because the full principal amount was outstanding for the entire five-year bond term.

## SECURITY FOR LOAN AGREEMENTS

In general, large loans with long terms to maturity pose more risk to lenders (creditors) than small loans with short terms. To reduce the risk that they won't get paid, lenders frequently require borrowers (debtors) to pledge designated assets as **collateral** for loans. For example, when a bank makes a car loan, it usually retains legal title to the car until the loan is fully repaid. If the borrower fails to make the monthly payments, the bank repossesses the car, sells it to someone else, and uses the proceeds to pay the original owner's debt. Similarly, assets like accounts receivable, inventory, equipment, buildings, and land may be pledged as collateral for business loans.

In addition to requiring collateral, creditors often obtain additional protection by including **restrictive covenants** in loan agreements. Such covenants may restrict additional borrowing, limit dividend payments, or restrict salary increases. If the loan restrictions are violated, the borrower is in default and the loan balance is due immediately.

Finally, creditors often ask key personnel to provide copies of their personal tax returns and financial statements. The financial condition of key executives is important because they may be asked to pledge personal property as collateral for business loans, particularly for small businesses.

### THE FINANCIAL

## ANALYST

### LO 8

Distinguish between current and noncurrent assets and liabilities.

## Current versus Noncurrent

Because meeting obligations on time is critical to business survival, financial analysts and creditors are interested in whether companies will have enough money available to pay bills when they are due. Most businesses provide information about their bill-paying ability by classifying their assets and liabilities according to liquidity. The more quickly an asset is converted to cash or consumed, the more *liquid* it is. Assets are usually divided into two major classifications: *current* and *noncurrent*. Current items are also referred to as *short term* and noncurrent items as *long term*.

A **current (short-term) asset** is expected to be converted to cash or consumed within one year or an operating cycle, whichever is longer. An **operating cycle** is defined as the average time it takes a business to convert cash to inventory, inventory to accounts receivable, and accounts receivable back to cash. The financial tools used to measure the length of an operating cycle for particular businesses are discussed in Chapter 5. For most businesses, the operating cycle is less than one year. As a result,

the one-year rule normally prevails with respect to classifying assets as current. The current assets section of a balance sheet typically includes the following items.

Current Assets  
Cash  
Marketable securities  
Accounts receivable  
Short-term notes receivable  
Interest receivable  
Inventory  
Supplies  
Prepaid items

Given the definition of current assets, it seems reasonable to assume that **current (short-term) liabilities** would be those due within one year or an operating cycle, whichever is longer. This assumption is usually correct. However, an exception is made for long-term renewable debt. For example, consider a liability that was issued with a 20-year term to maturity. After 19 years, the liability becomes due within one year and is, therefore, a current liability. Even so, the liability will be classified as long term if the company plans to issue new long-term debt and to use the proceeds from that debt to repay the maturing liability. This situation is described as *refinancing short-term debt on a long-term basis*. In general, if a business does not plan to use any of its current assets to repay a debt, that debt is listed as long term even if it is due within one year. The current liabilities section of a balance sheet typically includes the following items.

Current Liabilities  
Accounts payable  
Short-term notes payable  
Wages payable  
Taxes payable  
Interest payable

LO 9

Prepare a classified balance sheet.

Balance sheets that distinguish between current and noncurrent items are called **classified balance sheets**. To enhance the usefulness of accounting information, most real-world balance sheets are classified. Exhibit 7.10 displays an example of a classified balance sheet.

## Liquidity versus Solvency

**Liquidity** describes the ability to generate sufficient short-term cash flows to pay obligations as they come due. **Solvency** is the ability to repay liabilities in the long run. Liquidity and solvency are both important to the survival of a business. Financial analysts rely on several ratios to help them evaluate a company's liquidity and solvency. The primary ratio used to evaluate liquidity is the current ratio.

The **current ratio** is defined as

$$\frac{\text{Current assets}}{\text{Current liabilities}}$$

Since current assets normally exceed current liabilities, this ratio is usually greater than 100 percent. For example, if a company has \$250 in current assets and \$100 in current liabilities, current assets are 250 percent of current liabilities. The current ratio is traditionally expressed as a decimal rather than as a percentage, however; most analysts would describe this example as a current ratio of 2.5 to 1 ( $\$250 \div \$100 = \$2.50$  in current assets for every \$1 in current liabilities). This book uses the traditional format when referring to the current ratio.

LO 10

Use the current and debt to assets ratios to assess the level of liquidity.

**EXHIBIT 7.10****LIMBAUGH COMPANY**

Classified Balance Sheet

As of December 31, 2010

**Assets****Current Assets**

Cash		\$ 20,000	
Accounts receivable		35,000	
Inventory		230,000	
Prepaid rent		<u>3,600</u>	
Total current assets			\$288,600

**Property, Plant, and Equipment**

Office equipment	\$ 80,000		
Less: Accumulated depreciation	<u>(25,000)</u>	55,000	
Building	340,000		
Less: Accumulated depreciation	<u>(40,000)</u>	300,000	
Land		<u>120,000</u>	
Total property, plant, and equipment			<u>475,000</u>
Total assets			<u>\$763,600</u>

**Liabilities and Stockholders' Equity****Current Liabilities**

Accounts payable	\$ 32,000		
Notes payable	120,000		
Salaries payable	32,000		
Unearned revenue	<u>9,800</u>		
Total current liabilities			\$193,800

**Long-Term Liabilities**

Note payable		<u>100,000</u>	
Total liabilities			<u>293,800</u>

**Stockholders' Equity**

Common stock	200,000		
Retained earnings	<u>269,800</u>	<u>469,800</u>	
Total liabilities and stockholders' equity			<u>\$763,600</u>

The current ratio is among the most widely used ratios in analyzing financial statements. Current ratios can be too high as well as too low. A low ratio suggests that the company may have difficulty paying its short-term obligations. A high ratio suggests that a company is not maximizing its earnings potential because investments in liquid assets usually do not earn as much money as investments in other assets. Companies must try to maintain an effective balance between liquid assets (so they can pay bills on time) and nonliquid assets (so they can earn a good return).

The **debt to assets ratio** is a common measure of solvency. This ratio reveals the percentage of a company's assets that is financed with borrowed money. The higher the ratio, the greater the financial risk. The debt to assets ratio is defined as

$$\frac{\text{Total debt}}{\text{Total assets}}$$

While a high debt to assets ratio suggests high risk, it may also signal an opportunity for a high return. Suppose a company earns a 12% return on investment and

borrow money at 9%. The 3% spread (12% – 9%) goes into the pockets of the owners. In this case, owners benefit from high levels of debt rather than low levels. So, what is the ideal debt to assets ratio? The best ratio is the one that provides a proper balance between risk and return. Ratios that are excessively high or low suggest poor management.

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## *Focus On* **INTERNATIONAL ISSUES**

### **WHY ARE THESE BALANCE SHEETS BACKWARD?**

Many of the differences in accounting rules used around the world would be difficult to detect by merely comparing financial statements of companies in different countries. For example, if a balance sheet for a U.S. company and one for a U.K. company both report an asset called *land*, it might not be clear whether the reported amounts were computed by using the same measurement rules or different measurement rules. Did both companies use historical cost as a basis for measurement? Perhaps not, but this would be difficult to determine by comparing their balance sheets.



However, one difference between financial reporting in the United Kingdom and the United States that is obvious is the arrangement of assets on the balance sheet. In this chapter, we explain that U.S. GAAP requires current assets to be shown first and noncurrent assets second; the same is true of liabilities. In the United Kingdom, noncurrent assets appear first, followed by current assets; however, liabilities are shown in the same order as in the United States. In other countries (e.g., France), both assets and liabilities are shown with noncurrent items first. The accounting rules of some countries require that equity be shown before liabilities; this is the opposite of U.S. GAAP. Therefore, to someone who learned accounting in the United States, the balance sheets of companies from some countries may appear backward or upside down.

No matter in what order the assets, liabilities, and equity accounts are arranged on a company's balance sheet, one accounting concept is true throughout the free world:

$$\text{Assets} = \text{Liabilities} + \text{Equity}$$

For a real-world example of the items discussed here, look up the financial statements of **ITV**, the largest commercial television network in the United Kingdom. Go to [www.itvplc.com](http://www.itvplc.com). Click on "Reports and Presentations." Next click on "Company Reports," then click on "Reports and Accounts 2007" or whatever is the most current fiscal year.

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## **Real-World Data**

Exhibit 7.11 presents the current ratios and debt to assets ratios for six companies in three different industries.

Which of these companies has the highest level of financial risk? Perhaps **Dominion Resources** because it has the highest debt to assets ratio. The electric utilities have higher debt to assets ratios and lower current ratios than those of the companies in the building supplies business. Does this mean that electric utilities are riskier investments? Not necessarily; since the companies are in different industries, the ratios may not be comparable. Utility companies have a more stable revenue base than building companies. If the economy turns downward, people are likely to continue to use electricity. However, they are less likely to buy a new home or to add on to their existing home. Because utility companies have a stable source of revenue, creditors are likely to feel comfortable with higher levels of debt for them than they would for building

**EXHIBIT 7.11**

Industry	Company	Current Ratio	Debt to Assets Ratio
Electric utilities	American Electric Power	0.72	0.75
	Dominion Resources	0.70	0.80
Grocery stores	Kroger	0.96	0.79
	Whole Foods Market	1.61	0.28
Building supplies	Home Depot	1.19	0.40
	Lowe's	1.34	0.42

companies. As previously stated, the industry must be considered when interpreting ratios, but of the companies shown in Exhibit 7.11, **Whole Foods Market** appears to have the lowest financial risk.

Finally, note that the debt to assets ratios, with the exception of the grocery stores, tend to be grouped by industry. Current ratios do vary somewhat among different industries, but they probably do not vary as much as the debt to assets ratios. Why? Because all companies, regardless of how they finance their total assets, must keep sufficient current assets on hand to repay current liabilities.



## A Look Back

Chapter 7 discussed accounting for current liabilities and long-term debt. Current liabilities are obligations due within one year or the company's operating cycle, whichever is longer. The chapter expanded the discussion of promissory notes begun in Chapter 5. Chapter 5 introduced accounting for the note payee, the lender; Chapter 7 discussed accounting for the note maker (issuer), the borrower. Notes payable and related interest payable are reported as liabilities on the balance sheet. Chapter 7 also discussed accounting for the contingent liability and warranty obligations.

*Long-term notes payable* mature in two to five years and usually require payments that include a return of principal plus interest. *Lines of credit* enable companies to borrow limited amounts on an as-needed basis. Although lines of credit normally have one-year terms, companies frequently renew them, extending the effective maturity date to the intermediate range of five or more years. Interest on a line of credit is normally paid monthly. Long-term debt financing for more than 10 years usually requires issuing *bonds*.

Finally, Chapter 7 discussed assessing companies' liquidity. The current ratio is current assets divided by current liabilities. The higher the current ratio, the more liquid the business.



## A Look Forward

A company seeking long-term financing might choose to use debt, such as the types of bonds or term loans that were discussed in this chapter. Owners' equity is another source of long-term financing. Several equity alternatives are available, depending on the type of business organization the owners choose to establish. For example, a company could be organized as a sole proprietorship, partnership, or corporation. Chapter 8 presents accounting issues related to equity transactions for each of these types of business structures.



## SELF-STUDY REVIEW PROBLEM

Perfect Picture Inc. (PPI) experienced the following transactions during 2010. The transactions are summarized (transaction data pertain to the full year) and limited to those that affect the company's current liabilities.

1. PPI had cash sales of \$820,000. The state requires that PPI charge customers an 8 percent sales tax (ignore cost of goods sold).
2. PPI paid the state sales tax authority \$63,000.
3. On March 1, PPI issued a note payable to the County Bank. PPI received \$50,000 cash (principal balance). The note had a one-year term and a 6 percent annual interest rate.
4. On December 31, PPI recognized accrued interest on the note issued in Event 3.
5. On December 31, PPI recognized warranty expense at the rate of 3 percent of sales.
6. PPI paid \$22,000 cash to settle warranty claims.
7. On January 1, 2009, PPI issued a \$100,000 installment note. The note had a 10-year term and an 8 percent interest rate. PPI agreed to repay the principal and interest in 10 annual interest payments of \$14,902.94 at the end of each year.

### Required

Prepare the liabilities section of the December 31, 2010, balance sheet.

### Solution

PERFECT PICTURE INC.	
Partial Balance Sheet	
December 31, 2010	
<b>Current Liabilities</b>	
Sales tax payable	\$ 2,600
Notes payable	50,000
Interest payable	2,500
Warranties payable	2,600
Installment note payable	85,642
Total liabilities	<u>\$143,342</u>

Explanations for amounts shown in the balance sheet:

1. Sales Tax Payable:  $\$820,000 \times 0.08 = \$65,600$  Amount Due – \$63,000 Amount Paid = \$2,600 Liability as of December 31, 2010.
2. Note Payable: \$50,000 Borrowed with no repayment.
3. Interest Payable:  $\$50,000 \times 0.06 \times 10/12 = \$2,500$ .
4. Warranty Payable:  $\$820,000 \times 0.03 = \$24,600$  Estimated Warranty Liability – \$22,000 Cash Paid to Settle Warranty Claims = \$2,600 Remaining Liability.
5. Installment Note Payable:

Accounting Period	Principal Bal. January 1 A	Cash Payment December 31 B	Applied to Interest C = A × 0.08	Applied to Principal B – C
2009	\$100,000.00	\$14,902.94	\$8,000.00	\$6,902.94
2010	93,097.06	14,902.94	7,447.76	7,455.18
2011*	85,641.88			

\*The amount due on December 31, 2010, is the same as the amount due on January 1, 2011. The amount shown on the balance sheet has been rounded to the nearest dollar.



**KEY TERMS**

Amortization 258	Current (short-term) liabilities 251, 267	Going concern assumption 250	Operating cycle 266
Bond certificates 261	Current ratio 267	Installment notes 258	Restrictive covenants 266
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**QUESTIONS**

1. What type of transaction is a cash payment to creditors? How does this type of transaction affect the accounting equation?
2. What is a current liability? Distinguish between a current liability and a long-term debt.
3. What type of entry is the entry to record accrued interest expense? How does it affect the accounting equation?
4. Who is the maker of a note payable?
5. What is the going concern assumption? Does it affect the way liabilities are reported in the financial statements?
6. Why is it necessary to make an adjustment at the end of the accounting period for unpaid interest on a note payable?
7. Assume that on October 1, 2010, Big Company borrowed \$10,000 from the local bank at 6 percent interest. The note is due on October 1, 2011. How much interest does Big pay in 2010? How much interest does Big pay in 2011? What amount of cash does Big pay back in 2011?
8. When a business collects sales tax from customers, is it revenue? Why or why not?
9. What is a contingent liability?
10. List the three categories of contingent liabilities.
11. Are contingent liabilities recorded on a company's books? Explain.
12. What is the difference in accounting procedures for a liability that is probable and estimable and one that is reasonably possible but not estimable?
13. What type of liabilities are not recorded on a company's books?
14. What does the term *warranty* mean?
15. What effect does recognizing future warranty obligations have on the balance sheet? On the income statement?
16. When is warranty cost reported on the statement of cash flows?
17. What is the difference between classification of a note as short term or long term?
18. At the beginning of year 1, B Co. has a note payable of \$72,000 that calls for an annual payment of \$16,246, which includes both principal and interest. If the interest rate is 8 percent, what is the amount of interest expense in year 1 and in year 2? What is the balance of the note at the end of year 2?
19. What is the purpose of a line of credit for a business? Why would a company choose to obtain a line of credit instead of issuing bonds?
20. What are the primary sources of debt financing for most large companies?
21. What are some advantages of issuing bonds versus borrowing from a bank?
22. What are some disadvantages of issuing bonds?
23. Why can a company usually issue bonds at a lower interest rate than the company would pay if the funds were borrowed from a bank?
24. If Roc Co. issued \$100,000 of 5 percent, 10-year bonds at the face amount, what is the effect of the issuance of the bonds on the financial statements? What amount of interest expense will Roc Co. recognize each year?
25. What is a classified balance sheet?
26. What is the difference between the liquidity and the solvency of a business?
27. The higher the company's current ratio, the better the company's financial condition. Do you agree with this statement? Explain.

**EXERCISES****LO 1**

**All applicable Exercises are available with McGraw-Hill Connect Accounting.**

**Exercise 7-1 Recognizing accrued interest expense**

Flash Corporation borrowed \$120,000 from the bank on November 1, 2010. The note had an 8 percent annual rate of interest and matured on April 30, 2011. Interest and principal were paid in cash on the maturity date.

### Required

- What amount of interest expense was paid in cash in 2010?
- What amount of interest expense was reported on the 2010 income statement?
- What amount of total liabilities was reported on the December 31, 2010, balance sheet?
- What total amount of cash was paid to the bank on April 30, 2011, for principal and interest?
- What amount of interest expense was reported on the 2011 income statement?

### Exercise 7-2 *Effects of recognizing accrued interest on financial statements*

LO 1

Joe Hughes started Hughes Company on January 1, 2012. The company experienced the following events during its first year of operation.

- Earned \$2,500 of cash revenue for performing services.
- Borrowed \$3,000 cash from the bank.
- Adjusted the accounting records to recognize accrued interest expense on the bank note. The note, issued on August 1, 2012, had a one-year term and a 6 percent annual interest rate.

### Required

- What is the amount of interest expense in 2012?
- What amount of cash was paid for interest in 2012?
- Use a horizontal statements model to show how each event affects the balance sheet, income statement, and statement of cash flows. Indicate whether the event increases (I), decreases (D), or does not affect (NA) each element of the financial statements. In the Cash Flows column, designate the cash flows as operating activities (OA), investing activities (IA), or financing activities (FA). The first transaction has been recorded as an example.

Event No.	Balance Sheet									Income Statement					Statement of Cash Flows
	Cash	=	Notes Pay.	+	Int. Pay.	+	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	
1	I	=	NA	+	NA	+	NA	+	I	I	−	NA	=	I	I OA

### Exercise 7-3 *Recording sales tax expense*

LO 2

The Campus Book Store sells books and other supplies to students in a state where the sales tax rate is 7 percent. The Campus Book Store engaged in the following transactions for 2010. Sales tax of 7 percent is collected on all sales.

- Book sales, not including sales tax, for 2010 amounted to \$315,000 cash.
- Cash sales of miscellaneous items in 2010 were \$175,000, not including tax.
- Cost of goods sold amounted to \$255,000 for the year.
- Paid \$145,000 in operating expenses for the year.
- Paid the sales tax collected to the state agency.

### Required

- What is the total amount of sales tax the Campus Book Store collected and paid for the year?
- What is the Campus Book Store's net income for the year?

### Exercise 7-4 *Recognizing sales tax payable*

LO 2

The following selected transactions apply to Quick Mart for November and December 2010. November was the first month of operations. Sales tax is collected at the time of sale but is not paid to the state sales tax agency until the following month.

- Cash sales for November 2010 were \$72,000 plus sales tax of 8 percent.
- Quick Mart paid the November sales tax to the state agency on December 10, 2010.
- Cash sales for December 2010 were \$96,000 plus sales tax of 8 percent.

**Required**

- a. Show the effect of the above transactions on a statements model like the one shown below.

<b>Assets</b>	<b>=</b>	<b>Liabilities</b>	<b>+</b>	<b>Equity</b>	<b>Income Statement</b>	
<b>Cash</b>	<b>=</b>	<b>Sales Tax Pay.</b>	<b>+</b>	<b>Com. Stk. + Ret. Earn.</b>	<b>Rev. – Exp. = Net Inc.</b>	<b>Cash Flow</b>

- b. What was the total amount of sales tax paid in 2010?  
 c. What was the total amount of sales tax collected in 2010?  
 d. What is the amount of the sales tax liability as of December 31, 2010?  
 e. On what financial statement will the sales tax liability appear?

**LO 3****Exercise 7-5** *Contingent liabilities*

The following three independent sets of facts relate to contingent liabilities.

1. In November of the current year an automobile manufacturing company recalled all mini-vans manufactured during the past two years. A flaw in the seat belt fastener was discovered and the recall provides for replacement of the defective fasteners. The estimated cost of this recall is \$1 million.
2. The EPA has notified a company of violations of environmental laws relating to hazardous waste. These actions seek cleanup costs, penalties, and damages to property. The company is reasonably certain that the cleanup cost will be approximately \$5 million. In addition, potential reimbursements for property damage could be as much as \$2 million or as little as \$100,000. There is no way to more accurately estimate the property damage at this time.
3. Big Company does not carry property damage insurance because of the cost. The company suffered substantial losses each year of the past three years. However, it has had no losses for the current year. Management thinks this is too good to be true and is sure there will be significant losses in the coming year. However, the exact amount cannot be determined.

**Required**

- a. Discuss the various categories of contingent liabilities.  
 b. For each item above determine the correct accounting treatment.

**LO 4****Exercise 7-6** *Effect of warranties on income and cash flow*

To support herself while attending school, Kim Lee sold stereo systems to other students. During her first year of operation, she sold systems that had cost her \$95,000 cash for \$140,000 cash. She provided her customers with a one-year warranty against defects in parts and labor. Based on industry standards, she estimated that warranty claims would amount to 6 percent of sales. During the year she paid \$200 cash to replace a defective tuner.

**Required**

- a. Prepare an income statement and statement of cash flows for Lee's first year of operation.  
 b. Explain the difference between net income and the amount of cash flow from operating activities.

**LO 4****Exercise 7-7** *Effect of warranty obligations and payments on financial statements*

The Cycle Company provides a 120-day parts-and-labor warranty on all merchandise it sells. Cycle estimates the warranty expense for the current period to be \$1,400. During the period a customer returned a product that cost \$596 to repair.

### Required

- a. Show the effects of these transactions on the financial statements using a horizontal statements model like the example shown here. Use a + to indicate increase, a – for decrease, and NA for not affected. In the Cash Flow column, indicate whether the item is an operating activity (OA), investing activity (IA), or financing activity (FA).

Assets	=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
--------	---	-------	---	--------	------	---	------	---	----------	-----------

- b. Discuss the advantage of estimating the amount of warranty expense.

### Exercise 7-8 Current liabilities

LO 2, 4, 8

The following transactions apply to Comfort Mattress Sales for 2010.

- The business was started when the company received \$30,000 from the issue of common stock.
- Purchased mattress inventory of \$200,000 on account.
- Sold mattresses for \$300,000 cash (not including sales tax). Sales tax of 8 percent is collected when the merchandise is sold. The merchandise had a cost of \$150,000.
- Provided a six-month warranty on the mattresses sold. Based on industry estimates, the warranty claims would amount to 2 percent of mattress sales.
- Paid the sales tax to the state agency on \$250,000 of the sales.
- On September 1, 2010, borrowed \$30,000 from the local bank. The note had a 6 percent interest rate and matured on March 1, 2011.
- Paid \$4,600 for warranty repairs during the year.
- Paid operating expenses of \$96,000 for the year.
- Paid \$175,000 of accounts payable.
- Record accrued interest on the note issued in transaction no. 6.

### Required

- a. Record the above transactions in a horizontal statements model like the following one.

Event	Balance Sheet										Income Statement			Statem. of Cash Flows
	Assets		=	Liabilities						+	Equity		Rev. – Exp. = Net Inc.	
	Cash	+ Mdse. Inv.		Acct. Pay.	+ Sales Tax Pay.	+ War. Pay.	+ Int. Pay.	+ Notes Pay.	+ Com. Stock	+ Ret. Earn.				

- b. Prepare the income statement, balance sheet, and statement of cash flows for 2010.  
c. What is the total amount of current liabilities at December 31, 2010?

### Exercise 7-9 How credit terms affect financial statements

LO 5

Cordell Co. is planning to finance an expansion of its operations by borrowing \$100,000. City Bank has agreed to loan Cordell the funds. Cordell has two repayment options: (1) to issue a note with the principal due in 10 years and with interest payable annually or (2) to issue a note to repay \$10,000 of the principal each year along with the annual interest based on the unpaid principal balance. Assume the interest rate is 8 percent for each option.



### Required

- a. What amount of interest will Cordell pay in year 1  
(1) Under option 1?  
(2) Under option 2?

- b. What amount of interest will Cordell pay in year 2
  - (1) Under option 1?
  - (2) Under option 2?
- c. Explain the advantage of each option.

**LO 5****Exercise 7-10** *Accounting for an installment note payable with annual payments that include interest and principal*

On January 1, 2010, Grant Co. borrowed \$80,000 cash from First Bank by issuing a four-year, 6 percent note. The principal and interest are to be paid by making annual payments in the amount of \$23,087. Payments are to be made December 31 of each year, beginning December 31, 2010.

**Required**

Prepare an amortization schedule for the interest and principal payments for the four-year period.

**LO 5****Exercise 7-11** *Long-term installment note payable*

Jerry Posey started a business by issuing a \$50,000 face value note to State National Bank on January 1, 2010. The note had a 5 percent annual rate of interest and a 10-year term. Payments of \$6,475 are to be made each December 31 for 10 years.

**Required**

- a. What portion of the December 31, 2010, payment is applied to
  - (1) Interest expense?
  - (2) Principal?
- b. What is the principal balance on January 1, 2011?
- c. What portion of the December 31, 2011, payment is applied to
  - (1) Interest expense?
  - (2) Principal?

**LO 5****Exercise 7-12** *Amortization of a long-term loan*

A partial amortization schedule for a five-year note payable that Puro Co. issued on January 1, 2010, is shown here:

Accounting Period	Principal Balance January 1	Cash Payment	Applied to Interest	Applied to Principal
2010	\$100,000	\$25,046	\$8,000	\$17,046
2011	82,954	25,046	6,636	18,410

**Required**

- a. What rate of interest is Puro Co. paying on the note?
- b. Using a financial statements model like the one shown below, record the appropriate amounts for the following two events.
  - (1) January 1, 2010, issue of the note payable.
  - (2) December 31, 2010, payment on the note payable.

Event No.	Assets	=	Liab.	+	Equity	Rev.	-	Exp.	=	Net Inc.	Cash Flow
1											

- c. If the company earned \$75,000 cash revenue and paid \$35,000 in cash expenses in addition to the interest in 2010, what is the amount of each of the following?
  - (1) Net income for 2010.
  - (2) Cash flow from operating activities for 2010.
  - (3) Cash flow from financing activities for 2010.
- d. What is the amount of interest expense on this loan for 2012?

### Exercise 7-13 *Accounting for a line of credit*

LO 6

Song Co. uses an approved line of credit not to exceed \$250,000 with the local bank to provide short-term financing for its business operations. Song either borrows or repays funds on the first day of a month. Interest is payable monthly at the bank's prime interest rate plus 1 percent. The following table shows the amounts borrowed and repaid for 2010 along with the bank's prime interest rate.

Month	Amount Borrowed or (Repaid)	Prime Rate for the Month, %
January	70,000	4
February	\$40,000	4
March	(20,000)	4.5
April	(10,000)	5
May	(20,000)	4
June	(10,000)	4.5
July–October	0	4.5
November	40,000	5.5
December	(20,000)	5.25

#### Required

- a. Show the effects of these transactions on the financial statements using a horizontal statements model like the one shown here. Use a + to indicate increase, a – for decrease, and NA for not affected. In the Cash Flow column, indicate whether the item is an operating activity (OA), investing activity (IA), or financing activity (FA).

Assets	=	Liabilities	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
--------	---	-------------	---	--------	------	---	------	---	----------	-----------

- b. What is the total amount of interest expense paid for 2010?

### Exercise 7-14 *Two complete accounting cycles: bonds issued at face value with annual interest*

LO 7

Pulse Company issued \$200,000 of 10-year, 6 percent bonds on January 1, 2010. The bonds were issued at face value. Interest is payable in cash on December 31 of each year. Pulse immediately invested the proceeds from the bond issue in land. The land was leased for an annual \$32,000 of cash revenue, which was collected on December 31 of each year, beginning December 31, 2010.

#### Required

- a. Organize the transaction data in accounts under the accounting equation.  
b. Prepare the income statement, balance sheet, and statement of cash flows for 2010 and 2011.

### Exercise 7-15 *Preparing a classified balance sheet*

LO 9

#### Required

Use the following information to prepare a classified balance sheet for Little Co. at the end of 2010.

Accounts receivable	\$42,500
Accounts payable	12,500
Cash	16,230
Common stock	40,000
Long-term notes payable	27,000
Merchandise inventory	31,000
Office equipment (net)	27,000
Retained earnings	40,430
Prepaid insurance	3,200



## LO 10

**Exercise 7-16** *Performing ratio analysis using real-world data*

**Tupperware Company** claims to be “a global direct seller of premium, innovative products across multiple brands and categories through an independent sales force of approximately 2.1 million.” Its goods are sold in almost 100 countries through its eight brands. The following data were taken from the company’s 2007 annual report. Dollar amounts are in millions.

	Fiscal Years Ending	
	December 29, 2007	December 30, 2006
Current assets	\$ 699.5	\$ 586.6
Current liabilities	450.3	359.3
Total assets	1,868.7	1,712.1
Total liabilities	1,346.0	1,311.6

**Required**

- Compute Tupperware’s current ratios for 2007 and 2006.
- Compute Tupperware’s debt to assets ratios for 2007 and 2006.
- Based on the ratios computed in Requirements *a* and *b*, did Tupperware’s liquidity get better or worse from 2006 to 2007?
- Based on the ratios computed in Requirements *a* and *b*, did Tupperware’s solvency get better or worse from 2006 to 2007?

**PROBLEMS**

**All applicable Problems are available with McGraw-Hill Connect Accounting.**

## LO 1, 2, 3, 4

**CHECK FIGURE**

Net Income 2010: \$87,750

**Problem 7-17** *Account for short-term debt and sales tax—two accounting cycles*

The following transactions apply to Allied Enterprises for 2010, its first year of operations.

- Received \$50,000 cash from the issue of a short-term note with a 6 percent interest rate and a one-year maturity. The note was made on April 1, 2010.
- Received \$180,000 cash plus applicable sales tax from performing services. The services are subject to a sales tax rate of 6 percent.
- Paid \$90,000 cash for other operating expenses during the year.
- Paid the sales tax due on \$140,000 of the service revenue for the year. Sales tax on the balance of the revenue is not due until 2010.
- Recognized the accrued interest at December 31, 2010.

The following transactions apply to Allied Enterprises for 2011.

- Paid the balance of the sales tax due for 2010.
- Received \$215,000 cash plus applicable sales tax from performing services. The services are subject to a sales tax rate of 6 percent.
- Repaid the principal of the note and applicable interest on April 1, 2011.
- Paid \$125,000 of other operating expenses during the year.
- Paid the sales tax due on \$180,000 of the services revenue. The sales tax on the balance of the revenue is not due until 2012.

**Required**

- Organize the transaction data in accounts under an accounting equation.
- Prepare an income statement, statement of changes in stockholders’ equity, balance sheet, and statement of cash flow for 2010 and 2011.

### Problem 7-18 *Effect of accrued interest on financial statements*

LO 1

Magic Enterprises borrowed \$18,000 from the local bank on July 1, 2010, when the company was started. The note had an 8 percent annual interest rate and a one-year term to maturity. Magic Enterprises recognized \$42,500 of revenue on account in 2010 and \$45,000 of revenue on account in 2011. Cash collections from accounts receivable were \$36,000 in 2010 and \$35,000 in 2011. Magic Enterprises paid \$24,000 of salaries expense in 2010 and \$28,000 of salaries expense in 2011. Repaid loan and interest at maturity date.

#### CHECK FIGURES

- b. \$18,500
- i. \$34,060

#### Required

- a. Organize the information in accounts under an accounting equation.
- b. What amount of net cash flow from operating activities would Magic report on the 2010 cash flow statement?
- c. What amount of interest expense would Magic report on the 2010 income statement?
- d. What amount of total liabilities would Magic report on the December 31, 2010, balance sheet?
- e. What amount of retained earnings would Magic report on the December 31, 2010, balance sheet?
- f. What amount of cash flow from financing activities would Magic report on the 2010 statement of cash flows?
- g. What amount of interest expense would Magic report on the 2011 income statement?
- h. What amount of cash flows from operating activities would Magic report on the 2011 cash flow statement?
- i. What amount of total assets would Magic report on the December 31, 2011, balance sheet?

### Problem 7-19 *Current liabilities*

LO 1, 2, 4

The following selected transactions were taken from the books of Chandra Company for 2010.

#### CHECK FIGURE

Total Current Liabilities: \$53,300

1. On February 1, 2010, borrowed \$60,000 cash from the local bank. The note had a 6 percent interest rate and was due on June 1, 2010.
2. Cash sales for the year amounted to \$310,000 plus sales tax at the rate of 7 percent.
3. Chandra provides a 90-day warranty on the merchandise sold. The warranty expense is estimated to be 1 percent of sales.
4. Paid the sales tax to the state sales tax agency on \$280,000 of the sales.
5. Paid the note due on June 1 and the related interest.
6. On November 1, 2010, borrowed \$50,000 cash from the local bank. The note had a 6 percent interest rate and a one-year term to maturity.
7. Paid \$2,400 in warranty repairs.
8. A customer has filed a lawsuit against Chandra for \$500,000 for breach of contract. The company attorney does not believe the suit has merit.

#### Required

- a. Answer the following questions:
  - (1) What amount of cash did Chandra pay for interest during the year?
  - (2) What amount of interest expense is reported on Chandra's income statement for the year?
  - (3) What is the amount of warranty expense for the year?
- b. Prepare the current liabilities section of the balance sheet at December 31, 2010.
- c. Show the effect of these transactions on the financial statements using a horizontal statements model like the one shown here. Use a + to indicate increase, a - for decrease, and NA for not affected. In the Cash Flow column, indicate whether the item is an operating activity (OA), investing activity (IA), or financing activity (FA). The first transaction is recorded as an example.

Assets	=	Liabilities	+	Equity	Rev.	-	Exp.	=	Net Inc.	Cash Flow
+		+		NA	NA		NA		NA	+ FA

## LO 3

**Problem 7-20** *Contingent liabilities***Required**

How should each of the following situations be reported in the financial statements?

- It has been determined that one of the company's products has caused a safety hazard. It is considered probable that liabilities have been incurred and a reasonable estimate of the amount can be made.
- A company warehouse is located in a section of the city that has routinely flooded in the past. Consequently the company can no longer find a source of insurance for the warehouse. No flood has yet occurred this year.
- Because of newly passed legislation, a company will have to upgrade its facilities over the next two years. Significant expenditures will occur, but at this time the amount has not been determined.

## LO 9

**CHECK FIGURES**

Total Current Assets: \$250,300

Total Current Liabilities: \$110,900

**Problem 7-21** *Multistep income statement and classified balance sheet***Required**

Use the following information to prepare a multistep income statement and a classified balance sheet for Beamer Equipment Co. for 2010. (*Hint:* Some of the items will *not* appear on either statement, and ending retained earnings must be calculated.)

Salaries expense	\$ 96,000	Beginning retained earnings	\$ 10,400
Common stock	40,000	Warranties payable (short term)	1,300
Notes receivable (short term)	12,000	Gain on sale of equipment	6,400
Allowance for doubtful accounts	4,000	Operating expenses	70,000
Accumulated depreciation	30,000	Cash flow from investing activities	80,000
Notes payable (long term)	103,600	Prepaid rent	9,600
Salvage value of building	4,000	Land	36,000
Interest payable (short term)	1,800	Cash	17,800
Uncollectible accounts expense	10,800	Inventory	122,800
Supplies	1,600	Accounts payable	46,000
Equipment	60,000	Interest expense	24,000
Interest revenue	4,200	Salaries payable	9,200
Sales revenue	396,000	Unearned revenue	52,600
Dividends	8,000	Cost of goods sold	143,000
Warranty expense	3,400	Accounts receivable	90,000
Interest receivable (short term)	500		

## LO 5

**CHECK FIGURES**

a. 2008 Ending Principal

Balance: \$55,116

c. 2010 Net Income: \$38,006

**Problem 7-22** *Effect of a term loan on financial statements*

On January 1, 2008, Holmes Co. borrowed cash from First City Bank by issuing an \$80,000 face value, three-year term note that had a 7 percent annual interest rate. The note is to be repaid by making annual payments of \$30,484 that include both interest and principal on December 31. Holmes invested the proceeds from the loan in land that generated lease revenues of \$40,000 cash per year.

**Required**

- Prepare an amortization schedule for the three-year period.
- Organize the information in accounts under an accounting equation.
- Prepare an income statement, balance sheet, and statement of cash flows for each of the three years.
- Does cash outflow from operating activities remain constant or change each year? Explain.

## LO 5

**Problem 7-23** *Accounting for an installment note payable*

The following transactions apply to Gupta Co. for 2010, its first year of operations.

- Received \$50,000 cash in exchange for issuance of common stock.
- Secured a \$100,000, 10-year installment loan from First Bank. The interest rate was 6 percent and annual payments are \$14,901.33.

3. Purchased land for \$40,000.
4. Provided services for \$96,000 cash.
5. Paid other operating expenses of \$42,000.
6. Paid the annual payment on the loan.

### Required

- a. Organize the transaction data in accounts under an accounting equation.
- b. Prepare an income statement and balance sheet for 2010.
- c. What is the interest expense for 2011? 2012?

### Problem 7-24 Accounting for a line of credit

LO 6

Sayles Co. uses a line of credit to help finance its inventory purchases. Sayles sells ski equipment and uses the line of credit to build inventory for its peak sales months, which tend to be clustered in the winter months. Account balances at the beginning of 2010 were as follows.

### CHECK FIGURE

- a. Interest Expense for January: \$250

Cash	\$80,000
Inventory	65,000
Common stock	70,000
Retained earnings	75,000

Sayles experienced the following transactions for January, February, and March, 2010.

1. January 1, 2010, obtained approval for a line of credit of up to \$300,000. Funds are to be obtained or repaid on the first day of each month. The interest rate is the bank prime rate plus 1 percent.
2. January 1, 2010, borrowed \$50,000 on the line of credit. The bank's prime interest rate is 5 percent for January.
3. January 15, purchased inventory on account, \$82,000.
4. January 31, paid other operating expenses of \$12,000.
5. In January, sold inventory for \$90,000 on account. The inventory had cost \$62,000.
6. January 31, paid the interest due on the line of credit.
7. February 1, borrowed \$80,000 on the line of credit. The bank's prime rate is 6 percent for February.
8. February 1, paid the accounts payable from transaction 3.
9. February 10, collected \$81,000 of the sales on account.
10. February 20, purchased inventory on account, \$96,000.
11. February sales on account were \$130,000. The inventory had cost \$91,000.
12. February 28, paid the interest due on the line of credit.
13. March 1, repaid \$25,000 on the line of credit. The bank's prime rate is 5 percent for March.
14. March 5, paid \$70,000 of the accounts payable.
15. March 10, collected \$120,000 from accounts receivable.
16. March 20, purchased inventory on account, \$78,000.
17. March sales on account were \$165,000. The inventory had cost \$87,000.
18. March 31, paid the interest due on the line of credit.

### Required

- a. What is the amount of interest expense for January? February? March?
- b. What amount of cash was paid for interest in January? February? March?

### Problem 7-25 Effect of a line of credit on financial statements

LO 6

Hulse Company has a line of credit with Bay Bank. Hulse can borrow up to \$250,000 at any time over the course of the 2010 calendar year. The following table shows the prime rate expressed as an annual percentage along with the amounts borrowed and repaid during 2010. Hulse agreed to pay interest at an annual rate equal to 1 percent above the bank's prime rate. Funds are borrowed



**CHECK FIGURES**

- b. Interest Expense: \$5,650  
Total Assets: \$56,350

or repaid on the first day of each month. Interest is payable in cash on the last day of the month. The interest rate is applied to the outstanding monthly balance. For example, Hulse pays 6 percent (5 percent + 1 percent) annual interest on \$70,000 for the month of January.

Month	Amount Borrowed or (Repaid)	Prime Rate for the Month, %
January	\$70,000	5
February	40,000	5
March	(20,000)	6
April through October	No change	No change
November	(30,000)	6
December	(20,000)	5

Hulse earned \$22,000 of cash revenue during 2010.

**Required**

- Organize the information in accounts under an accounting equation.
- Prepare an income statement, balance sheet, and statement of cash flows for 2010.
- Write a memo discussing the advantages to a business of arranging a line of credit.

**LO 1, 6, 7****Problem 7-26 Effect of debt transactions on financial statements****Required**

Show the effect of each of the following independent accounting events on the financial statements using a horizontal statements model like the following one. Use + for increase, – for decrease, and NA for not affected. The first event is recorded as an example.

Event No.	Assets	=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
a	+		+		NA	NA		NA		NA	+ FA

- Issued a bond at face value.
- Made an interest payment on a bond that had been issued at face value.
- Borrowed funds using a line of credit.
- Made an interest payment for funds that had been borrowed against a line of credit.
- Made a cash payment on a note payable for both interest and principal.

**LO 10****Problem 7-27 Performing ratio analysis using real-world data**

**Texas Instruments, Inc.**, claims to be “the world leader in digital signal processing and analog technologies, the semiconductor engines of the Internet age.” **Eastman Kodak Company** manufactures Kodak film, cameras and related products. The following data were taken from the companies’ December 31, 2007, annual reports. Dollar amounts are in millions.

	Eastman Kodak	Texas Instruments
Current assets	\$ 6,053	\$ 6,918
Current liabilities	4,446	2,025
Total assets	13,659	12,667
Total liabilities	10,630	2,692

**Required**

- Compute the current ratio for each company.
- Compute the debt to assets ratio for each company.
- Based on the ratios computed in Requirements *a* and *b*, which company had the better liquidity in 2007?
- Based on the ratios computed in Requirements *a* and *b*, which company had the better solvency in 2007?

## ANALYZE, THINK, COMMUNICATE

### ATC 7-1 Business Applications Case *Understanding real-world annual reports*

#### Required

Use the **Topps Company**'s annual report in Appendix B to answer the following questions.

The Topps Company, Inc.

- What was Topps' current ratio as of February 25, 2007?
- Which of Topps' current assets had the largest balance as of February 25, 2007?
- What percentage of Topps' total assets consisted of current assets?
- Instead of "Cash," Topps' balance sheet shows an account named "Cash and cash equivalents." What do cash equivalents include? (See the footnotes.)
- Does Topps have any restrictions placed on it by its creditors? (*Hint*: See Note 11.)

### ATC 7-2 Group Assignment *Using current ratios to make comparisons*

The following accounting information pertains to Adams and Hood companies at the end of 2010.



Account Title	Adams	Hood
Cash	\$ 12,000	\$ 15,000
Wages payable	10,000	12,000
Merchandise inventory	20,000	55,000
Building	90,000	80,000
Accounts receivable	22,000	25,000
Long-term notes payable	80,000	100,000
Land	35,000	40,000
Accounts payable	25,000	35,000
Sales revenue	220,000	250,000
Expenses	190,000	230,000

#### Required

- Organize the class into two sections and divide each section into groups of three to five students. Assign each of the sections one of the companies.

#### Group Tasks

- Identify the current assets and current liabilities, and compute the current ratio for the particular company assigned to the group.
- Assuming that all assets and liabilities are listed here, compute the debt to assets ratio for the particular company assigned to the group.

#### Class Discussion

- Have a representative from each section report the current ratio and debt to assets ratio for their respective companies.
- Solicit comments regarding which company has the greater financial risk in both the short and long term.

### ATC 7-3 Real-World Case *Unusual types of liabilities*

In the liabilities section of its 2007 balance sheet, **Wachovia Corporation** reported "noninterest-bearing deposits" of over \$60 billion. Wachovia is a very large banking company. In the liabilities section of its 2007 balance sheet, **Newmont Mining Corporation** reported "reclamation and remediation liabilities" of more than \$623 million. Newmont Mining is involved in gold mining and refining activities. In the accrued liabilities reported on its 2007 balance sheet, **Conoco Phillips** included \$1.1 billion for "accrued dismantlement, removal, and environmental costs."





**Required**

- For each of the preceding liabilities, write a brief explanation of what you believe the nature of the liability to be and how the company will pay it off. To develop your answers, think about the nature of the industry in which each of the companies operates.
- Of the three liabilities described, which do you think poses the most risk for the company? In other words, for which liability are actual costs most likely to exceed the liability reported on the balance sheet? Uncertainty creates risk.

**ATC 7-4 Business Applications Case** *Using the current ratio*

The following information was drawn from the balance sheets of the Alberta and Ottawa Companies.

	Alberta Company	Ottawa Company
Current assets	\$45,000	\$72,000
Current liabilities	28,000	54,000

**Required**

- Compute the current ratio for each company.
- Which company has the greater likelihood of being able to pay its bills?
- Assuming that both companies have the same amount of total assets, which company would produce the higher return on assets ratio?

**ATC 7-5 Business Applications Case** *Debt versus equity financing*

Mack Company plans to invest \$50,000 in land that will produce annual rent revenue equal to 15 percent of the investment starting on January 1, 2007. The revenue will be collected in cash at the end of each year, starting December 31, 2007. Mack can obtain the cash necessary to purchase the land from two sources. Funds can be obtained by issuing \$50,000 of 10 percent, five-year bonds at their face amount. Interest due on the bonds is payable on December 31 of each year with the first payment due on December 31, 2007. Alternatively, the \$50,000 needed to invest in land can be obtained from equity financing. In this case, the stockholders (holders of the equity) will be paid a \$5,000 annual distribution. Mack Company is in a 30 percent income tax bracket.

**Required**

- Prepare an income statement and statement of cash flows for 2007 under the two alternative financing proposals.
- Write a short memorandum explaining why one financing alternative provides more net income but less cash flow than the other.

**ATC 7-6 Writing Assignment** *Definition of elements of financial statements*

Putting “yum” on people’s faces around the world is the mission of **YUM Brands, Inc.** Yum was spun off from **PepsiCo** in 1997. A spin-off occurs when a company separates its operations into two or more distinct companies. The company was originally composed of **KFC**, **Pizza Hut**, and **Taco Bell** and was operated as a part of PepsiCo prior to the spin-off. In 2002 YUM acquired **A & W All American Foods** and **Long John Silver’s** units. YUM’s long-term debt in 2007 was \$2.9 billion. YUM’s net income before interest and taxes in 2007 was \$1.36 million.

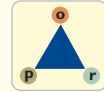
**Required**

- If YUM’s debt remains constant at \$2.9 billion for 2008, how much interest will YUM incur in 2008, assuming the average interest rate is 6 percent?
- Does the debt seem excessive compared with the amount of 2007 net income before interest and taxes? Explain.
- Assuming YUM pays tax at the rate of 25 percent, what amount of tax will YUM pay in 2007?
- Assume you are the president of the company. Write a memo to the shareholders explaining how YUM is able to meet its obligations and increase stockholders’ equity.

### ATC 7-7 Corporate Governance *Sometimes debt is not debt*

David Sheridan was a well-respected CPA in his mid-fifties. After spending 10 years at a national accounting firm, he was hired by Global, Inc., a multinational corporation headquartered in the United States. He patiently worked his way up to the top of Global's accounting department and in the early 1990s, took over as chief financial officer for the company. As the Internet began to explode, management at Global, Inc., decided to radically change the nature of its business to one of e-commerce. Two years after the transition, Internet commerce began to slow down, and Global was in dire need of cash in order to continue operations. Management turned to the accounting department.

Global, Inc., needed to borrow a substantial amount of money but couldn't afford to increase the amount of liabilities on the balance sheet for fear of the stock price dropping and banks becoming nervous and demanding repayment of existing loans. David discovered a way that would allow the company to raise the needed cash to continue operations without having to report the long-term notes payable on the balance sheet. Under an obscure rule, companies can set up separate legal organizations that do not have to be reported on the parent company's financial statements, if a third party contributes just 3 percent of the start-up capital. David called a friend, Brian Johnson, and asked him to participate in a business venture with Global. Brian agreed, and created a special purpose entity with Global named BrianCo. For his participation, Brian was awarded a substantial amount of valuable Global stock. Brian then went to a bank and used the stock as collateral to borrow a large sum of money for BrianCo. Then, Global sold some of its poor or underperforming assets to BrianCo for the cash that Brian borrowed. In the end, Global got rid of bad assets, received the proceeds of the long-term note payable, and did not have to show the liability on the balance sheet. Only the top executives and the accountants that worked closely with David knew of the scheme, and they planned to use this method only until the e-commerce portion of Global became profitable again.



#### Required

- How did David's scheme affect the overall appearance of Global's financial statements? Why was this important to investors and creditors?
- Review the AICPA's Articles of Professional Conduct (see Chapter 1) and comment on any of the standards that have been violated.
- Name the features of the fraud triangle and explain how they materialize in this case.

### ATC 7-8 Research Assignment *Analyzing long-term debt at Union Pacific Railroad*

Many companies have a form of debt called *capital leases*. A capital lease is created when a company agrees to rent an asset, such as equipment or a building, for such a long time that GAAP treats the lease as if the asset were purchased using borrowed funds. A capital lease creates a liability for the company that acquired the leased asset because it has promised to make payments to another company for several years in the future. If a company has any capital leases, it must disclose them in the footnotes to the financial statements, and will sometimes disclose them in a separate account in the liabilities section of the balance sheet.

Using the most current Forms 10-K for **Union Pacific Corporation**, complete the requirements below. To obtain the 10-Ks use either the EDGAR system following the instructions in Appendix A, or the company's website.



#### Required

- What was Union Pacific's debt to assets ratio? (You will need to compute total liabilities by subtracting "Common shareholders' equity" from total assets.)
- How much interest expense did Union Pacific incur?
- What amount of liabilities did Union Pacific have as a result of capital leases? Footnote 5 presents information about Union Pacific's leases.
- What percentage of Union Pacific's long-term liabilities was the result of capital leases?
- Many companies try to structure (design) leasing agreements so their leases will *not* be classified as capital leases. Explain why a company such as Union Pacific might want to avoid reporting capital leases.

# CHAPTER 8

# Proprietorships, Partnerships, *and* Corporations

## LEARNING OBJECTIVES

**After you have mastered the material in this chapter you will be able to:**

- 1** Identify the primary characteristics of sole proprietorships, partnerships, and corporations.
- 2** Analyze financial statements to identify the different types of business organizations.
- 3** Explain the characteristics of major types of stock issued by corporations.
- 4** Explain how to account for different types of stock issued by corporations.
- 5** Show how treasury stock transactions affect a company's financial statements.
- 6** Explain the effects of declaring and paying cash dividends on a company's financial statements.
- 7** Explain the effects of stock dividends and stock splits on a company's financial statements.
- 8** Show how the appropriation of retained earnings affects financial statements.
- 9** Explain some uses of accounting information in making stock investment decisions.

## CHAPTER OPENING

You want to start a business. How should you structure it? Should it be a sole proprietorship, partnership, or corporation? Each form of business structure presents advantages and disadvantages. For example, a sole proprietorship allows maximum independence and control while partnerships and corporations allow individuals to pool resources and talents with other people. This chapter discusses these and other features of the three primary forms of business structure.

## The *Curious* Accountant

Imagine that a rich uncle wanted to reward you for doing so well in your first accounting course, so he gave you \$10,000 to invest in the stock of one company. You narrowed your choice to two companies. After reviewing their recent annual reports, you developed the following information.

***Mystery Company A:*** This company's stock has been trading publicly since October 1999, but it only began selling its services in 2001. Although it is an early leader in a business that both you and your grandparents could enjoy, it has not made a profit in a single year of its existence. In fact, each year it has lost more money than the year before. By the end of 2005, it had accumulated losses of \$2.2 billion. This stock is currently selling for about \$11.40 per share, the same price at which it was offered to the public when it first began trading. At this price, you can buy around 880 shares. A friend told you that at its current price it is a sure winner, especially, since it has recently sold for as much as \$38 a share. Your friend, who uses the company's services, says "the sky is the limit for this company; just give it time."

***Mystery Company B:*** This company has been in existence since 1892 and has made a profit most years. From 1998 through 2006, its net earnings totaled \$786 million. This company produces products that both you and your grandparents could enjoy. Its stock is selling for about \$10.80 per share, so you can buy around 930 shares of it. Your friend says "you would have to be bananas to invest in this company."

The descriptions apply to real-world companies, the names of which will be revealed later. Based on the information provided, which company's stock would you buy? (Answer on page 290.)



**LO 1**

Identify the primary characteristics of sole proprietorships, partnerships, and corporations.

## FORMS OF BUSINESS ORGANIZATIONS

**Sole proprietorships** are owned by a single individual who is responsible for making business and profit distribution decisions. If you want to be the absolute master of your destiny, you should organize your business as a proprietorship. Establishing a sole proprietorship is usually as simple as obtaining a business license from local government authorities. Usually no legal ownership agreement is required.

**Partnerships** allow persons to share their talents, capital, and the risks and rewards of business ownership. Since two or more individuals share ownership, partnerships require clear agreements about how authority, risks, and profits will be shared. Prudent partners minimize misunderstandings by hiring attorneys to prepare a **partnership agreement** which defines the responsibilities of each partner and describes how income or losses will be divided. Since the measurement of income affects the distribution of profits, partnerships frequently hire accountants to ensure that records are maintained in accordance with generally accepted accounting principles (GAAP). Partnerships (and sole proprietorships) also may need professional advice to deal with tax issues.

A **corporation** is a separate legal entity created by the authority of a state government. The paperwork to start a corporation is complex. For most laypersons, engaging professional attorneys and accountants to assist with the paperwork is well worth the fees charged.

Each state has separate laws governing establishing corporations. Many states follow the standard provisions of the Model Business Corporation Act. All states require the initial application to provide **articles of incorporation** which normally include the following information: (1) the corporation's name and proposed date of incorporation; (2) the purpose of the corporation; (3) the location of the business and its expected life (which can be *perpetuity*, meaning *endless*); (4) provisions for capital stock; and (5) the names and addresses of the members of the first board of directors, the individuals with the ultimate authority for operating the business. If the articles are in order, the state establishes the legal existence of the corporation by issuing a charter of incorporation. The charter and the articles are public documents.

## ADVANTAGES AND DISADVANTAGES OF DIFFERENT FORMS OF BUSINESS ORGANIZATION

Each form of business organization presents a different combination of advantages and disadvantages. Persons wanting to start a business or invest in one should consider the characteristics of each type of business structure.

### Regulation

Few laws specifically affect the operations of proprietorships and partnerships. Corporations, however, are usually heavily regulated. The extent of government regulation depends on the size and distribution of a company's ownership interests. Ownership interests in corporations are normally evidenced by **stock certificates**.

Ownership of corporations can be transferred from one individual to another through exchanging stock certificates. As long as the exchanges (buying and selling of shares of stock, often called *trading*) are limited to transactions between individuals, a company is defined as a **closely held corporation**. However, once a corporation reaches a certain size, it may list its stock on a stock exchange such as the **New York Stock Exchange** or the **American Stock Exchange**. Trading on a stock exchange is limited to the stockbrokers who are members of the exchange. These brokers represent buyers and sellers who are willing to pay the brokers commissions for exchanging stock certificates on their behalf. Although closely held corporations are relatively free from government regulation, companies whose stock is publicly traded on the exchanges by brokers are subject to extensive regulation.



## Reality BYTES

Edward Nusbaum, CEO of **Grant Thornton**, a Chicago accounting firm, believes that “Sarbanes-Oxley is most likely creating the desired effect of making businesses realize that very strong responsibilities come with being a public company.” However, a recent study conducted by Grant Thornton indicates that the cost of regulatory compliance is so significant that many smaller companies are taking their firms’ stock off the exchanges. The study found that the number of public companies making the switch to private ownership is up 30 percent since the Sarbanes-Oxley Act went into effect July 30, 2002. A different study by Thomson Financial found similar results. The Thomson study found 60 public companies went private in the first nine months of 2003, up from 49 during the same period in 2002 and nearly double the 32 firms that went private in 2001. Clearly, the expense of regulatory compliance is a distinct disadvantage of the corporate form of business. In contrast, ease of formation and limited regulation are clear advantages of proprietorships and, to a lesser extent, partnerships.



The extensive regulation of trading on stock exchanges began in the 1930s. The stock market crash of 1929 and the subsequent Great Depression led Congress to pass the **Securities Act of 1933** and the **Securities Exchange Act of 1934** to regulate issuing stock and to govern the exchanges. The 1934 act also created the Securities and Exchange Commission (SEC) to enforce the securities laws. Congress gave the SEC legal authority to establish accounting principles for corporations that are registered on the exchanges. However, the SEC has generally deferred its rule-making authority to private sector accounting bodies such as the Financial Accounting Standards Board (FASB), effectively allowing the accounting profession to regulate itself.

A number of high-profile business failures around the turn of the last century raised questions about the effectiveness of self-regulation and the usefulness of audits to protect the public. The **Sarbanes-Oxley Act of 2002** was adopted to address these concerns. The act creates a five-member Public Company Accounting Oversight Board (PCAOB) with the authority to set and enforce auditing, attestation, quality control, and ethics standards for auditors of public companies. The PCAOB is empowered to impose disciplinary and remedial sanctions for violations of its rules, securities laws, and professional auditing and accounting standards. Public corporations operate in a complex regulatory environment that requires the services of attorneys and professional accountants.

## Double Taxation

Corporations pay income taxes on their earnings and then owners pay income taxes on distributions (dividends) received from corporations. As a result, distributed corporate profits are taxed twice—first when income is reported on the corporation’s income tax return and a second time when distributions are reported on individual owners’ tax returns. This phenomenon is commonly called **double taxation** and is a significant disadvantage of the corporate form of business organization.

To illustrate, assume Glide Corporation earns pretax income of \$100,000. Glide is in a 30 percent tax bracket. The corporation itself will pay income tax of \$30,000 ( $\$100,000 \times 0.30$ ). If the corporation distributes the after-tax income of \$70,000 ( $\$100,000 - \$30,000$ ) to individual stockholders in 15 percent tax brackets,<sup>1</sup> the

<sup>1</sup>As a result of the Jobs and Growth Tax Relief Reconciliation Act (JGTRRA) of 2003, dividends received in tax years after 2002 are taxed at a maximum rate of 15 percent for most taxpayers. Lower income individuals pay a 5 percent tax on dividends received on December 31, 2007, or earlier. This rate falls to zero in 2008. The provisions of JGTRRA are set to expire on December 31, 2008.



## Answers to The *Curious* Accountant

**Mystery Company A** is **XM Satellite Holdings, Inc.** (as of November 3, 2006). It is a company that provides XM satellite radio services on a

monthly subscription basis. The origins of the company can be traced back to 1992, but it took several years to get its satellite system up and running. On October 5, 1999, XM's stock was sold to the public in an *initial public offering* (IPO) at \$12 per share. Its stock, which is traded on NASDAQ, rose as high as \$44.75 in 1999, but in 2002 it traded below \$5.00 at times. Obviously, the people trading XM's stock were not paying much attention to its past profits. Instead, they were focusing on what the company might become.

**Mystery Company B** is **Del Monte Foods Company, Inc.** (as of November 3, 2006). Of course, only the future will tell which company will be the better investment.

\$70,000 dividend will be reported on the individual tax returns, requiring tax payments of \$10,500 ( $\$70,000 \times .15$ ). Total income tax of \$40,500 ( $\$30,000 + \$10,500$ ) is due on \$100,000 of earned income. In contrast, consider a proprietorship that is owned by an individual in a 30 percent tax bracket. If the proprietorship earns and distributes \$100,000 profit, the total tax would be only \$30,000 ( $\$100,000 \times .30$ ).

Double taxation can be a burden for small companies. To reduce that burden, tax laws permit small closely held corporations to elect "S Corporation" status. S Corporations are taxed as proprietorships or partnerships. Also, many states have recently enacted laws permitting the formation of **limited liability companies (LLCs)** which offer many of the benefits of corporate ownership yet are in general taxed as partnerships. Since proprietorships and partnerships are not separate legal entities, company earnings are taxable to the owners rather than the company itself.

### Limited Liability

Given the disadvantages of increased regulation and double taxation, why would anyone choose the corporate form of business structure over a partnership or proprietorship? A major reason is that the corporate form limits an investor's potential liability as an owner of a business venture. Because a corporation is legally separate from its owners, creditors cannot claim owners' personal assets as payment for the company's debts. Also, plaintiffs must sue the corporation, not its owners. The most that owners of a corporation can lose is the amount they have invested in the company (the value of the company's stock).

Unlike corporate stockholders, the owners of proprietorships and partnerships are *personally liable* for actions they take in the name of their companies. In fact, partners are responsible not only for their own actions but also for those taken by any other partner on behalf of the partnership. The benefit of **limited liability** is one of the most significant reasons the corporate form of business organization is so popular.

### Continuity

Unlike partnerships or proprietorships, which terminate with the departure of their owners, a corporation's life continues when a shareholder dies or sells his or her stock. Because of **continuity** of existence, many corporations formed in the 1800s still thrive today.

## Transferability of Ownership

The **transferability** of corporate ownership is easy. An investor simply buys or sells stock to acquire or give up an ownership interest in a corporation. Hundreds of millions of shares of stock are bought and sold on the major stock exchanges each day.

Transferring the ownership of proprietorships is much more difficult. To sell an ownership interest in a proprietorship, the proprietor must find someone willing to purchase the entire business. Since most proprietors also run their businesses, transferring ownership also requires transferring management responsibilities. Consider the difference in selling \$1 million of **Exxon** stock versus selling a locally owned gas station. The stock could be sold on the New York Stock Exchange within minutes. In contrast, it could take years to find a buyer who is financially capable of and interested in owning and operating a gas station.

Transferring ownership in partnerships can also be difficult. As with proprietorships, ownership transfers may require a new partner to make a significant investment and accept management responsibilities in the business. Further, a new partner must accept and be accepted by the other partners. Personality conflicts and differences in management style can cause problems in transferring ownership interests in partnerships.

## Management Structure

Partnerships and proprietorships are usually managed by their owners. Corporations, in contrast, have three tiers of management authority. The *owners (stockholders)* represent the highest level of organizational authority. The stockholders *elect* a **board of directors** to oversee company operations. The directors then *hire* professional executives to manage the company on a daily basis. Since large corporations can offer high salaries and challenging career opportunities, they can often attract superior managerial talent.

While the management structure used by corporations is generally effective, it sometimes complicates dismissing incompetent managers. The chief executive officer (CEO) is usually a member of the board of directors and is frequently influential in choosing other board members. The CEO is also in a position to reward loyal board members. As a result, board members may be reluctant to fire the CEO or other top executives even if the individuals are performing poorly. Corporations operating under such conditions are said to be experiencing **entrenched management**.

## Ability to Raise Capital

Because corporations can have millions of owners (shareholders), they have the opportunity to raise huge amounts of capital. Few individuals have the financial means to build and operate a telecommunications network such as **AT&T** or a marketing distribution system such as **Wal-Mart**. However, by pooling the resources of millions of owners through public stock and bond offerings, corporations generate the billions of dollars of capital needed for such massive investments. In contrast, the capital resources of proprietorships and partnerships are limited to a relatively small number of private owners. Although proprietorships and partnerships can also obtain resources by borrowing, the amount creditors are willing to lend them is usually limited by the size of the owners' net worth.

## APPEARANCE OF CAPITAL STRUCTURE IN FINANCIAL STATEMENTS

The ownership interest (equity) in a business is composed of two elements: (1) owner/investor contributions and (2) retained earnings. The way these two elements are reported in the financial statements differs for each type of business structure (proprietorship, partnership, or corporation).

### LO 2

Analyze financial statements to identify the different types of business organizations.

## Presentation of Equity in Proprietorships

Owner contributions and retained earnings are combined in a single Capital account on the balance sheets of proprietorships. To illustrate, assume that Worthington Sole Proprietorship was started on January 1, 2010, when it acquired a \$5,000 capital contribution from its owner, Phil Worthington. During the first year of operation, the company generated \$4,000 of cash revenues, incurred \$2,500 of cash expenses, and distributed \$1,000 cash to the owner. Exhibit 8.1 displays 2010 financial statements for Worthington's company. Note on the *capital statement* that distributions are called **withdrawals**. Verify that the \$5,500 balance in the Capital account on the balance sheet includes the \$5,000 owner contribution and the retained earnings of \$500 (\$1,500 net income – \$1,000 withdrawal).

### EXHIBIT 8.1

<b>WORTHINGTON SOLE PROPRIETORSHIP</b> Financial Statements As of December 31, 2010					
Income Statement		Capital Statement		Balance Sheet	
Revenue	\$4,000	Beginning capital balance	\$ 0	Assets	
Expenses	<u>2,500</u>	Plus: Investment by owner	5,000	Cash	<u>\$5,500</u>
Net income	<u>\$1,500</u>	Plus: Net income	1,500	Equity	
		Less: Withdrawal by owner	<u>(1,000)</u>	Worthington, capital	<u>\$5,500</u>
		Ending capital balance	<u>\$5,500</u>		

### CHECK *Yourself* 8.1

Weiss Company was started on January 1, 2011, when it acquired \$50,000 cash from its owner(s). During 2011 the company earned \$72,000 of net income. Explain how the equity section of Weiss's December 31, 2011, balance sheet would differ if the company were a proprietorship versus a corporation.

**Answer** *Proprietorship* records combine capital acquisitions from the owner and earnings from operating the business in a single capital account. In contrast, *corporation* records separate capital acquisitions from the owners and earnings from operating the business. If Weiss were a proprietorship, the equity section of the year-end balance sheet would report a single capital component of \$122,000. If Weiss were a corporation, the equity section would report two separate equity components, most likely common stock of \$50,000 and retained earnings of \$72,000.

## Presentation of Equity in Partnerships

The financial statement format for reporting partnership equity is similar to that used for proprietorships. Contributed capital and retained earnings are combined. However, a separate capital account is maintained for each partner in the business to reflect each partner's ownership interest.

To illustrate, assume that Sara Slater and Jill Johnson formed a partnership on January 1, 2010. The partnership acquired \$2,000 of capital from Slater and \$4,000

from Johnson. The partnership agreement called for each partner to receive an annual distribution equal to 10 percent of her capital contribution. Any further earnings were to be retained in the business and divided equally between the partners. During 2010, the company earned \$5,000 of cash revenue and incurred \$3,000 of cash expenses, for net income of \$2,000 (\$5,000 – \$3,000). As specified by the partnership agreement, Slater received a \$200 (\$2,000 × 0.10) cash withdrawal and Johnson received \$400 (\$4,000 × 0.10). The remaining \$1,400 (\$2,000 – \$200 – \$400) of income was retained in the business and divided equally, adding \$700 to each partner's capital account.

Exhibit 8.2 displays financial statements for the Slater and Johnson partnership. Again, note that distributions are called *withdrawals*. Also find on the balance sheet a *separate capital account* for each partner. Each capital account includes the amount of the partner's contributed capital plus her proportionate share of the retained earnings.

## EXHIBIT 8.2

### SLATER AND JOHNSON PARTNERSHIP

#### Financial Statements

As of December 31, 2010

Income Statement		Capital Statement		Balance Sheet	
Revenue	\$5,000	Beginning capital balance	\$ 0	Assets	
Expenses	<u>3,000</u>	Plus: Investment by owners	6,000	Cash	<u>\$7,400</u>
Net income	<u>\$2,000</u>	Plus: Net income	2,000	Equity	
		Less: Withdrawal by owners	(600)	Slater, capital	\$2,700
		Ending capital balance	<u>\$7,400</u>	Johnson, capital	<u>4,700</u>
				Total capital	<u>\$7,400</u>

## Presentation of Equity in Corporations

Corporations have more complex capital structures than proprietorships and partnerships. Explanations of some of the more common features of corporate capital structures and transactions follow.

## CHARACTERISTICS OF CAPITAL STOCK

Stock issued by corporations may have a variety of different characteristics. For example, a company may issue different classes of stock that grant owners different rights and privileges. Also, the number of shares a corporation can legally issue may differ from the number it actually has issued. Further, a corporation can even buy back its own stock. Finally, a corporation may assign different values to the stock it issues. Accounting for corporate equity transactions is discussed in the next section of the text.

### LO 3

Explain the characteristics of major types of stock issued by corporations.

## Par Value

Many states require assigning a **par value** to stock. Historically, par value represented the maximum liability of the investors. Par value multiplied by the number of shares of stock issued represents the minimum amount of assets that must be retained in the company as protection for creditors. This amount is known as **legal capital**. To ensure that the amount of legal capital is maintained in a corporation, many states

require that purchasers pay at least the par value for a share of stock initially purchased from a corporation. To minimize the amount of assets that owners must maintain in the business, many corporations issue stock with very low par values, often \$1 or less. Therefore, *legal capital* as defined by par value has come to have very little relevance to investors or creditors. As a result, many states allow corporations to issue no-par stock.

## Stated Value

No-par stock may have a stated value. Like par value, **stated value** is an arbitrary amount assigned by the board of directors to the stock. It also has little relevance to investors and creditors. Stock with a par value and stock with a stated value are accounted for exactly the same way. When stock has no par or stated value, accounting for it is slightly different. These accounting differences are illustrated later in this chapter.

## Other Valuation Terminology

The price an investor must pay to purchase a share of stock is the **market value**. The sales price of a share of stock may be more or less than the par value. Another term analysts frequently associate with stock is *book value*. **Book value per share** is calculated by dividing total stockholders' equity (assets – liabilities) by the number of shares of stock owned by investors. Book value per share differs from market value per share because equity is measured in historical dollars and market value reflects investors' estimates of a company's current value.

## Stock: Authorized, Issued, and Outstanding

As part of the regulatory function, states approve the maximum number of shares of stock corporations are legally permitted to issue. This maximum number is called **authorized stock**. Authorized stock that has been sold to the public is called **issued stock**. When a corporation buys back some of its issued stock from the public, the repurchased stock is called **treasury stock**. Treasury stock is still considered to be issued stock, but it is no longer outstanding. **Outstanding stock** (total issued stock minus treasury stock) is stock owned by investors outside the corporation. For example, assume a company that is authorized to issue 150 shares of stock issues 100 shares to investors, and then buys back 20 shares of treasury stock. There are 150 shares authorized, 100 shares issued, and 80 shares outstanding.

## Classes of Stock

The corporate charter defines the number of shares of stock authorized, the par value or stated value (if any), and the classes of stock that a corporation can issue. Most stock issued is either *common* or *preferred*.

### Common Stock

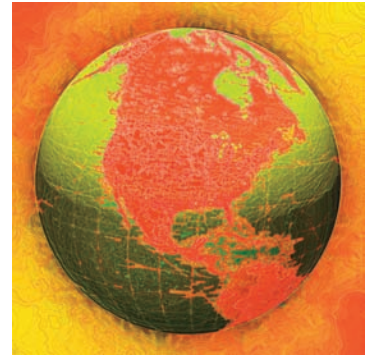
All corporations issue **common stock**. Common stockholders bear the highest risk of losing their investment if a company is forced to liquidate. On the other hand, they reap the greatest rewards when a corporation prospers. Common stockholders generally enjoy several rights, including: (1) the right to buy and sell stock, (2) the right to share in the distribution of profits, (3) the right to share in the distribution of corporate assets in the case of liquidation, (4) the right to vote on significant matters that affect the corporate charter, and (5) the right to participate in the election of directors.

## Focus On INTERNATIONAL ISSUES

### WHO PROVIDES THE FINANCING?

The accounting rules in a country are affected by who provides financing to businesses in that country. Equity (versus debt) financing is a major source of financing for most businesses in the United States. The stock (equity ownership) of most large U.S. companies is said to be *widely held*. This means that many different institutional investors (e.g., pension funds) and individuals own stock. At the other extreme is a country in which the government owns most industries. In between might be a country in which large banks provide a major portion of business financing, such as Japan or Germany.

It is well beyond the scope of this course to explain specifically how a country's accounting principles are affected by who provides the financing for the country's major industries. Nevertheless, a businessperson should be aware that the source of a company's financing affects its financial reporting. Do not assume that business practices or accounting rules in other countries are like those in the United States.



### Preferred Stock

Many corporations issue **preferred stock** in addition to common stock. Holders of preferred stock receive certain privileges relative to holders of common stock. In exchange for special privileges in some areas, preferred stockholders give up rights in other areas. Preferred stockholders usually have no voting rights and the amount of their dividends is usually limited. Preferences granted to preferred stockholders include the following.

1. *Preference as to assets.* Preferred stock often has a liquidation value. In case of bankruptcy, preferred stockholders must be paid the liquidation value before any assets are distributed to common stockholders. However, preferred stockholder claims still fall behind creditor claims.
2. *Preference as to dividends.* Preferred shareholders are frequently guaranteed the right to receive dividends before common stockholders. The amount of the preferred dividend is normally stated on the stock certificate. It may be stated as a dollar value (say, \$5) per share or as a percentage of the par value. Most preferred stock has **cumulative dividends**, meaning that if a corporation is unable to pay the preferred dividend in any year, the dividend is not lost but begins to accumulate. Cumulative dividends that have not been paid are called **dividends in arrears**. When a company pays dividends, any preferred stock arrearages must be paid before any other dividends are paid. Noncumulative preferred stock is not often issued because preferred stock is much less attractive if missed dividends do not accumulate.

To illustrate the effects of preferred dividends, consider Dillion, Incorporated, which has the following shares of stock outstanding.

Preferred stock, 4%, \$10 par, 10,000 shares  
Common stock, \$10 par, 20,000 shares

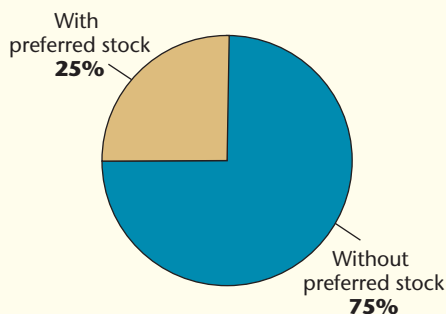
Assume the preferred stock dividend has not been paid for two years. If Dillion pays \$22,000 in dividends, how much will each class of stock receive? It depends on whether the preferred stock is cumulative.



Allocation of Distribution for Cumulative Preferred Stock		
	To Preferred	To Common
Dividends in arrears	\$ 8,000	\$ 0
Current year's dividends	<u>4,000</u>	<u>10,000</u>
Total distribution	<u>\$12,000</u>	<u>\$10,000</u>

Allocation of Distribution for Noncumulative Preferred Stock		
	To Preferred	To Common
Dividends in arrears	\$ 0	\$ 0
Current year's dividends	<u>4,000</u>	<u>18,000</u>
Total distribution	<u>\$ 4,000</u>	<u>\$18,000</u>

**EXHIBIT 8.3****Presence of Preferred Stock in the Capital Structure of U.S. Companies**Data source: AICPA, *Accounting Trends and Techniques*, 2006.

The total annual dividend on the preferred stock is \$4,000 ( $0.04 \times \$10 \text{ par} \times 10,000 \text{ shares}$ ). If the preferred stock is cumulative, the \$8,000 in arrears must be paid first. Then \$4,000 for the current year's dividend is paid next. The remaining \$10,000 goes to common stockholders. If the preferred stock is noncumulative, the \$8,000 of dividends from past periods is ignored. This year's \$4,000 preferred dividend is paid first, with the remaining \$18,000 going to common.

Other features of preferred stock may include the right to participate in distributions beyond the established amount of the preferred dividend, the right to convert preferred stock to common stock or to bonds, and the potential for having the preferred stock called (repurchased) by the corporation. Detailed discussion of these topics is left to more advanced courses. Exhibit 8.3 indicates that roughly 25 percent of U.S. companies have preferred shares outstanding.

## ACCOUNTING FOR STOCK TRANSACTIONS ON THE DAY OF ISSUE

**LO 4**

Explain how to account for different types of stock issued by corporations.

Issuing stock with a par or stated value is accounted for differently from issuing no-par stock. For stock with either a par or stated value, the total amount acquired from the owners is divided between two separate equity accounts. The amount of the par or stated value is recorded in the stock account. Any amount received above the par or stated value is recorded in an account called **Paid-in Capital in Excess of Par (or Stated) Value**.

### Issuing Par Value Stock

To illustrate the issue of common stock with a par value, assume that Nelson Incorporated is authorized to issue 250 shares of common stock. During 2010, Nelson issued 100 shares of \$10 par common stock for \$22 per share. The event increases assets and stockholders' equity by \$2,200 ( $\$22 \times 100 \text{ shares}$ ). The increase in stockholders' equity is divided into two parts, \$1,000 of par value ( $\$10 \text{ per share} \times 100 \text{ shares}$ ) and \$1,200 ( $\$2,200 - \$1,000$ ) received in excess of par value. The income statement is not affected. The \$2,200 cash inflow is reported in the financing

activities section of the statement of cash flows. The effects on the financial statements follow.

Assets	=	Liab.	+	Equity	Rev.	-	Exp.	=	Net Inc.	Cash Flow
Cash	=			Com. Stk. + PIC in Excess						
2,200	=	NA	+	1,000 + 1,200	NA	-	NA	=	NA	2,200 FA

The *legal capital* of the corporation is \$1,000, the total par value of the issued common stock. The number of shares issued can be easily verified by dividing the total amount in the common stock account by the par value ( $\$1,000 \div \$10 = 100$  shares).

## Stock Classification

Assume Nelson Incorporated obtains authorization to issue 400 shares of Class B, \$20 par value common stock. The company issues 150 shares of this stock at \$25 per share. The event increases assets and stockholders' equity by \$3,750 ( $\$25 \times 150$  shares). The increase in stockholders' equity is divided into two parts, \$3,000 of par value ( $\$20$  per share  $\times 150$  shares) and \$750 ( $\$3,750 - \$3,000$ ) received in excess of par value. The income statement is not affected. The \$3,750 cash inflow is reported in the financing activities section of the statement of cash flows. The effects on the financial statements follow.

Assets	=	Liab.	+	Equity	Rev.	-	Exp.	=	Net Inc.	Cash Flow
Cash	=			Com. Stk. + PIC in Excess						
3,750	=	NA	+	3,000 + 750	NA	-	NA	=	NA	3,750 FA

As the preceding event suggests, companies can issue numerous classes of common stock. The specific rights and privileges for each class are described in the individual stock certificates.

## Stock Issued at Stated Value

Assume Nelson is authorized to issue 300 shares of a third class of stock, 7 percent cumulative preferred stock with a stated value of \$10 per share. Nelson issued 100 shares of the preferred stock at a price of \$22 per share. The effects on the financial statements are identical to those described for the issue of the \$10 par value common stock.

Assets	=	Liab.	+	Equity	Rev.	-	Exp.	=	Net Inc.	Cash Flow
Cash	=			Pfd. Stk. + PIC in Excess						
2,200	=	NA	+	1,000 + 1,200	NA	-	NA	=	NA	2,200 FA

## Stock Issued with No Par Value

Assume that Nelson Incorporated is authorized to issue 150 shares of a fourth class of stock. This stock is no-par common stock. Nelson issues 100 shares of this no-par stock at \$22 per share. The entire amount received ( $\$22 \times 100 = \$2,200$ ) is recorded in the stock account. The effects on the financial statements follow.

Assets	=	Liab.	+	Equity	Rev.	-	Exp.	=	Net Inc.	Cash Flow
Cash	=			Com. Stk. + PIC in Excess						
2,200	=	NA	+	2,200 + NA	NA	-	NA	=	NA	2,200 FA

## Financial Statement Presentation

Exhibit 8.4 displays Nelson Incorporated's balance sheet after the four stock issuances described above. The exhibit assumes that Nelson earned and retained \$5,000 of cash income during 2010. The stock accounts are presented first, followed by the paid-in capital in excess of par (or stated) value accounts. A wide variety of reporting formats is used in practice. For example, another popular format is to group accounts by stock class, with the paid-in capital in excess accounts listed with their associated stock accounts. Alternatively, many companies combine the different classes of stock into a single amount and provide the detailed information in footnotes to the financial statements.

### EXHIBIT 8.4

#### NELSON INCORPORATED

##### Balance Sheet

As of December 31, 2010

Assets	
Cash	<u>\$15,350</u>
Stockholders' equity	
Preferred stock, \$10 stated value, 7% cumulative, 300 shares authorized, 100 issued and outstanding	\$ 1,000
Common stock, \$10 par value, 250 shares authorized, 100 issued and outstanding	1,000
Common stock, class B, \$20 par value, 400 shares authorized, 150 issued and outstanding	3,000
Common stock, no par, 150 shares authorized, 100 issued and outstanding	2,200
Paid-in capital in excess of stated value—preferred	1,200
Paid-in capital in excess of par value—common	1,200
Paid-in capital in excess of par value—class B common	<u>750</u>
Total paid-in capital	10,350
Retained earnings	<u>5,000</u>
Total stockholders' equity	<u>\$15,350</u>

## STOCKHOLDERS' EQUITY TRANSACTIONS AFTER THE DAY OF ISSUE

### LO 5

Show how treasury stock transactions affect a company's financial statements.

### Treasury Stock

When a company buys its own stock, the stock purchased is called *treasury stock*. Why would a company buy its own stock? Common reasons include (1) to have stock available to give employees pursuant to stock option plans, (2) to accumulate stock in preparation for a merger or business combination, (3) to reduce the number of shares outstanding in order to increase earnings per share, (4) to keep the price of the stock high when it appears to be falling, and (5) to avoid a hostile takeover (removing shares from the open market reduces the opportunity for outsiders to obtain enough voting shares to gain control of the company).

Conceptually, purchasing treasury stock is the reverse of issuing stock. When a business issues stock, the assets and equity of the business increase. When a business buys treasury stock, the assets and equity of the business decrease. To illustrate, return to the Nelson Incorporated example. Assume that in 2011 Nelson paid \$20 per share to buy back 50 shares of the \$10 par value common stock that it originally issued at \$22 per share. The purchase of treasury stock is an asset use transaction. Assets and stockholders' equity decrease by the cost of the purchase ( $\$20 \times 50 \text{ shares} = \$1,000$ ). The income statement is not affected. The cash outflow is reported in the financing

activities section of the statement of cash flows. The effects on the financial statements follow.

Assets	=	Liab.	+	Equity		Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	=			Other Equity Accts.	– Treasury Stk.						
(1,000)	=	NA	+	NA	– 1,000	NA	–	NA	=	NA	(1,000) FA

The Treasury Stock account is a contra equity account. It is deducted from the other equity accounts in determining total stockholders' equity. In this example, the Treasury Stock account is debited for the full amount paid (\$1,000). The original issue price and the par value of the stock have no effect on the entry. Recording the full amount paid in the treasury stock account is called the **cost method of accounting for treasury stock** transactions. Although other methods could be used, the cost method is the most common.

Assume Nelson reissues 30 shares of treasury stock at a price of \$25 per share. As with any other stock issue, the sale of treasury stock is an asset source transaction. In this case, assets and stockholders' equity increase by \$750 (\$25 × 30 shares). The income statement is not affected. The cash inflow is reported in the financing activities section of the statement of cash flows. The effects on the financial statements follow.

Assets	=	Liab.	+	Equity			Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	=			Other Equity Accounts	– Treasury Stock	+ PIC from Treasury Stk.						
750	=	NA	+	NA	– (600)	+ 150	NA	–	NA	=	NA	750 FA

The decrease in the Treasury Stock account increases stockholders' equity. The \$150 difference between the cost of the treasury stock (\$20 per share × 30 shares = \$600) and the sales price (\$750) is *not* reported as a gain. The sale of treasury stock is a capital acquisition, not a revenue transaction. The \$150 is additional paid-in capital. *Corporations do not recognize gains or losses on the sale of treasury stock.*

After selling 30 shares of treasury stock, 20 shares remain in Nelson's possession. These shares cost \$20 each, so the balance in the Treasury Stock account is now \$400 (\$20 × 20 shares). Treasury stock is reported on the balance sheet directly below retained earnings. Although this placement suggests that treasury stock reduces retained earnings, the reduction actually applies to the entire stockholders' equity section. Exhibit 8.5 on page 302 shows the presentation of treasury stock in the balance sheet.

## CHECK Yourself 8.2

On January 1, 2010, Janell Company's Common Stock account balance was \$20,000. On April 1, 2010, Janell paid \$12,000 cash to purchase some of its own stock. Janell resold this stock on October 1, 2010, for \$14,500. What is the effect on the company's cash and stockholders' equity from both the April 1 purchase and the October 1 resale of the stock?

**Answer** The April 1 purchase would reduce both cash and stockholders' equity by \$12,000. The treasury stock transaction represents a return of invested capital to those owners who sold stock back to the company.

The sale of the treasury stock on October 1 would increase both cash and stockholders' equity by \$14,500. The difference between the sales price of the treasury stock and its cost (\$14,500 – \$12,000) represents additional paid-in capital from treasury stock transactions. The stockholders' equity section of the balance sheet would include Common Stock, \$20,000, and Additional Paid-in Capital from Treasury Stock Transactions, \$2,500.

## LO 6

Explain the effects of declaring and paying cash dividends on a company's financial statements.

## Cash Dividend

Cash dividends are affected by three significant dates: *the declaration date, the date of record, and the payment date*. Assume that on October 15, 2011, the board of Nelson Incorporated declared a 7% cash dividend on the 100 outstanding shares of its \$10 stated value preferred stock. The dividend will be paid to stockholders of record as of November 15, 2011. The cash payment will be made on December 15, 2011.

### Declaration Date

Although corporations are not required to declare dividends, they are legally obligated to pay dividends once they have been declared. They must recognize a liability on the **declaration date** (in this case, October 15, 2011). The increase in liabilities is accompanied by a decrease in retained earnings. The income statement and statement of cash flows are not affected. The effects on the financial statements of *declaring* the \$70 ( $0.07 \times \$10 \times 100$  shares) dividend follow.

Assets	=	Liab.	+	Equity	Rev.	-	Exp.	=	Net Inc.	Cash Flow
Cash	=	Div. Pay.	+	Com. Stk.	+	Ret. Earn.				
NA	=	70	+	NA	+	(70)				
					NA	-	NA	=	NA	NA

### Date of Record

Cash dividends are paid to investors who owned the preferred stock on the **date of record** (in this case November 15, 2011). Any stock sold after the date of record but before the payment date (in this case December 15, 2011) is traded **ex-dividend**, meaning the buyer will not receive the upcoming dividend. The date of record is merely a cutoff date. It does not affect the financial statements.

### Payment Date

Nelson actually paid the cash dividend on the **payment date**. This event has the same effect as paying any other liability. Assets (cash) and liabilities (dividends payable) both decrease. The income statement is not affected. The cash outflow is reported in the financing activities section of the statement of cash flows. The effects of the cash payment on the financial statements follow.

Assets	=	Liab.	+	Equity	Rev.	-	Exp.	=	Net Inc.	Cash Flow
Cash	=	Div. Pay.	+	Com. Stk.	+	Ret. Earn.				
(70)	=	(70)	+	NA	+	NA				
					NA	-	NA	=	NA	(70) FA

## Stock Dividend

## LO 7

Explain the effects of stock dividends and stock splits on a company's financial statements.

Dividends are not always paid in cash. Companies sometimes choose to issue **stock dividends**, wherein they distribute additional shares of stock to the stockholders. To illustrate, assume that Nelson Incorporated decided to issue a 10 percent stock dividend on its class B, \$20 par value common stock. Since dividends apply to outstanding shares only, Nelson will issue 15 ( $150 \text{ outstanding shares} \times 0.10$ ) additional shares of class B stock.

Assume the new shares are distributed when the market value of the stock is \$30 per share. As a result of the stock dividend, Nelson will transfer \$450 ( $\$30 \times 15$  new shares) from retained earnings to paid-in capital.<sup>2</sup> The stock dividend is an equity exchange

<sup>2</sup>The accounting here applies to small stock dividends. Accounting for large stock dividends is explained in a more advanced course.

transaction. The income statement and statement of cash flows are not affected. The effects of the stock dividend on the financial statements follow.

Assets	=	Liab.	+	Equity				Rev.	–	Exp.	=	Net Inc.	Cash Flow
				Com. Stk.	+	PIC in Excess	+	Ret. Earn.					
NA	=	NA	+	300	+	150	+	(450)	NA	–	NA	=	NA

Stock dividends have no effect on assets. They merely increase the number of shares of stock outstanding. Since a greater number of shares represents the same ownership interest in the same amount of assets, the market value per share of a company's stock normally declines when a stock dividend is distributed. A lower market price makes the stock more affordable and may increase demand for the stock, which benefits both the company and its stockholders.

## Stock Split

A corporation may also reduce the market price of its stock through a **stock split**. A stock split replaces existing shares with a greater number of new shares. Any par or stated value of the stock is proportionately reduced to reflect the new number of shares outstanding. For example, assume Nelson Incorporated declared a 2-for-1 stock split on the 165 outstanding shares (150 originally issued + 15 shares distributed in a stock dividend) of its \$20 par value, class B common stock. Nelson notes in the accounting records that the 165 old \$20 par shares are replaced with 330 new \$10 par shares. Investors who owned the 165 shares of old common stock would now own 330 shares of the new common stock.

Stock splits have no effect on the dollar amounts of assets, liabilities, and stockholders' equity. They only affect the number of shares of stock outstanding. In Nelson's case, the ownership interest that was previously represented by 165 shares of stock is now represented by 330 shares. Since twice as many shares now represent the same ownership interest, the market value per share should be one-half as much as it was prior to the split. However, as with a stock dividend, the lower market price will probably stimulate demand for the stock. As a result, doubling the number of shares will likely reduce the market price to slightly more than one-half of the pre-split value. For example, if the stock were selling for \$30 per share before the 2-for-1 split, it might sell for \$15.50 after the split.

## Appropriation of Retained Earnings

The board of directors may restrict the amount of retained earnings available to distribute as dividends. The restriction may be required by credit agreements, or it may be discretionary. A retained earnings restriction, often called an *appropriation*, is an equity exchange event. It transfers a portion of existing retained earnings to **Appropriated Retained Earnings**. Total retained earnings remains unchanged. To illustrate, assume that Nelson appropriates \$1,000 of retained earnings for future expansion. The income statement and the statement of cash flows are not affected. The effects on the financial statements of appropriating \$1,000 of retained earnings follow.

### LO 8

Show how the appropriation of retained earnings affects financial statements.

Assets	=	Liab.	+	Equity				Rev.	–	Exp.	=	Net Inc.	Cash Flow
				Com. Stk.	+	Ret. Earn.	+	App. Ret. Earn.					
NA	=	NA	+	NA	+	(1,000)	+	1,000	NA	–	NA	=	NA



## FINANCIAL STATEMENT PRESENTATION

The 2010 and 2011 events for Nelson Incorporated are summarized below. Events 1 through 8 are cash transactions. The results of the 2010 transactions (nos. 1–5) are reflected in Exhibit 8.4. The results of the 2011 transactions (nos. 6–9) are shown in Exhibit 8.5.

1. Issued 100 shares of \$10 par value common stock at a market price of \$22 per share.
2. Issued 150 shares of class B, \$20 par value common stock at a market price of \$25 per share.
3. Issued 100 shares of \$10 stated value, 7 percent cumulative preferred stock at a market price of \$22 per share.
4. Issued 100 shares of no-par common stock at a market price of \$22 per share.
5. Earned and retained \$5,000 cash from operations.
6. Purchased 50 shares of \$10 par value common stock as treasury stock at a market price of \$20 per share.
7. Sold 30 shares of treasury stock at a market price of \$25 per share.
8. Declared and paid a \$70 cash dividend on the preferred stock.
9. Issued a 10 percent stock dividend on the 150 shares of outstanding class B, \$20 par value common stock (15 additional shares). The additional shares were issued when the market price of the stock was \$30 per share. There are 165 (150 + 15) class B common shares outstanding after the stock dividend.
10. Issued a 2-for-1 stock split on the 165 shares of class B, \$20 par value common stock. After this transaction, there are 330 shares outstanding of the class B common stock with a \$10 par value.
11. Appropriated \$1,000 of retained earnings.

### EXHIBIT 8.5

NELSON INCORPORATED			
Balance Sheet			
As of December 31, 2011			
<b>Assets</b>			
Cash			<u>\$21,030</u>
<b>Stockholders' equity</b>			
Preferred stock, \$10 stated value, 7% cumulative, 300 shares authorized, 100 issued and outstanding	\$1,000		
Common stock, \$10 par value, 250 shares authorized, 100 issued, and 80 outstanding	1,000		
Common stock, class B, \$10 par, 800 shares authorized, 330 issued and outstanding	3,300		
Common stock, no par, 150 shares authorized, 100 issued and outstanding	2,200		
Paid-in capital in excess of stated value—preferred	1,200		
Paid-in capital in excess of par value—common	1,200		
Paid-in capital in excess of par value—class B common	900		
Paid-in capital in excess of cost of treasury stock	<u>150</u>		
Total paid-in capital			\$10,950
<b>Retained earnings</b>			
Appropriated	1,000		
Unappropriated	<u>9,480</u>		
Total retained earnings			10,480
Less: Treasury stock, 20 shares @ \$20 per share			<u>(400)</u>
Total stockholders' equity			<u>\$21,030</u>

The illustration assumes that Nelson earned net income of \$6,000 in 2011. The ending retained earnings balance is determined as follows: Beginning Balance \$5,000 – \$70 Cash Dividend – \$450 Stock Dividend + \$6,000 Net Income = \$10,480.



Stockholders may benefit in two ways when a company generates earnings. The company may distribute the earnings directly to the stockholders in the form of dividends. Alternatively, the company may retain some or all of the earnings to finance growth and increase its potential for future earnings. If the company retains earnings, the market value of its stock should increase to reflect its greater earnings prospects. How can analysts use financial reporting to help assess the potential for dividend payments or growth in market value?

## LO 9

Explain some uses of accounting information in making stock investment decisions.

### Receiving Dividends

Is a company likely to pay dividends in the future? The financial statements can help answer this question. They show if dividends were paid in the past. Companies with a history of paying dividends usually continue to pay dividends. Also, to pay dividends in the future, a company must have sufficient cash and retained earnings. These amounts are reported on the balance sheet and the statement of cash flows.

### Increasing the Price of Stock

Is the market value (price) of a company's stock likely to increase? Increases in a company's stock price occur when investors believe the company's earnings will grow. Financial statements provide information that is useful in predicting the prospects for earnings growth. Here also, a company's earnings history is an indicator of its growth potential. However, because published financial statements report historical information, investors must recognize their limitations. Investors want to know about the future. Stock prices are therefore influenced more by forecasts than by history.

For example:

- On July 11, 2006, **Alcoa, Inc.**, announced that its profits for the second quarter of the 2006 fiscal year were 62 percent higher than profits in the same quarter of 2005. Its sales were up 19 percent during the second quarter. In reaction to this news, the price of Alcoa's stock *fell* by 4.5 percent. Why did the stock market respond in this way? Because many analysts who follow the company were expecting revenues to grow more than 19 percent.
- On July 26, 2006, **General Motors Corporation** announced a second quarter *loss* of \$3.2 billion. This loss was over three times greater than its loss had been for the second quarter of the 2005 fiscal year. The stock market's reaction to the news was to *increase* the price of GM's stock by over 4 percent to its highest price in ten months. The market reacted this way because in that same announcement the company reported strong revenue growth, which made investors more optimistic about the future, and the investors had expected an even greater second quarter loss.

In each case, investors reacted to the potential for earnings growth rather than the historical earnings reports. Because investors find forecasted statements more relevant to decision making than historical financial statements, most companies provide forecasts in addition to historical financial statements.

The value of a company's stock is also influenced by nonfinancial information that financial statements cannot provide. For example, suppose **ExxonMobil** announced

in the middle of its fiscal year that it had just discovered substantial oil reserves on property to which it held drilling rights. Consider the following questions:

- What would happen to the price of ExxonMobil's stock on the day of the announcement?
- What would happen to ExxonMobil's financial statements on that day?

The price of ExxonMobil's stock would almost certainly increase as soon as the discovery was made public. However, nothing would happen to its financial statements on that day. There would probably be very little effect on its financial statements for that year. Only after the company began to develop the oil field and sell the oil would its financial statements reflect the discovery. Changes in financial statements tend to lag behind the announcements companies make regarding their earnings potential.

Stock prices are also affected by general economic conditions and consumer confidence as well as the performance measures reported in financial statements. For example, the stock prices of virtually all companies declined sharply immediately after the September 11, 2001, terrorist attacks on the World Trade Center and the Pentagon. Historically based financial statements are of little benefit in predicting general economic conditions or changes in consumer confidence.

## Price-earnings Ratio

The most commonly reported measure of a company's value is the price-earnings ratio, frequently called the P/E ratio. The P/E ratio is a company's market price per share of stock divided by the company's annual earnings per share (EPS). In general, high P/E ratios indicate that investors are optimistic about a company's earnings growth potential.

## Exercising Control through Stock Ownership

The more influence an investor has over the operations of a company, the more the investor can benefit from owning stock in the company. For example, consider a power company that needs coal to produce electricity. The power company may purchase some common stock in a coal mining company to ensure a stable supply of coal. What percentage of the mining company's stock must the power company acquire to exercise significant influence over the mining company? The answer depends on how many investors own stock in the mining company and how the number of shares is distributed among the stockholders.

The greater its number of stockholders, the more *widely held* a company is. If stock ownership is concentrated in the hands of a few persons, a company is *closely held*. Widely held companies can generally be controlled with smaller percentages of ownership than closely held companies. Consider a company in which no existing investor owns more than 1 percent of the voting stock. A new investor who acquires a 5 percent interest would immediately become, by far, the largest shareholder and would likely be able to significantly influence board decisions. In contrast, consider a closely held company in which one current shareholder owns 51 percent of the company's stock. Even if another investor acquired the remaining 49 percent of the company, that investor could not control the company.

Financial statements contain some, but not all, of the information needed to help an investor determine ownership levels necessary to permit control. For example, the financial statements disclose the total number of shares of stock outstanding, but they normally contain little information about the number of shareholders and even less information about any relationships between shareholders. Relationships between shareholders are critically important because related shareholders, whether bound by family or business interests, might exercise control by voting as a block. For publicly traded companies, information about the number of shareholders and the identity of some large shareholders is disclosed in reports filed with the Securities and Exchange Commission.

## A Look Back



Starting a business requires obtaining financing; it takes money to make money. Although some money may be borrowed, lenders are unlikely to make loans to businesses that lack some degree of owner financing. Equity financing is therefore critical to virtually all profit-oriented businesses. This chapter has examined some of the issues related to accounting for equity transactions.

The idea that a business must obtain financing from its owners was one of the first events presented in this textbook. This chapter discussed the advantages and disadvantages of organizing a business as a sole proprietorship versus a partnership versus a corporation. These advantages and disadvantages include the following.

1. *Double taxation*—Income of corporations is subject to double taxation, but that of proprietorships and partnerships is not.
2. *Regulation*—Corporations are subject to more regulation than are proprietorships and partnerships.
3. *Limited liability*—An investor's personal assets are not at risk as a result of owning corporate securities. The investor's liability is limited to the amount of the investment. In general proprietorships and partnerships do not offer limited liability. However, laws in some states permit the formation of limited liability companies which operate like proprietorships and partnerships yet place some limits on the personal liability of their owners.
4. *Continuity*—Proprietorships and partnerships dissolve when one of the owners leaves the business. Corporations are separate legal entities that continue to exist regardless of changes in ownership.
5. *Transferability*—Ownership interests in corporations are easier to transfer than those of proprietorships or partnerships.
6. *Management structure*—Corporations are more likely to have independent professional managers than are proprietorships or partnerships.
7. *Ability to raise capital*—Because they can be owned by millions of investors, corporations have the opportunity to raise more capital than proprietorships or partnerships.

Corporations issue different classes of common stock and preferred stock as evidence of ownership interests. In general, *common stock* provides the widest range of privileges including the right to vote and participate in earnings. *Preferred stockholders* usually give up the right to vote in exchange for preferences such as the right to receive dividends or assets upon liquidation before common stockholders. Stock may have a *par value* or *stated value*, which relates to legal requirements governing the amount of capital that must be maintained in the corporation. Corporations may also issue *no-par stock*, avoiding some of the legal requirements that pertain to par or stated value stock.

Stock that a company issues and then repurchases is called *treasury stock*. Purchasing treasury stock reduces total assets and stockholders' equity. Reselling treasury stock represents a capital acquisition. The difference between the reissue price and the cost of the treasury stock is recorded directly in the equity accounts. Treasury stock transactions do not result in gains or losses on the income statement.

Companies may issue *stock splits* or *stock dividends*. These transactions increase the number of shares of stock without changing the net assets of a company. The per share market value usually drops when a company issues stock splits or dividends.

## A Look Forward



The Financial Analyst sections of the previous chapters have discussed several procedures and ratios used to analyze financial statements. Financial statement analysis is so important that Chapter 9 is devoted solely to a more detailed discussion of this

subject. The expanded coverage in Chapter 9 includes new ratios and additional detail about many of the ratios previously introduced. The chapter also covers vertical analysis (analyzing relationships within a specific statement) and horizontal analysis (analyzing relationships across accounting periods). Finally, the chapter discusses limitations associated with financial statement analysis.



## SELF-STUDY REVIEW PROBLEM

Edwards Inc. experienced the following events:

1. Issued common stock for cash.
2. Declared a cash dividend.
3. Issued noncumulative preferred stock for cash.
4. Appropriated retained earnings.
5. Distributed a stock dividend.
6. Paid cash to purchase treasury stock.
7. Distributed a 2-for-1 stock split.
8. Issued cumulative preferred stock for cash.
9. Paid a cash dividend that had previously been declared.
10. Sold treasury stock for cash at a higher amount than the cost of the treasury stock.

### Required

Show the effect of each event on the elements of the financial statements using a horizontal statements model like the one shown here. Use + for increase, – for decrease, and NA for not affected. In the Cash Flow column, indicate whether the item is an operating activity (OA), investing activity (IA), or a financing activity (FA). The first transaction is entered as an example.

Event	Assets	=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
1	+		NA		+	NA		NA		NA	+ FA

### Solution to Self-Study Review Problem

Event	Assets	=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
1	+		NA		+	NA		NA		NA	+ FA
2	NA		+		–	NA		NA		NA	NA
3	+		NA		+	NA		NA		NA	+ FA
4	NA		NA		– +	NA		NA		NA	NA
5	NA		NA		– +	NA		NA		NA	NA
6	–		NA		–	NA		NA		NA	– FA
7	NA		NA		NA	NA		NA		NA	NA
8	+		NA		+	NA		NA		NA	+ FA
9	–		–		NA	NA		NA		NA	– FA
10	+		NA		+	NA		NA		NA	+ FA



## KEY TERMS

Appropriated Retained Earnings 301	Cumulative dividends 295	Market value 294	Securities Act of 1933 and Securities Exchange Act of 1934 289
Articles of incorporation 288	Date of record 300	Outstanding stock 294	Sole proprietorships 288
Authorized stock 294	Declaration date 300	Paid-in Capital in Excess of Par Value 296	Stated value 294
Board of directors 291	Dividends in arrears 295	Par value 293	Stock certificates 288
Book value per share 294	Double taxation 289	Partnerships 288	Stock dividends 300
Closely held corporation 288	Entrenched management 291	Partnership agreement 288	Stockholders 291
Common stock 294	Ex-dividend 300	Payment date 300	Stock split 301
Continuity 290	Issued stock 294	Preferred stock 295	Transferability 291
Corporation 288	Legal capital 293	Sarbanes-Oxley Act of 2002 289	Treasury stock 294
Cost method of accounting for treasury stock 299	Limited liability 290		Withdrawals 292
	Limited liability companies (LLCs) 290		

## QUESTIONS

- What are the three major forms of business organizations? Describe each.
- How are sole proprietorships formed?
- Discuss the purpose of a partnership agreement. Is such an agreement necessary for partnership formation?
- What is meant by the phrase *separate legal entity*? To which type of business organization does it apply?
- What is the purpose of the articles of incorporation? What information do they provide?
- What is the function of the stock certificate?
- What prompted Congress to pass the Securities Act of 1933 and the Securities Exchange Act of 1934? What is the purpose of these laws?
- What are the advantages and disadvantages of the corporate form of business organization?
- What is a limited liability company? Discuss its advantages and disadvantages.
- How does the term *double taxation* apply to corporations? Give an example of double taxation.
- What is the difference between contributed capital and retained earnings for a corporation?
- What are the similarities and differences in the equity structure of a sole proprietorship, a partnership, and a corporation?
- Why is it easier for a corporation to raise large amounts of capital than it is for a partnership?
- What is the meaning of each of the following terms with respect to the corporate form of organization?
  - Legal capital
  - Par value of stock
  - Stated value of stock
  - Market value of stock
  - Book value of stock
  - Authorized shares of stock
  - Issued stock
  - Outstanding stock
  - Treasury stock
  - Common stock
  - Preferred stock
  - Dividends
- What is the difference between cumulative preferred stock and noncumulative preferred stock?
- What is no-par stock? How is it recorded in the accounting records?
- Assume that Best Co. has issued and outstanding 1,000 shares of \$100 par value, 10 percent, cumulative preferred stock. What is the dividend per share? If the preferred dividend is two years in arrears, what total amount of dividends must be paid before the common shareholders can receive any dividends?
- If Best Co. issued 10,000 shares of \$20 par value common stock for \$30 per share, what amount is credited to the Common Stock account? What amount of cash is received?
- What is the difference between par value stock and stated value stock?
- Why might a company repurchase its own stock?
- What effect does the purchase of treasury stock have on the equity of a company?
- Assume that Day Company repurchased 1,000 of its own shares for \$30 per share and sold the shares two weeks later for \$35 per share. What is the amount of gain on the sale? How is it reported on the balance sheet? What type of account is treasury stock?
- What is the importance of the declaration date, record date, and payment date in conjunction with corporate dividends?
- What is the difference between a stock dividend and a stock split?
- Why would a company choose to distribute a stock dividend instead of a cash dividend?
- What is the primary reason that a company would declare a stock split?
- If Best Co. had 10,000 shares of \$20 par value common stock outstanding and declared a 5-for-1 stock split, how



- many shares would then be outstanding and what would be their par value after the split?
28. When a company appropriates retained earnings, does the company set aside cash for a specific use? Explain.
29. What is the largest source of financing for most U.S. businesses?
30. What is meant by *equity financing*? What is meant by *debt financing*?
31. What is a widely held corporation? What is a closely held corporation?
32. What are some reasons that a corporation might not pay dividends?

## EXERCISES



**All applicable Exercises are available with McGraw-Hill Connect Accounting.**

### LO 1, 2

#### **Exercise 8-1** *Effect of accounting events on the financial statements of a sole proprietorship*

A sole proprietorship was started on January 1, 2010, when it received \$80,000 cash from Derek Hughes, the owner. During 2010, the company earned \$50,000 in cash revenues and paid \$22,400 in cash expenses. Hughes withdrew \$5,000 cash from the business during 2010.

##### **Required**

Prepare an income statement, capital statement (statement of changes in equity), balance sheet, and statement of cash flows for Hughes's 2010 fiscal year.

### LO 1, 2

#### **Exercise 8-2** *Effect of accounting events on the financial statements of a partnership*

Wes Poole and Ross King started the PK partnership on January 1, 2010. The business acquired \$60,000 cash from Poole and \$90,000 from King. During 2010, the partnership earned \$56,000 in cash revenues and paid \$32,000 for cash expenses. Poole withdrew \$2,000 cash from the business, and King withdrew \$3,000 cash. The net income was allocated to the capital accounts of the two partners in proportion to the amounts of their original investments in the business.

##### **Required**

Prepare an income statement, capital statement, balance sheet, and statement of cash flows for the PK partnership for the 2010 fiscal year.

### LO 1, 2

#### **Exercise 8-3** *Effect of accounting events on the financial statements of a corporation*

Premo Corporation was started with the issue of 8,000 shares of \$10 par common stock for cash on January 1, 2010. The stock was issued at a market price of \$18 per share. During 2010, the company earned \$58,000 in cash revenues and paid \$39,000 for cash expenses. Also, a \$4,000 cash dividend was paid to the stockholders.

##### **Required**

Prepare an income statement, statement of changes in stockholders' equity, balance sheet, and statement of cash flows for Premo Corporation's 2010 fiscal year.

### LO 4

#### **Exercise 8-4** *Effect of issuing common stock on the balance sheet*

Newly formed Health First Corporation has 100,000 shares of \$5 par common stock authorized. On March 1, 2010, Health First issued 20,000 shares of the stock for \$12 per share. On May 2 the company issued an additional 30,000 shares for \$15 per share. Health First was not affected by other events during 2010.

##### **Required**

- Record the transactions in a horizontal statements model like the following one. In the Cash Flow column, indicate whether the item is an operating activity (OA), investing activity

(IA), or financing activity (FA). Use NA to indicate that an element was not affected by the event.

Assets = Liab. + Equity				Rev. – Exp. = Net Inc.	Cash Flow
Cash	=	+ Com. Stk.	+ Paid-in Excess		

- Determine the amount Health First would report for common stock on the December 31, 2010, balance sheet.
- Determine the amount Health First would report for paid-in capital in excess of par.
- What is the total amount of capital contributed by the owners?
- What amount of total assets would Health First report on the December 31, 2010, balance sheet?

### Exercise 8-5 Recording and reporting common and preferred stock transactions

LO 4

Farmer, Inc., was organized on June 5, 2010. It was authorized to issue 400,000 shares of \$10 par common stock and 50,000 shares of 5 percent cumulative class A preferred stock. The class A stock had a stated value of \$30 per share. The following stock transactions pertain to Farmer, Inc.

- Issued 20,000 shares of common stock for \$14 per share.
- Issued 10,000 shares of the class A preferred stock for \$32 per share.
- Issued 30,000 shares of common stock for \$18 per share.

#### Required

Prepare the stockholders' equity section of the balance sheet immediately after these transactions have been recognized.

### Exercise 8-6 Effect of no-par common and par preferred stock on the horizontal statements model

LO 4

Collins Corporation issued 10,000 shares of no-par common stock for \$20 per share. Collins also issued 2,000 shares of \$50 par, 5 percent noncumulative preferred stock at \$55 per share.

#### Required

Record these events in a horizontal statements model like the following one. In the cash flow column, indicate whether the item is an operating activity (OA), investing activity (IA), or financing activity (FA). Use NA to indicate that an element was not affected by the event.

Assets = Equity				Rev. – Exp. = Net Inc.	Cash Flow
Cash	=	Pfd. Stk.	+ Com. Stk.	+ PIC in Excess	

### Exercise 8-7 Issuing stock for assets other than cash

LO 4

Gaines Corporation was formed when it issued shares of common stock to two of its shareholders. Gaines issued 5,000 shares of \$10 par common stock to S. Gaines in exchange for \$75,000 cash (the issue price was \$15 per share). Gaines also issued 2,000 shares of stock to J. Caldwell in exchange for a one-year-old delivery van on the same day. Caldwell had originally paid \$42,000 for the van.

- What was the market value of the delivery van on the date of the stock issue?
- Show the effect of the two stock issues on Gaine's books in a horizontal statements model like the following one. In the Cash Flow column, indicate whether the item is an operating activity (OA), investing activity (IA), or financing activity (FA). Use NA to indicate that an element was not affected by the event.

Assets		=	Equity		Rev.	–	Exp.	=	Net Inc.	Cash Flow
Cash	+	Van	=	Com. Stk.	+	PIC in Excess				

**LO 5****Exercise 8-8** *Treasury stock transactions*

Woodard Corporation repurchased 3,000 shares of its own stock for \$40 per share. The stock has a par of \$10 per share. A month later Woodard resold 1,500 shares of the treasury stock for \$45 per share.

**Required**

What is the balance of the treasury stock account after these transactions are recognized?

**LO 5****Exercise 8-9** *Recording and reporting treasury stock transactions*

The following information pertains to Kwon Corp. at January 1, 2010.

Common stock, \$10 par, 50,000 shares authorized, 2,000 shares issued and outstanding	\$20,000
Paid-in capital in excess of par, common stock	15,000
Retained earnings	65,000

Kwon Corp. completed the following transactions during 2010:

1. Issued 2,000 shares of \$10 par common stock for \$25 per share.
2. Repurchased 200 shares of its own common stock for \$22 per share.
3. Resold 50 shares of treasury stock for \$26 per share.

**Required**

- a. How many shares of common stock were outstanding at the end of the period?
- b. How many shares of common stock had been issued at the end of the period?
- c. Organize the transactions data in accounts under the accounting equation.
- d. Prepare the stockholders' equity section of the balance sheet reflecting these transactions. Include the number of shares authorized, issued, and outstanding in the description of the common stock.

**LO 6****Exercise 8-10** *Effect of cash dividends on financial statements*

On October 1, 2011, Evans Corporation declared a \$50,000 cash dividend to be paid on December 30 to shareholders of record on November 20.

**Required**

Record the events occurring on October 1, November 20, and December 30 in a horizontal statements model like the following one. In the Cash Flow column, indicate whether the item is an operating activity (OA), investing activity (IA), or financing activity (FA).

Date	Assets	=	Liab.	+	Com. Stock	+	Ret. Earn.	Rev.	–	Exp.	=	Net Inc.	Cash Flow
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**LO 6****Exercise 8-11** *Accounting for cumulative preferred dividends*

When Collum Corporation was organized in January 2011, it immediately issued 10,000 shares of \$60 par, 5 percent, cumulative preferred stock and 20,000 shares of \$10 par common stock. The company's earnings history is as follows: 2011, net loss of \$15,000; 2012, net income of \$120,000; 2013, net income of \$95,000. The corporation did not pay a dividend in 2011.

### Required

- How much is the dividend arrearage as of January 1, 2012?
- Assume that the board of directors declares an \$80,000 cash dividend at the end of 2012 (remember that the 2011 and 2012 preferred dividends are due). How will the dividend be divided between the preferred and common stockholders?

### Exercise 8-12 Cash dividends for preferred and common shareholders

LO 6

J&J Corporation had the following stock issued and outstanding at January 1, 2010.

- 50,000 shares of \$5 par common stock.
- 5,000 shares of \$100 par, 5 percent, noncumulative preferred stock.

On May 10, J&J Corporation declared the annual cash dividend on its 5,000 shares of preferred stock and a \$1 per share dividend for the common shareholders. The dividends will be paid on June 15 to the shareholders of record on May 30.

### Required

Determine the total amount of dividends to be paid to the preferred shareholders and common shareholders.

### Exercise 8-13 Cash dividends: common and preferred stock

LO 6

Hu Corp. had the following stock issued and outstanding at January 1, 2010.

- 50,000 shares of no-par common stock.
- 10,000 shares of \$100 par, 3 percent, cumulative preferred stock. (Dividends are in arrears for one year, 2009.)

On February 1, 2010, Hu declared a \$100,000 cash dividend to be paid March 31 to shareholders of record on March 10.

### Required

What amount of dividends will be paid to the preferred shareholders versus the common shareholders?

### Exercise 8-14 Accounting for stock dividends

LO 7

Magee Corporation issued a 4 percent stock dividend on 30,000 shares of its \$10 par common stock. At the time of the dividend, the market value of the stock was \$30 per share.

### Required

- Compute the amount of the stock dividend.
- Show the effects of the stock dividend on the financial statements using a horizontal statements model like the following one.

Assets	=	Liab.	+	Com. Stk.	+	PIC in Excess	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
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### Exercise 8-15 Determining the effects of stock splits on the accounting records

LO 7

The market value of Lan Corporation's common stock had become excessively high. The stock was currently selling for \$160 per share. To reduce the market price of the common stock, Lan declared a 2-for-1 stock split for the 400,000 outstanding shares of its \$10 par common stock.



### Required

- How will Lan Corporation's books be affected by the stock split?
- Determine the number of common shares outstanding and the par value after the split.
- Explain how the market value of the stock will be affected by the stock split.

## LO 9

**Exercise 8-16** *Corporate announcements*

Mighty Drugs (one of the three largest drug makers) just reported that its 2010 third quarter profits are essentially the same as the 2009 third quarter profits. In addition to this announcement, the same day, Mighty Drugs also announced that the Food and Drug Administration had just approved a new drug used to treat high blood pressure that Mighty Drugs developed. This new drug has been shown to be extremely effective and has few or no side effects. It will also be less expensive than the other drugs currently on the market.

**Required**

Using the above information, answer the following questions.

- What do you think will happen to the stock price of Mighty Drugs on the day these two announcements are made? Explain your answer.
- How will the balance sheet be affected on that day by the above announcements?
- How will the income statement be affected on that day by the above announcements?
- How will the statement of cash flows be affected on that day by the above announcements?

## LO 9

**Exercise 8-17** *Performing ratio analysis using real-world data*

**Merck & Company** is one of the world's largest pharmaceutical companies. The following data were taken from the company's 2007 annual report.

	<b>Fiscal Years Ending</b>	
	<b>December 31, 2007</b>	<b>December 31, 2006</b>
Net earnings (in millions)	\$3,275.4	\$4,433.8
Earnings per share	\$1.51	\$2.04

The following data were taken from public stock-price quotes.

Stock price per share on March 3, 2008: \$44.06  
(Two months after the end of Merck's 2007 fiscal year.)

Stock price per share on March 1, 2007: \$43.99  
(Two months after the end of Merck's 2007 fiscal year.)

**Required**

- Compute Merck's price-earnings ratio for March 3, 2008, and March 1, 2007.
- Did the financial markets appear to be more optimistic about Merck's future performance on March 1, 2007, or March 3, 2008?
- Based on the information provided, estimate approximately how many shares of stock Merck had outstanding as of December 31, 2007.

**PROBLEMS**

connect  
ACCOUNTING

LO 1, 2

excel

**All applicable Problems are available with McGraw-Hill Connect Accounting.**

**Problem 8-18** *Effect of business structure on financial statements*

Upton Company was started on January 1, 2011, when the owners invested \$160,000 cash in the business. During 2011, the company earned cash revenues of \$120,000 and incurred cash expenses of \$82,000. The company also paid cash distributions of \$15,000.

### Required

Prepare a 2011 income statement, capital statement (statement of changes in equity), balance sheet, and statement of cash flows using each of the following assumptions. (Consider each assumption separately.)

- Upton is a sole proprietorship owned by J. Upton.
- Upton is a partnership with two partners, Dan and Nancy Upton. Dan invested \$100,000 and Nancy invested \$60,000 of the \$160,000 cash that was used to start the business. Nancy was expected to assume the vast majority of the responsibility for operating the business. The partnership agreement called for Nancy to receive 60 percent of the profits and Dan the remaining 40 percent. With regard to the \$15,000 distribution, Nancy withdrew \$6,000 from the business and Dan withdrew \$9,000.
- Upton is a corporation. The owners were issued 10,000 shares of \$10 par common stock when they invested the \$160,000 cash in the business.

### CHECK FIGURES

- Net Income: \$38,000
- Dan Upton Capital: \$106,200

### Problem 8-19 *Recording and reporting stock transactions and cash dividends across two accounting cycles*

LO 4-6



Flesher Corporation was authorized to issue 100,000 shares of \$5 par common stock and 50,000 shares of \$50 par, 5 percent, cumulative preferred stock. Flesher Corporation completed the following transactions during its first two years of operation.

#### 2010

- Jan. 2 Issued 15,000 shares of \$5 par common stock for \$8 per share.
- 15 Issued 2,000 shares of \$50 par preferred stock for \$55 per share.
- Feb. 14 Issued 20,000 shares of \$5 par common stock for \$9 per share.
- Dec. 31 During the year, earned \$310,000 of cash service revenue and paid \$240,000 of cash operating expenses.
- 31 Declared the cash dividend on outstanding shares of preferred stock for 2010. The dividend will be paid on January 31 to stockholders of record on January 15, 2011.

#### 2011

- Jan. 31 Paid the cash dividend declared on December 31, 2010.
- Mar. 1 Issued 3,000 shares of \$50 par preferred stock for \$60 per share.
- June 1 Purchased 500 shares of common stock as treasury stock at \$9 per share.
- Dec. 31 During the year, earned \$250,000 of cash service revenue and paid \$175,000 of cash operating expenses.
- 31 Declared the dividend on the preferred stock and a \$0.50 per share dividend on the common stock.

### CHECK FIGURES

- Preferred Stock, 2010: \$100,000
- Common Shares Outstanding, 2011: 34,500

### Required

- Organize the transaction data in accounts under an accounting equation.
- Prepare the stockholders' equity section of the balance sheet at December 31, 2010.
- Prepare the balance sheet at December 31, 2011.

### Problem 8-20 *Recording and reporting treasury stock transactions*

LO 5, 6, 8



Millsaps Corp. completed the following transactions in 2010, the first year of operation.

- Issued 30,000 shares of \$10 par common stock at par.
- Issued 2,000 shares of \$30 stated value preferred stock at \$33 per share.
- Purchased 1,000 shares of common stock as treasury stock for \$12 per share.
- Declared a 5 percent dividend on preferred stock.
- Sold 300 shares of treasury stock for \$15 per share.
- Paid the cash dividend on preferred stock that was declared in Event 4.

### CHECK FIGURE

- Total Paid-In Capital: \$366,900



7. Earned cash service revenue of \$75,000 and incurred cash operating expenses of \$42,000.
8. Appropriated \$6,000 of retained earnings.

**Required**

- a. Organize the transaction in accounts under an accounting equation.
- b. Prepare the stockholders' equity section of the balance sheet as of December 31, 2010.

**LO 5****CHECK FIGURES**

Total Paid-In Capital: \$451,200  
Total Stockholders' Equity:  
\$569,200

**Problem 8-21 Recording and reporting treasury stock transactions**

Carter Corporation reports the following information in its January 1, 2010, balance sheet:

Stockholders' equity	
Common stock, \$10 par value,	
50,000 shares authorized, 30,000 shares issued and outstanding	\$300,000
Paid-in capital in excess of par value	150,000
Retained earnings	100,000
Total stockholders' equity	<u>\$550,000</u>

During 2010, Carter was affected by the following accounting events.

1. Purchased 1,000 shares of treasury stock at \$20 per share.
2. Reissued 600 shares of treasury stock at \$22 per share.
3. Earned \$64,000 of cash service revenues.
4. Paid \$38,000 of cash operating expenses.

**Required**

Prepare the stockholders' equity section of the year-end balance sheet.

**LO 4, 6, 7****CHECK FIGURES**

- b. Total Paid-In Capital:  
\$1,215,000
- b. Retained Earnings: \$5,000

**Problem 8-22 Recording and reporting stock dividends**

Davis Corp. completed the following transactions in 2010, the first year of operation.

1. Issued 30,000 shares of \$20 par common stock for \$30 per share.
2. Issued 5,000 shares of \$50 par, 4 percent, preferred stock at \$51 per share.
3. Paid the annual cash dividend to preferred shareholders.
4. Issued a 5 percent stock dividend on the common stock. The market value at the dividend declaration date was \$40 per share.
5. Later that year, issued a 2-for-1 split on the 31,500 shares of outstanding common stock.
6. Earned \$195,000 of cash service revenues and paid \$120,000 of cash operating expenses.

**Required**

- a. Record each of these events in a horizontal statements model like the following one. In the Cash Flow column, indicate whether the item is an operating activity (OA), investing activity (IA), or financing activity (FA). Use NA to indicate that an element is not affected by the event.

Assets = Liab. +					Equity			Rev. — Exp. = Net Inc.	Cash Flow
					PIC in	PIC in			
					Pfd. Stk. +	Com. Stk. +	Excess PS +	Excess CS +	Ret. Earn.

- b. Prepare the stockholders' equity section of the balance sheet at the end of 2010.

### Problem 8-23 Analyzing the stockholders' equity section of the balance sheet

LO 4, 7

The stockholders' equity section of the balance sheet for Atkins Company at December 31, 2011, is as follows.



Stockholders' Equity		
Paid-in capital		
Preferred stock, ? par value, 6% cumulative, 50,000 shares authorized, 40,000 shares issued and outstanding	\$400,000	
Common stock, \$10 stated value, 150,000 shares authorized, 60,000 shares issued and ? outstanding	600,000	
Paid-in capital in excess of par—preferred	30,000	
Paid-in capital in excess of par—common	<u>200,000</u>	
Total paid-in capital		\$1,230,000
Retained earnings		250,000
Treasury stock, 2,000 shares		<u>(50,000)</u>
Total stockholders' equity		<u>\$1,430,000</u>

#### CHECK FIGURES

- a. Par value per share: \$10
- b. Dividend per share: \$.60

*Note:* The market value per share of the common stock is \$25, and the market value per share of the preferred stock is \$12.

#### Required

- a. What is the par value per share of the preferred stock?
- b. What is the dividend per share on the preferred stock?
- c. What is the number of common stock shares outstanding?
- d. What was the average issue price per share (price for which the stock was issued) of the common stock?
- e. Explain the difference between the average issue price and the market price of the common stock.
- f. If Atkins declared a 2-for-1 stock split on the common stock, how many shares would be outstanding after the split? What amount would be transferred from the retained earnings account because of the stock split? Theoretically, what would be the market price of the common stock immediately after the stock split?

### Problem 8-24 Different forms of business organization

LO 1

Brian Walter was working to establish a business enterprise with four of his wealthy friends. Each of the five individuals would receive a 20 percent ownership interest in the company. A primary goal of establishing the enterprise was to minimize the amount of income taxes paid. Assume that the five investors are taxed at the rate of 15% on dividend income received from corporations and that the corporate tax rate is 30 percent. Also assume that the new company is expected to earn \$400,000 of cash income before taxes during its first year of operation. All earnings are expected to be immediately distributed to the owners.



#### Required

Calculate the amount of after-tax cash flow available to each investor if the business is established as a partnership versus a corporation. Write a memo explaining the advantages and disadvantages of these two forms of business organization. Explain why a limited liability company may be a better choice than either a partnership or a corporation.

### Problem 8-25 Effects of equity transactions on financial statements

LO 4-8

The following events were experienced by Baskin, Inc.

1. Issued common stock for cash.
2. Paid cash to purchase treasury stock.

3. Declared a cash dividend.
4. Issued cumulative preferred stock.
5. Issued noncumulative preferred stock.
6. Appropriated retained earnings.
7. Sold treasury stock for an amount of cash that was more than the cost of the treasury stock.
8. Distributed a stock dividend.
9. Declared a 2-for-1 stock split on the common stock.
10. Paid a cash dividend that was previously declared.

**Required**

Show the effect of each event on the elements of the financial statements using a horizontal statements model like the following one. Use + for increase, – for decrease, and NA for not affected. In the Cash Flow column, indicate whether the item is an operating activity (OA), investing activity (IA), or financing activity (FA). The first transaction is entered as an example.

Event No.	Assets	=	Liab.	+	Equity	Rev.	–	Exp.	=	Net Inc.	Cash Flow
1	+		NA		+	NA		NA		NA	+ FA

**LO 9****Problem 8-26** *Performing ratio analysis using real-world data*

**Google, Inc.**, operates the world's largest Internet search engine. **International Business Machines Corporation (IBM)** is one of the world's largest computer hardware and software companies. The following data were taken from the companies' December 31, 2007, annual reports.

	Google, Inc.	IBM
Net earnings (in thousands)	\$4,203.7	\$10,418.0
Earnings per share	\$5.31	\$7.32

The following data were taken from public stock-price quotes.

Stock price per share on March 3, 2007: (Two months after the end of their 2007 fiscal years.)	\$457.02	\$114.23
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**Required**

- a. Compute the price-earnings ratios for each company as of March 3, 2008.
- b. Which company's future performance did the financial markets appear to be more optimistic about as of March 3, 2008?
- c. Provide some reasons why the market may view one company's future more optimistically than the other's.

**ANALYZE, THINK, COMMUNICATE****ATC 8-1 Business Applications Case** *Understanding real-world annual reports***Required**

Use the **Topps Company's** annual report in Appendix B to answer the following questions.

- a. Does Topps' common stock have a par value, and if so how much is it?
- b. How many shares of Topps' common stock were *outstanding* as of February 25, 2006? Do not forget to consider treasury stock.

- The dollar-value balance in Topps' Treasury Stock account is larger than the balance in its Common Stock and Additional Paid-In-Capital accounts. How can this be?
- How many members of Topps' Board of Directors are also officers (employees) of the company as of February 25, 2006?
- What was the highest and lowest price per share that Topps' common stock sold for during the fiscal year ending on February 25, 2006?

### ATC 8-2 Group Assignment *Missing information*

Listed here are the stockholders' equity sections of three public companies for years ending in 2007 and 2006.



	2007	2006
<b>Wendy's</b> (dollar amounts are presented in thousands)		
Stockholders' Equity		
Common stock, ?? Stated Value per share, authorized:		
200,000,000; 130,241,000 in 2007 and 129,548,000 in 2006 shares issued, respectively	\$ 13,024	\$ 12,955
Capital in Excess of Stated Value	1,110,363	1,089,825
Retained Earnings	1,287,963	1,241,489
Acc. Other Comp. Income (Exp.)	9,959	(13,446)
Treasury Stock, at cost: (42,844,000 shares in 2007; 33,847,000 shares in 2006)	(1,617,178)	1,319,146
<b>Coca-Cola</b> (amounts are presented in millions)		
Stockholders' Equity		
Common Stock, ?? Par Value per share, authorized:		
5,600; issued: 3,519 shares in 2007 and 3,511 shares in 2006	\$ 880	\$ 878
Capital Surplus	7,378	5,983
Reinvested Earnings	36,235	33,468
Acc. Other Comp. Inc. (loss)	626	(1,291)
Treasury Stock, at cost: (1,201 shares in 2007; 1,193 shares in 2006)	(23,375)	(22,118)
<b>Harley-Davidson</b> (dollar amounts are presented in thousands)		
Stockholders' Equity		
Common stock, ?? Par Value per share, authorized:		
800,000,000, issued: 335,211,201 in 2007 and 334,328,193 shares in 2006	3,352	3,343
Additional Paid-in Capital	812,224	766,382
Retained Earnings	6,117,567	5,460,629
Acc. Other Comp. Inc. (loss)	(137,258)	(206,662)
Treasury Stock, at cost: 96,725,399 for 2007 and 76,275,837 for 2006	(4,420,394)	(3,266,955)

### Required

- Divide the class in three sections and divide each section into groups of three to five students. Assign each section one of the companies.

### Group Tasks

Based on the company assigned to your group, answer the following questions.

- What is the per share par or stated value of the common stock in 2006?
- What was the average issue price of the common stock for each year?
- How many shares of stock are outstanding at the end of each year?
- What is the average cost per share of the treasury stock for 2006?
- Do the data suggest that your company was profitable in 2006?
- Can you determine the amount of net income from the information given? What is missing?
- What is the total stockholders' equity of your company for each year?

**Class Discussion**

- i. Have each group select a representative to present the information about its company. Compare the share issue price and the par or stated value of the companies.
- j. Compare the average issue price to the current market price for each of the companies. Speculate about what might cause the difference.

**ATC 8-3 Real-World Case Which stock is most valuable?**

Listed here are data for five companies. These data are from companies' annual reports for the fiscal year indicated in the parentheses. The market price per share is the closing price of the companies' stock as of November 3, 2006. Except for market price per share, all amounts are in thousands. The shares outstanding number is the weighted-average number of shares the company used to compute its basic earnings per share.

Company (Fiscal Year)	Net Earnings	Shares Outstanding	Stockholders' Equity	Market-Price per Share
Brink's (12/31/2005)	\$ 142,400	58,700	\$ 837,500	\$52.50
Carmax (2/28/2006)	148,055	104,954	959,738	43.33
ExxonMobil (12/31/2005)	36,130,000	6,133,000	111,186,000	72.15
Garmin (12/31/2005)	311,219	216,134	1,157,264	46.57
Schering-Plough (12/31/2005)	269,000	1,480,000	7,387,000	22.28

**Required**

- a. Compute the earnings per share (EPS) for each company.
- b. Compute the P/E ratio for each company.
- c. Using the P/E ratios, rank the companies' stock in the order that the stock market appears to value the companies, from most valuable to least valuable. Identify reasons the ranking based on P/E ratios may not represent the market's optimism about one or two companies.
- d. Compute the book value per share for each company.
- e. Compare each company's book value per share to its market price per share. Based on the data, rank the companies from most valuable to least valuable. (The higher the ratio of market value to book value, the greater the value the stock market appears to be assigning to a company's stock.)

**ATC 8-4 Business Applications Case Finding stock market information**

Use one of the many financial information sites on the Internet, such as CNBC, CNNMoney, Google Finance, or Yahoo Finance, to complete the requirements below. Some of the sites require you to enter a company's stock trading symbol in order to retrieve information. These sites will provide a function to find a company's stock symbol based on its name.

**Required**

For each company listed here, provide the requested information based on the most recent data available.

Company Name	Closing Price of Stock	P/E Ratio	Dividend per Share	Dividend Yield
Berkshire Hathaway A				
ExxonMobil				
Johnson & Johnson				
Kroger				
Walgreen				

### ATC 8-5 Business Applications Case *Using the P/E ratio*

During 2010, Jason Corporation and Fitzgerald Corporation reported net incomes of \$7,000 and \$9,600, respectively. Each company had 2,000 shares of common stock issued and outstanding. The market price per share of Jason's stock was \$50, while Fitzgerald's stock sold for \$85 per share.

#### Required

- Determine the P/E ratio for each company.
- Based on the P/E ratios computed in Requirement *a*, which company do investors believe has more potential for growth in income?

### ATC 8-6 Writing Assignment *Comparison of organizational forms*

Jim Baku and Scott Hanson are thinking about opening a new restaurant. Baku has extensive marketing experience but does not know that much about food preparation. However, Hanson is an excellent chef. Both will work in the business, but Baku will provide most of the funds necessary to start the business. At this time, they cannot decide whether to operate the business as a partnership or a corporation.



#### Required

Prepare a written memo to Baku and Hanson describing the advantages and disadvantages of each organizational form. Also, from the limited information provided, recommend the organizational form you think they should use.

### ATC 8-7 Ethical Dilemma *Bad news versus very bad news*

Louise Stinson, the chief financial officer of Bostonian Corporation, was on her way to the president's office. She was carrying the latest round of bad news. There would be no executive bonuses this year. Corporate profits were down. Indeed, if the latest projections held true, the company would report a small loss on the year-end income statement. Executive bonuses were tied to corporate profits. The executive compensation plan provided for 10 percent of net earnings to be set aside for bonuses. No profits meant no bonuses. While things looked bleak, Stinson had a plan that might help soften the blow.



After informing the company president of the earnings forecast, Stinson made the following suggestion: Since the company was going to report a loss anyway, why not report a big loss? She reasoned that the directors and stockholders would not be much more angry if the company reported a large loss than if it reported a small one. There were several questionable assets that could be written down in the current year. This would increase the current year's loss but would reduce expenses in subsequent accounting periods. For example, the company was carrying damaged inventory that was estimated to have a value of \$2,500,000. If this estimate were revised to \$500,000, the company would have to recognize a \$2,000,000 loss in the current year. However, next year when the goods were sold, the expense for cost of goods sold would be \$2,000,000 less and profits would be higher by that amount. Although the directors would be angry this year, they would certainly be happy next year. The strategy would also have the benefit of adding \$200,000 to next year's executive bonus pool ( $\$2,000,000 \times 0.10$ ). Furthermore, it could not hurt this year's bonus pool because there would be no pool this year since the company is going to report a loss.

Some of the other items that Stinson is considering include (1) converting from straight-line to accelerated depreciation, (2) increasing the percentage of receivables estimated to be uncollectible in the current year and lowering the percentage in the following year, and (3) raising the percentage of estimated warranty claims in the current period and lowering it in the following period. Finally, Stinson notes that two of the company's department stores have been experiencing losses. The company could sell these stores this year and thereby improve earnings next year. Stinson admits that the sale would result in significant losses this year, but she smiles as she thinks of next year's bonus check.

#### Required

- Explain how each of the three numbered strategies for increasing the amount of the current year's loss would affect the stockholders' equity section of the balance sheet in the current year. How would the other elements of the balance sheet be affected?



- b. If Stinson's strategy were effectively implemented, how would it affect the stockholders' equity in subsequent accounting periods?
- c. Comment on the ethical implications of running the company for the sake of management (maximization of bonuses) versus the maximization of return to stockholders.
- d. Formulate a bonus plan that will motivate managers to maximize the value of the firm instead of motivating them to manipulate the reporting process.
- e. How would Stinson's strategy of overstating the amount of the reported loss in the current year affect the company's current P/E ratio?

#### ATC 8-8 Research Assignment *Analyzing PepsiCo's equity structure*



Using either **PepsiCo**'s most current Form 10-K or the company's annual report, answer the questions below. To obtain the Form 10-K use either the EDGAR system following the instructions in Appendix A or the company's website. The company's annual report is available on its website.

##### Required

- a. What is the *book value* of PepsiCo's stockholders' equity that is shown on the company's balance sheet?
- b. What is the par value of PepsiCo's common stock?
- c. Does PepsiCo have any treasury stock? If so, how many shares of treasury stock does the company hold?
- d. Why does the stock of a company such as a PepsiCo have a market value that is higher than its book value?



# CHAPTER 9

## Financial Statement Analysis

### LEARNING OBJECTIVES

**After you have mastered the material in this chapter you will be able to:**

- 1** Describe factors associated with communicating useful information.
- 2** Differentiate between horizontal and vertical analysis.
- 3** Explain ratio analysis.
- 4** Calculate ratios for assessing a company's liquidity.
- 5** Calculate ratios for assessing a company's solvency.
- 6** Calculate ratios for assessing company management's effectiveness.
- 7** Calculate ratios for assessing a company's position in the stock market.
- 8** Explain the limitations of financial statement analysis.

### CHAPTER OPENING

Expressing financial statement information in the form of ratios enhances its usefulness. Ratios permit comparisons over time and among companies, highlighting similarities, differences, and trends. Proficiency with common financial statement analysis techniques benefits both internal and external users. Before beginning detailed explanations of numerous ratios and percentages, however, we consider factors relevant to communicating useful information.

## The *Curious* Accountant

On May 14, 2007, **DaimlerChrysler** (DC) and **Cerberus** announced that Cerberus, a private-equity firm, was buying 80 percent of the Chrysler Group from DaimlerChrysler. The sale closed on August 3, 2007. Some analysts claimed the “sale” actually involved DaimlerChrysler paying Cerberus to take Chrysler off its hands. After the sale DaimlerChrysler planned to rename itself Daimler AG and focus its efforts on its production of commercial trucks and its Mercedes brand of cars.

Three other groups in addition to Cerberus also made offers to buy Chrysler, but in the end Cerberus was the winner. The question some might ask is why would anyone have wanted to buy Chrysler? It had lost money in several years prior to the sale, including a \$1.6 billion loss in 2006. Additionally, like **Ford** and **GM**, it is at a costing disadvantage to its main competitors from Japan. Some analysts estimate that when all benefits are included, American car manufacturers pay an average of \$30 per hour more to their workers than do **Toyota** and **Honda**. Also, as part of the deal Cerberus agreed to assume \$18 billion of liabilities related to Chrysler’s pension and health-care commitments.

Why would Cerberus be so anxious to buy Chrysler? What types of analysis would the company use to make this decision? (Answers on page 327.)



**LO 1**

Describe factors associated with communicating useful information.

## FACTORS IN COMMUNICATING USEFUL INFORMATION

The primary objective of accounting is to provide information useful for decision making. To provide information that supports this objective, accountants must consider the intended users, the types of decisions users make with financial statement information, and available means of analyzing the information.

### The Users

Users of financial statement information include managers, creditors, stockholders, potential investors, and regulatory agencies. These individuals and organizations use financial statements for different purposes and bring varying levels of sophistication to understanding business activities. For example, investors range from private individuals who know little about financial statements to large investment brokers and institutional investors capable of using complex statistical analysis techniques. At what level of user knowledge should financial statements be aimed? Condensing and reporting complex business transactions at a level easily understood by nonprofessional investors is increasingly difficult. Current reporting standards target users that have a reasonably informed knowledge of business, though that level of sophistication is difficult to define.

### The Types of Decisions

Just as the knowledge level of potential users varies, the information needs of users varies, depending on the decision at hand. A supplier considering whether or not to sell goods on account to a particular company wants to evaluate the likelihood of getting paid; a potential investor in that company wants to predict the likelihood of increases in the market value of the company's common stock. Financial statements, however, are designed for general purposes; they are not aimed at any specific user group. Some disclosed information, therefore, may be irrelevant to some users but vital to others. Users must employ different forms of analysis to identify information most relevant to a particular decision.

Financial statements can provide only highly summarized economic information. The costs to a company of providing excessively detailed information would be prohibitive. In addition, too much detail leads to **information overload**, the problem of having so much data that important information becomes obscured by trivial information. Users faced with reams of data may become so frustrated attempting to use it that they lose the value of *key* information that is provided.

### Information Analysis

Because of the diversity of users, their different levels of knowledge, the varying information needs for particular decisions, and the general nature of financial statements, a variety of analysis techniques has been developed. In the following sections, we explain several common methods of analysis. The choice of method depends on which technique appears to provide the most relevant information in a given situation.

## METHODS OF ANALYSIS

**LO 2**

Differentiate between horizontal and vertical analysis.

Financial statement analysis should focus primarily on isolating information useful for making a particular decision. The information required can take many forms but usually involves comparisons, such as comparing changes in the same item for the same company over a number of years, comparing key relationships within the same year, or comparing the operations of several different companies in the same industry. This chapter discusses three categories of analysis methods: horizontal, vertical, and ratio. Exhibits 9.1 and 9.2 present comparative financial statements for Milavec Company. We refer to these statements in the examples of analysis techniques.

### EXHIBIT 9.1

#### MILAVEC COMPANY Income Statements and Statements of Retained Earnings For the Years Ending December 31

	2010	2009
Sales	\$900,000	\$800,000
Cost of goods sold		
Beginning inventory	43,000	40,000
Purchases	637,000	483,000
Goods available for sale	680,000	523,000
Ending inventory	70,000	43,000
Cost of goods sold	610,000	480,000
Gross margin	290,000	320,000
Operating expenses	248,000	280,000
Income before taxes	42,000	40,000
Income taxes	17,000	18,000
Net income	25,000	22,000
Plus: Retained earnings, beginning balance	137,000	130,000
Less: Dividends	0	15,000
Retained earnings, ending balance	\$162,000	\$137,000

### EXHIBIT 9.2

#### MILAVEC COMPANY Balance Sheets As of December 31

	2010	2009
<b>Assets</b>		
Cash	\$ 20,000	\$ 17,000
Marketable securities	20,000	22,000
Notes receivable	4,000	3,000
Accounts receivable	50,000	56,000
Merchandise inventory	70,000	43,000
Prepaid items	4,000	4,000
Property, plant, and equipment (net)	340,000	310,000
Total assets	\$508,000	\$455,000
<b>Liabilities and Stockholders' Equity</b>		
Accounts payable	\$ 40,000	\$ 38,000
Salaries payable	2,000	3,000
Taxes payable	4,000	2,000
Bonds payable, 8%	100,000	100,000
Preferred stock, 6%, \$100 par, cumulative	50,000	50,000
Common stock, \$10 par	150,000	125,000
Retained earnings	162,000	137,000
Total liabilities and stockholders' equity	\$508,000	\$455,000

## Horizontal Analysis

**Horizontal analysis**, also called **trend analysis**, refers to studying the behavior of individual financial statement items over several accounting periods. These periods may be several quarters within the same fiscal year or they may be several different years. The analysis of a given item may focus on trends in the absolute dollar amount of the item or trends in percentages. For example, a user may observe that revenue increased from one period to the next by \$42 million (an absolute dollar amount) or that it increased by a percentage such as 15 percent.

### Absolute Amounts

The **absolute amounts** of particular financial statement items have many uses. Various national economic statistics, such as gross domestic product and the amount spent to replace productive capacity, are derived by combining absolute amounts reported by businesses. Financial statement users with expertise in particular industries might evaluate amounts reported for research and development costs to judge whether a company is spending excessively or conservatively. Users are particularly concerned with how amounts change over time. For example, a user might compare a pharmaceutical company's revenue before and after the patent expired on one of its drugs.

Comparing only absolute amounts has drawbacks, however, because *materiality* levels differ from company to company or even from year to year for a given company. The **materiality** of information refers to its relative importance. An item is considered material if knowledge of it would influence the decision of a reasonably informed user. Generally accepted accounting principles permit companies to account for *immaterial* items in the most convenient way, regardless of technical accounting rules. For example, companies may expense, rather than capitalize and depreciate, relatively inexpensive long-term assets like pencil sharpeners or waste baskets even if the assets have



useful lives of many years. The concept of materiality, which has both quantitative and qualitative aspects, underlies all accounting principles.

It is difficult to judge the materiality of an absolute financial statement amount without considering the size of the company reporting it. For reporting purposes, **Exxon Corporation's** financial statements are rounded to the nearest million dollars. For Exxon, a \$400,000 increase in sales is not material. For a small company, however, \$400,000 could represent total sales, a highly material amount. Meaningful comparisons between the two companies' operating performance are impossible using only absolute amounts. Users can surmount these difficulties with percentage analysis.

### EXHIBIT 9.3

#### MILAVEC COMPANY Comparative Income Statements For the Years Ending December 31

	2010	2009	Percentage Difference
Sales	\$900,000	\$800,000	+12.5%*
Cost of goods sold	610,000	480,000	+27.1
Gross margin	290,000	320,000	−9.4
Operating expenses	248,000	280,000	−11.4
Income before taxes	42,000	40,000	+5.0
Income taxes	17,000	18,000	−5.6
Net income	<u>\$ 25,000</u>	<u>\$ 22,000</u>	+13.6

\* $(\$900,000 - \$800,000) \div \$800,000$ ; all changes expressed as percentages of previous totals.

### Percentage Analysis

**Percentage analysis** involves computing the percentage relationship between two amounts. In horizontal percentage analysis, a financial statement item is expressed as a percentage of the previous balance for the same item. Percentage analysis sidesteps the materiality problems of comparing different size companies by measuring changes in percentages rather than absolute amounts. Each change is converted to a percentage of the base year. Exhibit 9.3 presents a condensed version of Milavec's income statement with horizontal percentages for each item.

The percentage changes disclose that, even though Milavec's net income increased slightly more than sales, products may be underpriced. Cost of goods sold increased much more than sales, resulting in a lower gross margin. Users would also want to investigate why operating expenses decreased substantially despite the increase in sales.

Whether basing their analyses on absolute amounts, percentages, or ratios, users must avoid drawing overly simplistic conclusions about the reasons for the results. Numerical relationships flag conditions requiring further study. A change that appears favorable on the surface may not necessarily be a good sign. Users must evaluate the underlying reasons for the change.

### CHECK Yourself 9.1

The following information was drawn from the annual reports of two retail companies (amounts are shown in millions). One company is an upscale department store; the other is a discount store. Based on this limited information, identify which company is the upscale department store.

	Jenkins Co.	Horn's Inc.
Sales	\$325	\$680
Cost of goods sold	<u>130</u>	<u>408</u>
Gross margin	<u>\$195</u>	<u>\$272</u>

**Answer** Jenkins' gross margin represents 60 percent ( $\$195 \div \$325$ ) of sales. Horn's gross margin represents 40 percent ( $\$272 \div \$680$ ) of sales. Since an upscale department store would have higher margins than a discount store, the data suggest that Jenkins is the upscale department store.

## Answers to The *Curious* Accountant

Obviously, **Cerberus** agreed to purchase **Chrysler** believing it could make a profit on its investment. In its public comments it did not explain

exactly how it planned to make the company profitable when DaimlerChrysler could not. Being a private-equity company it is not obligated to make public disclosures about how well its businesses are doing or what its plans are, unlike companies whose stock is publicly traded. Many analysts believe that getting the workers to grant concessions on wages and/or benefits is essential if Cerberus is to have success with Chrysler.

Cerberus does have other opportunities to cut costs. Before buying Chrysler Cerberus had purchased the **General Motors Acceptance Corporation** (GMAC), which finances automobiles and home mortgages. Chrysler Financial is the arm of Chrysler that also finances auto purchases, so there is the potential to merge some of its operations with GMAC, though Cerberus did not disclose any plans of doing this. Cerberus also owns some automotive parts supply companies, so the opportunity for vertical integration exists.

Cerberus' optimism about its purchase of Chrysler does not guarantee that the investment will be successful. Remember that Daimler was optimistic when it purchased Chrysler through a merger in 1998 for \$36 billion. Less than 10 years later it was sold to Cerberus for what has to be considered a substantial loss. However the deal turns out, we can be sure that Cerberus' team of analysts, lawyers, accountants, and investment bankers put thousands of hours into analyzing every aspect of the deal. But then, so did Daimler's in 1998.

The point here is that financial analysis techniques can help managers make decisions, but these tools cannot guarantee success. Before tools such as ratios and trend analysis can be used, the decision maker must understand the business being evaluated and he or she must make assumptions about future events. Only the future will tell us whether Cerberus made a wise investment in Chrysler, but we can be sure that a lot of ratio analysis and capital budgeting computations were made before the deal was done.

Sources: DaimlerChrysler's filings with the SEC; "Chrysler Deal Heralds New Direction for Detroit," *The Wall Street Journal*, May 15, 2007, pp. A-1 and A-14; and "After Pact to Shed Chrysler, Daimler Turns Focus to Other Challenges," *The Wall Street Journal*, May 15, 2007, p. A-14.

When comparing more than two periods, analysts use either of two basic approaches: (1) choosing one base year from which to calculate all increases or decreases or (2) calculating each period's percentage change from the preceding figure. For example, assume Milavec's sales for 2007 and 2008 were \$600,000 and \$750,000, respectively.

	2010	2009	2008	2007
Sales	\$900,000	\$800,000	\$750,000	\$600,000
Increase over 2007 sales	50.0%	33.3%	25.0%	—
Increase over preceding year	12.5%	6.7%	25.0%	—

Analysis discloses that Milavec's 2010 sales represented a 50 percent increase over 2007 sales, and a large increase (25 percent) occurred in 2008. From 2008 to 2009, sales increased only 6.7 percent but in the following year increased much more (12.5 percent).

## Vertical Analysis

**Vertical analysis** uses percentages to compare individual components of financial statements to a key statement figure. Horizontal analysis compares items over many time periods; vertical analysis compares many items within the same time period.

### Vertical Analysis of the Income Statement

Vertical analysis of an income statement (also called a *common size* income statement) involves converting each income statement component to a percentage of sales. Although vertical analysis suggests examining only one period, it is useful to compare common size income statements for several years. Exhibit 9.4 presents Milavec's income statements, along with vertical percentages, for 2010 and 2009. This analysis discloses that cost of goods sold increased significantly as a percentage of sales. Operating expenses and income taxes, however, decreased in relation to sales. Each of these observations indicates a need for more analysis regarding possible trends for future profits.

#### EXHIBIT 9.4

MILAVEC COMPANY				
Vertical Analysis of Comparative Income Statements				
	2010		2009	
	Amount	Percentage* of Sales	Amount	Percentage* of Sales
Sales	\$900,000	100.0%	\$800,000	100.0%
Cost of goods sold	610,000	67.8	480,000	60.0
Gross margin	290,000	32.2	320,000	40.0
Operating expenses	248,000	27.6	280,000	35.0
Income before taxes	42,000	4.7	40,000	5.0
Income taxes	17,000	1.9	18,000	2.3
Net income	\$ 25,000	2.8%	\$ 22,000	2.8%

\*Percentages may not add exactly due to rounding.

### Vertical Analysis of the Balance Sheet

Vertical analysis of the balance sheet involves converting each balance sheet component to a percentage of total assets. The vertical analysis of Milavec's balance sheets in Exhibit 9.5 discloses few large percentage changes from the preceding year. Even small individual percentage changes, however, may represent substantial dollar increases. For example, inventory constituted 9.5% of total assets in 2009 and 13.5% in 2010. While this appears to be a small increase, it actually represents a 62.8% increase in the inventory account balance  $(\$70,000 - \$43,000) \div \$43,000$  from 2009 to 2010. Careful analysis requires considering changes in both percentages *and* absolute amounts.

## Ratio Analysis

**Ratio analysis** involves studying various relationships between different items reported in a set of financial statements. For example, net earnings (net income) reported on the income statement may be compared to total assets reported on the balance sheet. Analysts calculate many different ratios for a wide variety of purposes. The remainder of this chapter is devoted to discussing some of the more commonly used ratios.

### LO 3

Explain ratio analysis.

## EXHIBIT 9.5

MILAVEC COMPANY				
Vertical Analysis of Comparative Balance Sheets				
	2010	Percentage* of Total	2009	Percentage* of Total
<b>Assets</b>				
Cash	\$ 20,000	3.9%	\$ 17,000	3.7%
Marketable securities	20,000	3.9	22,000	4.8
Notes receivable	4,000	0.8	3,000	0.7
Accounts receivable	50,000	9.8	56,000	12.3
Merchandise inventory	70,000	13.8	43,000	9.5
Prepaid items	4,000	0.8	4,000	0.9
Total current assets	168,000	33.1	145,000	31.9
Property, plant, and equipment	340,000	66.9	310,000	68.1
Total assets	\$508,000	100.0%	\$455,000	100.0%
<b>Liabilities and Stockholders' Equity</b>				
Accounts payable	\$ 40,000	7.9%	\$ 38,000	8.4%
Salaries payable	2,000	0.4	3,000	0.7
Taxes payable	4,000	0.8	2,000	0.4
Total current liabilities	46,000	9.1	43,000	9.5
Bonds payable, 8%	100,000	19.7	100,000	22.0
Total liabilities	146,000	28.7	143,000	31.4
Preferred stock 6%, \$100 par	50,000	9.8	50,000	11.0
Common stock, \$10 par	150,000	29.5	125,000	27.5
Retained earnings	162,000	31.9	137,000	30.1
Total stockholders' equity	362,000	71.3	312,000	68.6
Total liabilities and stockholders' equity	\$508,000	100.0%	\$455,000	100.0%

\*Percentages may not add exactly due to rounding.

### Objectives of Ratio Analysis

As suggested earlier, various users approach financial statement analysis with many different objectives. Creditors are interested in whether a company will be able to pay its debts on time. Both creditors and stockholders are concerned with how the company is financed, whether through debt, equity, or earnings. Stockholders and potential investors analyze past earnings performance and dividend policy for clues to the future value of their investments. In addition to using internally generated data to analyze operations, company managers find much information prepared for external purposes useful for examining past operations and planning future policies. Although many of these objectives are interrelated, it is convenient to group ratios into categories such as measures of debt-paying ability and measures of profitability.

## MEASURES OF DEBT-PAYING ABILITY

### Liquidity Ratios

**Liquidity ratios** indicate a company's ability to pay short-term debts. They focus on current assets and current liabilities. The examples in the following section use the financial statement information reported by Milavec Company.

#### Working Capital

**Working capital** is current assets minus current liabilities. Current assets include assets most likely to be converted into cash or consumed in the current operating period.

LO 4

Calculate ratios for assessing a company's liquidity.

Current liabilities represent debts that must be satisfied in the current period. Working capital therefore measures the excess funds the company will have available for operations, excluding any new funds it generates during the year. Think of working capital as the cushion against short-term debt-paying problems. Working capital at the end of 2010 and 2009 for Milavec Company was as follows.

	2010	2009
Current assets	\$168,000	\$145,000
– Current liabilities	<u>46,000</u>	<u>43,000</u>
Working capital	<u>\$122,000</u>	<u>\$102,000</u>

Milavec's working capital increased from 2009 to 2010, but the numbers themselves say little. Whether \$122,000 is sufficient or not depends on such factors as the industry in which Milavec operates, its size, and the maturity dates of its current obligations. We can see, however, that the increase in working capital is primarily due to the increase in inventories.

### Current Ratio

Working capital is an absolute amount. Its usefulness is limited by the materiality difficulties discussed earlier. It is hard to draw meaningful conclusions from comparing Milavec's working capital of \$122,000 with another company that also has working capital of \$122,000. By expressing the relationship between current assets and current liabilities as a ratio, however, we have a more useful measure of the company's debt-paying ability relative to other companies. The **current ratio**, also called the **working capital ratio**, is calculated as follows.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

To illustrate using the current ratio for comparisons, consider Milavec's current position relative to Laroque's, a larger firm with current assets of \$500,000 and current liabilities of \$378,000.

	Milavec	Laroque
Current assets (a)	\$168,000	\$500,000
– Current liabilities (b)	<u>46,000</u>	<u>378,000</u>
Working capital	<u>\$122,000</u>	<u>\$122,000</u>
Current ratio (a ÷ b)	3.65:1	1.32:1

The current ratio is expressed as the number of dollars of current assets for each dollar of current liabilities. In the above example, both companies have the same amount of working capital. Milavec, however, appears to have a much stronger working capital position. Any conclusions from this analysis must take into account the circumstances of the particular companies; there is no single ideal current ratio that suits all companies. In recent years the average current ratio of the 30 companies that constitute the Dow Jones Industrial Average was around 1.21:1; the individual company ratios, however, ranged from .05:1 to 3.0:1. A current ratio can be too high. Money invested in factories and developing new products is usually more profitable than money held as large cash balances or invested in inventory.

### Quick Ratio

The **quick ratio**, also known as the **acid-test ratio**, is a conservative variation of the current ratio. The quick ratio measures a company's *immediate* debt-paying ability.

Only cash, receivables, and current marketable securities (*quick assets*) are included in the numerator. Less liquid current assets, such as inventories and prepaid items, are omitted. Inventories may take several months to sell; prepaid items reduce otherwise necessary expenditures but do not lead eventually to cash receipts. The quick ratio is computed as follows.

$$\text{Quick ratio} = \frac{\text{Quick assets}}{\text{Current liabilities}}$$

Milavec Company's current ratios and quick ratios for 2010 and 2009 follow.

	2010	2009
Current ratio	\$168,000 ÷ \$46,000 3.65:1	\$145,000 ÷ \$43,000 3.37:1
Quick ratio	\$94,000 ÷ \$46,000 2.04:1	\$98,000 ÷ \$43,000 2.28:1

The decrease in the quick ratio from 2009 to 2010 reflects both a decrease in quick assets and an increase in current liabilities. The result indicates that the company is less liquid (has less ability to pay its short-term debt) in 2010 than it was in 2009.

### Accounts Receivable Ratios

Offering customers credit plays an enormous role in generating revenue, but it also increases expenses and delays cash receipts. To minimize uncollectible accounts expense and collect cash for use in current operations, companies want to collect receivables as quickly as possible without losing customers. Two relationships are often examined to assess a company's collection record: *accounts receivable turnover* and *average number of days to collect receivables (average collection period)*.

**Accounts receivable turnover** is calculated as follows.

$$\text{Accounts receivable turnover} = \frac{\text{Net credit sales}}{\text{Average accounts receivable}}$$

*Net credit sales* refers to total sales on account less sales discounts, allowances, and returns. When most sales are credit sales or when a breakdown of total sales between cash sales and credit sales is not available, the analyst must use total sales in the numerator. The denominator is based on *net accounts receivable* (receivables after subtracting the allowance for doubtful accounts). Since the numerator represents a whole period, it is preferable to use average receivables in the denominator if possible. When comparative statements are available, the average can be based on the beginning and ending balances. Milavec Company's accounts receivable turnover is computed as follows.

	2010	2009
Net sales (assume all on account) (a)	\$900,000	\$800,000
Beginning receivables (b)	\$ 56,000	\$ 55,000*
Ending receivables (c)	50,000	56,000
Average receivables (d) = (a + c) ÷ 2	\$ 53,000	\$ 55,500
Accounts receivable turnover (a ÷ d)	16.98	14.41

\*The beginning receivables balance was drawn from the 2008 financial statements, which are not included in the illustration.

The 2010 accounts receivable turnover of 16.98 indicates Milavec collected its average receivables almost 17 times that year. The higher the turnover, the faster the



collections. A company can have cash flow problems and lose substantial purchasing power if resources are tied up in receivables for long periods.

**Average number of days to collect receivables** is calculated as follows.

$$\text{Average number of days to collect receivables} = \frac{365 \text{ days}}{\text{Accounts receivable turnover}}$$

This ratio offers another way to look at turnover by showing the number of days, on average, it takes to collect a receivable. If receivables were collected 16.98 times in 2010, the average collection period was 21 days,  $365 \div 16.98$  (the number of days in the year divided by accounts receivable turnover). For 2009, it took an average of 25 days ( $365 \div 14.41$ ) to collect a receivable.

Although the collection period improved, no other conclusions can be reached without considering the industry, Milavec's past performance, and the general economic environment. In recent years the average time to collect accounts receivable for the 25 nonfinancial companies that make up the Dow Jones Industrial Average was around 49 days. (Financial firms are excluded because, by the nature of their business, they have very long collection periods.)

### Inventory Ratios

A fine line exists between having too much and too little inventory in stock. Too little inventory can result in lost sales and costly production delays. Too much inventory can use needed space, increase financing and insurance costs, and become obsolete. To help analyze how efficiently a company manages inventory, we use two ratios similar to those used in analyzing accounts receivable.

**Inventory turnover** indicates the number of times, on average, that inventory is totally replaced during the year. The relationship is computed as follows.

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

The average inventory is usually based on the beginning and ending balances that are shown in the financial statements. Inventory turnover for Milavec was as follows.

	2010	2009
Cost of goods sold (a)	\$610,000	\$480,000
Beginning inventory (b)	\$ 43,000	\$ 40,000*
Ending inventory (c)	70,000	43,000
Average inventory (d) = (b + c) ÷ 2	\$ 56,500	\$ 41,500
Inventory turnover (a ÷ d)	10.80	11.57

\*The beginning inventory balance was drawn from the company's 2008 financial statements, which are not included in the illustration.

Generally, a higher turnover indicates that merchandise is being handled more efficiently. Trying to compare firms in different industries, however, can be misleading. Inventory turnover for grocery stores and many retail outlets is high. Because of the nature of the goods being sold, inventory turnover is much lower for appliance and jewelry stores. We look at this issue in more detail when we discuss return on investment.

**Average number of days to sell inventory** is determined by dividing the number of days in the year by the inventory turnover as follows.

$$\text{Average number of days to sell inventory} = \frac{365 \text{ days}}{\text{Inventory turnover}}$$

The result approximates the number of days the firm could sell inventory without purchasing more. For Milavec, this figure was 34 days in 2010 ( $365 \div 10.80$ ) and 32 days in 2009 ( $365 \div 11.57$ ). In recent years it took around 72 days, on average, for the companies in the Dow Jones Industrial Average that have inventory to sell their inventory.

The time it took individual companies to sell their inventory varied by industry, ranging from 10 days to 292 days.

## Solvency Ratios

**Solvency ratios** are used to analyze a company's long-term debt-paying ability and its financing structure. Creditors are concerned with a company's ability to satisfy outstanding obligations. The larger a company's liability percentage, the greater the risk that the company could fall behind or default on debt payments. Stockholders, too, are concerned about a company's solvency. If a company is unable to pay its debts, the owners could lose their investment. Each user group desires that company financing choices minimize its investment risk, whether their investment is in debt or stockholders' equity.

**LO 5**

Calculate ratios for assessing a company's solvency.

### Debt Ratios

The following ratios represent two different ways to express the same relationship. Both are frequently used.

**Debt to assets ratio.** This ratio measures the percentage of a company's assets that are financed by debt.

**Debt to equity ratio.** As used in this ratio, *equity* means stockholders' equity. The debt to equity ratio compares creditor financing to owner financing. It is expressed as the dollar amount of liabilities for each dollar of stockholders' equity.

These ratios are calculated as follows.

$$\text{Debt to assets} = \frac{\text{Total liabilities}}{\text{Total assets}}$$

$$\text{Debt to equity} = \frac{\text{Total liabilities}}{\text{Total stockholders' equity}}$$

Applying these formulas to Milavec Company's results produces the following.

	2010	2009
Total liabilities (a)	\$146,000	\$143,000
Total stockholders' equity (b)	362,000	312,000
Total assets (liabilities + stockholders' equity) (c)	\$508,000	\$455,000
Debt to assets (a ÷ c)	29%	31%
Debt to equity ratio (a ÷ b)	0.40:1	0.46:1

Each year less than one-third of the company's assets were financed with debt. The amount of liabilities per dollar of stockholders' equity declined by 0.06. It is difficult to judge whether the reduced percentage of liabilities is favorable. In general, a lower level of liabilities provides greater security because the likelihood of bankruptcy is reduced. Perhaps, however, the company is financially strong enough to incur more liabilities and benefit from financial leverage. The 25 nonfinancial companies that make up the Dow Jones Industrial Average report around 33 percent of their assets, on average, are financed through borrowing.

### Number of Times Interest Is Earned

The **times interest earned** ratio measures the burden a company's interest payments represent. Users often consider times interest is earned along with the debt ratios when evaluating financial risk. The numerator of this ratio uses *earnings before interest and taxes (EBIT)*, rather than net earnings, because the amount of earnings *before* interest and income taxes is available for paying interest.

$$\text{Times interest earned} = \frac{\text{Earnings before interest expense and taxes}}{\text{Interest expense}}$$

Dividing EBIT by interest expense indicates how many times the company could have made its interest payments. Obviously, interest is paid only once, but the more times it *could* be paid, the bigger the company's safety net. Although interest is paid from cash, not accrual earnings, it is standard practice to base this ratio on accrual-based EBIT, not a cash-based amount. For Milavec, this calculation is as follows.

	2010	2009
Income before taxes	\$42,000	\$40,000
Interest expense (b)	<u>8,000</u>	<u>8,000*</u>
Earnings before interest and taxes (a)	<u>\$50,000</u>	<u>\$48,000</u>
Times interest earned (a ÷ b)	6.25 times	6 times

\*Interest on bonds:  $\$100,000 \times .08 = \$8,000$ .

Any expense or dividend payment can be analyzed this way. Another frequently used calculation is the number of times the preferred dividend is earned. In that case, the numerator is net income (after taxes) and the denominator is the amount of the annual preferred dividend.

## CHECK Yourself 9.2

Selected data for Riverside Corporation and Academy Company follow (amounts are shown in millions).

	Riverside Corporation	Academy Company
Total liabilities (a)	\$650	\$450
Stockholders' equity (b)	<u>300</u>	<u>400</u>
Total liabilities + stockholders' equity (c)	<u>\$950</u>	<u>\$850</u>
Interest expense (d)	\$ 65	\$ 45
Income before taxes (e)	<u>140</u>	<u>130</u>
Earnings before interest and taxes (f)	<u>\$205</u>	<u>\$175</u>

Based on this information alone, which company would likely obtain the less favorable interest rate on additional debt financing?

**Answer** Interest rates vary with risk levels. Companies with less solvency (long-term debt-paying ability) generally must pay higher interest rates to obtain financing. Two solvency measures for the two companies follow. Recall:

$$\text{Total assets} = \text{Liabilities} + \text{Stockholders' equity}$$

	Riverside Corporation	Academy Company
Debt to assets ratio (a ÷ c)	68.4%	52.9%
Times interest earned (f ÷ d)	3.15 times	3.89 times

Since Riverside has a higher percentage of debt and a lower times interest earned ratio, the data suggest that Riverside is less solvent than Academy. Riverside would therefore likely have to pay a higher interest rate to obtain additional financing.

### Plant Assets to Long-Term Liabilities

Companies often pledge plant assets as collateral for long-term liabilities. Financial statement users may analyze a firm's ability to obtain long-term financing on the strength of its asset base. Effective financial management principles dictate that asset purchases should be financed over a time span about equal to the expected lives of the assets. Short-term assets should be financed with short-term liabilities; the current ratio, introduced earlier, indicates how well a company manages current debt. Long-lived assets should be financed with long-term liabilities, and the **plant assets to long-term liabilities** ratio suggests how well long-term debt is managed. It is calculated as follows.

$$\text{Plant assets to long-term liabilities} = \frac{\text{Net plant assets}}{\text{Long-term liabilities}}$$

For Milavec Company, these ratios follow.

	2010	2009
Net plant assets (a)	\$340,000	\$310,000
Bonds payable (b)	100,000	100,000
Plant assets to long-term liabilities (a ÷ b)	3.4:1	3.1:1

## MEASURES OF PROFITABILITY

*Profitability* refers to a company's ability to generate earnings. Both management and external users desire information about a company's success in generating profits and how these profits are used to reward investors. Some of the many ratios available to measure different aspects of profitability are discussed in the following two sections.

### Measures of Managerial Effectiveness

The most common ratios used to evaluate managerial effectiveness measure what percentage of sales results in earnings and how productive assets are in generating those sales. As mentioned earlier, the *absolute amount* of sales or earnings means little without also considering company size.

#### Net Margin (or Return on Sales)

*Gross margin* and *gross profit* are alternate terms for the amount remaining after subtracting the expense cost of goods sold from sales. **Net margin**, sometimes called *operating margin*, *profit margin*, or the *return on sales ratio*, describes the percent remaining of each sales dollar after subtracting other expenses as well as cost of goods sold. Net margin can be calculated in several ways; some of the more common methods only subtract normal operating expenses or all expenses other than income tax expense. For simplicity, our calculation uses net income (we subtract all expenses). Net income divided by net sales expresses net income (earnings) as a percentage of sales, as follows.

$$\text{Net margin} = \frac{\text{Net income}}{\text{Net sales}}$$

For Milavec Company, the net margins for 2010 and 2009 were as follows.

	2010	2009
Net income (a)	\$ 25,000	\$ 22,000
Net sales (b)	900,000	800,000
Net margin (a ÷ b)	2.78%	2.75%

#### LO 6

Calculate ratios for assessing company management's effectiveness.

Milavec has maintained approximately the same net margin. Obviously, the larger the percentage, the better; a meaningful interpretation, however, requires analyzing the company's history and comparing the net margin to other companies in the same industry. The average net margin for the 30 companies that make up the Dow Jones Industrial Average has been around 12 percent in recent years; some companies, such as **Pfizer** with 40 percent, have been much higher than the average. Of course, if a company has a net loss, its net margin for that year will be negative.

### Asset Turnover Ratio

The **asset turnover ratio** (sometimes called *turnover of assets ratio*) measures how many sales dollars were generated for each dollar of assets invested. As with many ratios used in financial statement analysis, users may define the numerator and denominator of this ratio in different ways. For example, they may use total assets or only include operating assets. Since the numerator represents a whole period, it is preferable to use average assets in the denominator if possible, especially if the amount of assets changed significantly during the year. We use average total assets in our illustration.

$$\text{Asset turnover} = \frac{\text{Net sales}}{\text{Average total assets}}$$

For Milavec, the asset turnover ratios were as follows.

	2010	2009
Net sales (a)	<u>\$900,000</u>	<u>\$800,000</u>
Beginning assets (b)	<u>\$455,000</u>	<u>\$420,000*</u>
Ending assets (c)	<u>508,000</u>	<u>455,000</u>
Average assets (d) = (b + c) ÷ 2	<u>\$481,500</u>	<u>\$437,500</u>
Asset turnover (a ÷ d)	1.87	1.83

\*The beginning asset balance was drawn from the 2008 financial statements, which are not included in the illustration.

As with most ratios, the implications of a given asset turnover ratio are affected by other considerations. Asset turnover will be high in an industry that requires only minimal investment to operate, such as real estate sales companies. On the other hand, industries that require large investments in plant and machinery, like the auto industry, are likely to have lower asset turnover ratios. The asset turnover ratios of the companies that make up the Dow Jones Industrial Average have averaged around 0.90 in recent years. This means that annual sales have averaged 90 percent of their assets.

### Return on Investment

**Return on investment (ROI)**, also called *return on assets* or *earning power*, is the ratio of wealth generated (net income) to the amount invested (average total assets) to generate the wealth. ROI can be calculated as follows.<sup>1</sup>

$$\text{ROI} = \frac{\text{Net income}}{\text{Average total assets}}$$

<sup>1</sup>Detailed coverage of the return on investment ratio is provided in Chapter 15. As discussed in that chapter, companies frequently manipulate the formula to improve managerial motivation and performance. For example, instead of using net income, companies frequently use operating income because net income may be affected by items that are not controllable by management such as loss on a plant closing, storm damage, and so on.

For Milavec, ROI was as follows.

<b>2010</b>
$\$25,000 \div \$481,500^* = 5.19\%$
<b>2009</b>
$\$22,000 \div \$437,500^* = 5.03\%$

\*The computation of average assets is shown above.

In general, higher ROIs suggest better performance. The ROI of the large companies that make up the Dow Jones Industrial Average averaged around 9 percent. These data suggest that Milavec is performing below average, and therefore signals a need for further evaluation that would lead to improved performance.

### Return on Equity

**Return on equity (ROE)** is often used to measure the profitability of the stockholders' investment. ROE is usually higher than ROI because of financial leverage. Financial leverage refers to using debt financing to increase the assets available to a business beyond the amount of assets financed by owners. As long as a company's ROI exceeds its cost of borrowing (interest expense), the owners will earn a higher return on their investment in the company by using borrowed money. For example, if a company borrows money at 8 percent and invests it at 10 percent, the owners will enjoy a return that is higher than 10 percent. ROE is computed as follows.

$$\text{ROE} = \frac{\text{Net income}}{\text{Average total stockholders' equity}}$$

If the amount of stockholders' equity changes significantly during the year, it is desirable to use average equity rather than year-end equity in the denominator. The ROE figures for Milavec Company were as follows.

	<b>2010</b>	<b>2009</b>
Net income (a)	<u>\$ 25,000</u>	<u>\$ 22,000</u>
Preferred stock, 6%, \$100 par, cumulative	50,000	50,000
Common stock, \$10 par	150,000	125,000
Retained earnings	<u>162,000</u>	<u>137,000</u>
Total stockholders' equity (b)	<u>\$362,000</u>	<u>\$312,000</u>
ROE (a ÷ b)	6.9%	7.1%

The slight decrease in ROE is due primarily to the increase in common stock. The effect of the increase in total stockholders' equity offsets the effect of the increase in earnings. This information does not disclose whether Milavec had the use of the additional stockholder investment for all or part of the year. If the data are available, calculating a weighted average amount of stockholders' equity provides more meaningful results.

We mentioned earlier the companies that make up the Dow Jones Industrial Average had an average ROI of 9 percent. The average ROE for the companies in the Dow was 25 percent, indicating effective use of financial leverage.

### Stock Market Ratios

Existing and potential investors in a company's stock use many common ratios to analyze and compare the earnings and dividends of different size companies in different industries. Purchasers of stock can profit in two ways: through receiving dividends

#### LO 7

Calculate ratios for assessing a company's position in the stock market.



and through increases in stock value. Investors consider both dividends and overall earnings performance as indicators of the value of the stock they own.

### Earnings per Share

Perhaps the most frequently quoted measure of earnings performance is **earnings per share (EPS)**. EPS calculations are among the most complex in accounting, and more advanced textbooks devote entire chapters to the subject. At this level, we use the following basic formula.

$$\text{Earnings per share} = \frac{\text{Net earnings available for common stock}}{\text{Average number of outstanding common shares}}$$

EPS pertains to shares of *common stock*. Limiting the numerator to earnings available for common stock eliminates the annual preferred dividend ( $0.06 \times \$50,000 = \$3,000$ ) from the calculation. Exhibit 9.1 shows that Milavec did not pay the preferred dividends in 2010. Since the preferred stock is cumulative, however, the preferred dividend is in arrears and not available to the common stockholders. The number of common shares outstanding is determined by dividing the book value of the common stock by its par value per share ( $\$150,000 \div \$10 = 15,000$  for 2010 and  $\$125,000 \div \$10 = 12,500$  for 2009). Using these data, Milavec's 2010 EPS is calculated as follows.

$$\frac{\$25,000 \text{ (net income)} - \$3,000 \text{ (preferred dividend)}}{(15,000 + 12,500)/2 \text{ (average outstanding common shares)}} = \$1.60 \text{ per share}$$

Investors attribute a great deal of importance to EPS figures. The amounts used in calculating EPS, however, have limitations. Many accounting choices, assumptions, and estimates underlie net income computations, including alternative depreciation methods, different inventory cost flow assumptions, and estimates of future uncollectible accounts or warranty expenses, to name only a few. The denominator is also inexact because various factors (discussed in advanced accounting courses) affect the number of shares to include. Numerous opportunities therefore exist to manipulate EPS figures. Prudent investors consider these variables in deciding how much weight to attach to earnings per share.

### Book Value

**Book value per share** is another frequently quoted measure of a share of stock. It is calculated as follows.

$$\text{Book value per share} = \frac{\text{Stockholders' equity} - \text{Preferred rights}}{\text{Outstanding common shares}}$$

Instead of describing the numerator as stockholders' equity, we could have used assets minus liabilities, the algebraic computation of a company's "net worth." Net worth is a misnomer. A company's accounting records reflect book values, not worth. Because assets are recorded at historical costs and different methods are used to transfer asset costs to expense, the book value of assets after deducting liabilities means little if anything. Nevertheless, investors use the term *book value per share* frequently.

*Preferred rights* represents the amount of money required to satisfy the claims of preferred stockholders. If the preferred stock has a call premium, the call premium amount is subtracted. In our example, we assume the preferred stock can be retired at par. Book value per share for 2010 was therefore as follows.

$$\frac{\$362,000 - \$50,000}{15,000 \text{ shares}} = \$20.80 \text{ per share}$$

### Price-Earnings Ratio

The **price-earnings ratio**, or *P/E ratio*, compares the earnings per share of a company to the market price for a share of the company's stock. Assume Avalanche Company and Brushfire Company each report earnings per share of \$3.60. For the same year, Cyclone Company reports EPS of \$4.10. Based on these data alone, Cyclone stock may seem to be the best investment. Suppose, however, that the price for one share

of stock in each company is \$43.20, \$36.00, and \$51.25, respectively. Which stock would you buy? Cyclone's stock price is the highest, but so is its EPS. The P/E ratio provides a common base of comparison.

$$\text{Price-earnings ratio} = \frac{\text{Market price per share}}{\text{Earnings per share}}$$

The P/E ratios for the three companies are

Avalanche	Brushfire	Cyclone
12.0	10.0	12.5

Brushfire might initially seem to be the best buy for your money. Yet there must be some reason that Cyclone's stock is selling at 12½ times earnings. In general, a higher P/E ratio indicates the market is more optimistic about a company's growth potential than it is about a company with a lower P/E ratio. The market price of a company's stock reflects judgments about both the company's current results and expectations about future results. Investors cannot make informed use of these ratios for investment decisions without examining the reasons behind the ratios. Recently the average P/E ratio for the companies in the Dow Jones Industrial Average was around 18.

### Dividend Yield

There are two ways to profit from a stock investment. One, investors can sell the stock for more than they paid to purchase it (if the stock price rises). Two, the company that issued the stock can pay cash dividends to the shareholders. Most investors view rising stock prices as the primary reward for investing in stock. The importance of receiving dividends, however, should not be overlooked. Evaluating dividend payments is more complex than simply comparing the dividends per share paid by one company to the dividends per share paid by another company. Receiving a \$1 dividend on a share purchased for \$10 is a much better return than receiving a \$1.50 dividend on stock bought for \$100. Computing the **dividend yield** simplifies comparing dividend payments. Dividend yield measures dividends received as a percentage of a stock's market price.

$$\text{Dividend yield} = \frac{\text{Dividends per share}}{\text{Market price per share}}$$

To illustrate, consider Dragonfly Inc. and Elk Company. The information for calculating dividend yield follows.

	Dragonfly	Elk
Dividends per share (a)	\$ 1.80	\$ 3.00
Market price per share (b)	40.00	75.00
Dividend yield (a ÷ b)	4.5%	4.0%

Even though the dividend per share paid by Elk Company is higher, the yield is lower (4.5 percent versus 4.0 percent) because Elk's stock price is so high. The dividend yields for the companies included in the Dow Jones Industrial Average were averaging around 2.3 percent.

### Other Ratios

Investors can also use a wide array of other ratios to analyze profitability. Most **profitability ratios** use the same reasoning. For example, you can calculate the *yield* of a variety of financial investments. Yield represents the percentage the amount received is of the amount invested. The dividend yield explained above could be calculated for either common or preferred stock. Investors could measure the earnings yield by calculating earnings per share as a percentage of market price. Yield on a bond can be calculated the same way: interest received divided by the price of the bond.

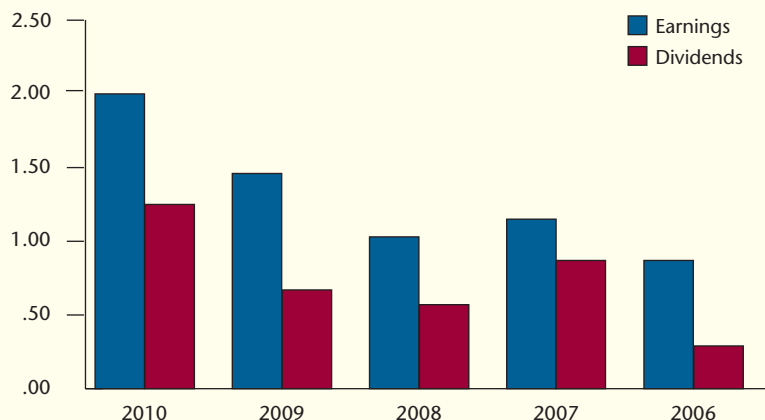
The specific ratios presented in this chapter are summarized in Exhibit 9.6.

**EXHIBIT 9.6****Summary of Key Relationships**

<b>Liquidity Ratios</b>	1. Working capital	Current assets — Current liabilities
	2. Current ratio	Current assets ÷ Current liabilities
	3. Quick (acid-test) ratio	(Current assets — Inventory — Prepaid Items) ÷ Current liabilities
<b>Solvency Ratios</b>	4. Accounts receivable turnover	Net credit sales ÷ Average receivables
	5. Average number of days to collect receivables	365 ÷ Accounts receivable turnover
	6. Inventory turnover	Cost of goods sold ÷ Average inventory
	7. Average number of days to sell inventory	365 ÷ Inventory turnover
	8. Debt to assets ratio	Total liabilities ÷ Total assets
<b>Profitability Ratios</b>	9. Debt to equity ratio	Total liabilities ÷ Total stockholders' equity
	10. Times interest earned	Earnings before interest expense and taxes ÷ Interest expense
	11. Plant assets to long-term liabilities	Net plant assets ÷ Long-term liabilities
<b>Stock Market Ratios</b>	12. Net margin	Net income ÷ Net sales
	13. Asset turnover	Net sales ÷ Average total assets
	14. Return on investment (also: return on assets)	Net income ÷ Average total assets
<b>Stock Market Ratios</b>	15. Return on equity	Net income ÷ Average total stockholders' equity
	16. Earnings per share	Net earnings available for common stock ÷ Average outstanding common shares
	17. Book value per share	(Stockholders' equity — Preferred rights) ÷ Outstanding common shares
	18. Price-earnings ratio	Market price per share ÷ Earnings per share
	19. Dividend yield	Dividends per share ÷ Market price per share

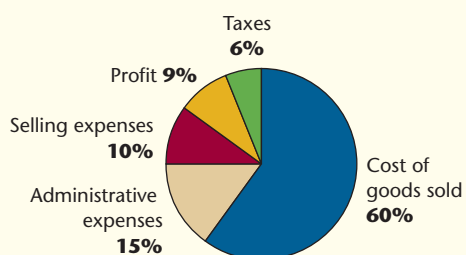
**PRESENTATION OF ANALYTICAL RELATIONSHIPS**

To communicate with users, companies present analytical information in endless different ways in annual reports. Although providing diagrams and illustrations in annual reports is not usually required, companies often include various forms of graphs and charts along with the underlying numbers to help users interpret financial statement data more easily. Common types presented include bar charts, pie charts, and line graphs. Exhibits 9.7, 9.8, and 9.9 show examples of these forms.

**EXHIBIT 9.7****Earnings and Dividends on Common Stock**

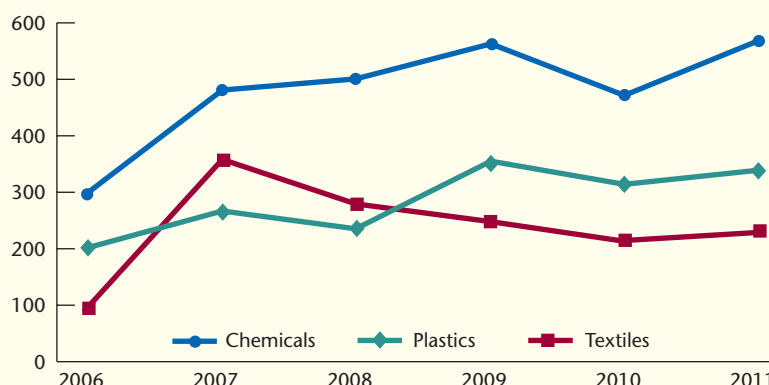
## EXHIBIT 9.8

### Percentage of Sales Dollar



## EXHIBIT 9.9

### Profits by Major Industry Segment



## LIMITATIONS OF FINANCIAL STATEMENT ANALYSIS

Analyzing financial statements is analogous to choosing a new car. Each car is different, and prospective buyers must evaluate and weigh a myriad of features: gas mileage, engine size, manufacturer's reputation, color, accessories, and price, to name a few. Just as it is difficult to compare a **Toyota** minivan to a **Ferrari** sports car, so it is difficult to compare a small textile firm to a giant oil company. To make a meaningful assessment, the potential car buyer must focus on key data that can be comparably expressed for each car, such as gas mileage. The superior gas mileage of the minivan may pale in comparison to the thrill of driving the sports car, but the price of buying and operating the sports car may be the characteristic that determines the ultimate choice.

External users can rely on financial statement analysis only as a general guide to the potential of a business. They should resist placing too much weight on any

### LO 8

Explain the limitations of financial statement analysis.

## Reality BYTES

The most important source of financial information comes from companies' reports, but decision makers should also consult other sources. Interested persons can access quarterly and annual reports through the SEC's EDGAR database and often from company websites. Many companies will provide printed versions of these reports upon request. Companies also post information on their websites that is not included in their annual reports. For example, some automobile companies provide detailed production data on their websites.

Users can frequently obtain information useful in analyzing a particular company from independent sources as well as from the company itself. For example, the websites of popular news services such as **CNN** ([money.cnn.com](http://money.cnn.com)) and **CNBC** ([moneycentral.msn.com](http://moneycentral.msn.com)) provide archived news stories and independent financial information about many companies. The websites of brokerage houses like [www.schwab.com](http://www.schwab.com) offer free financial information about companies. Finally, libraries often subscribe to independent services that evaluate companies as potential investments. One example worth reviewing is *Value Line Investment Survey*.



particular figure or trend. Many factors must be considered simultaneously before making any judgments. Furthermore, the analysis techniques discussed in this chapter are all based on historical information. Future events and unanticipated changes in conditions will also influence a company's operating results.

## Different Industries

Different industries may be affected by unique social policies, special accounting procedures, or other individual industry attributes. Ratios of companies in different industries are not comparable without considering industry characteristics. A high debt to assets ratio is more acceptable in some industries than others. Even within an industry, a particular business may require more or less working capital than the industry average. If so, the working capital and quick ratios would mean little compared to those of other firms, but may still be useful for trend analysis.

Because of industry-specific factors, most professional analysts specialize in one, or only a few, industries. Financial institutions such as brokerage houses, banks, and insurance companies typically employ financial analysts who specialize in areas such as mineral or oil extraction, chemicals, banking, retail, insurance, bond markets, or automobile manufacturing.

## Changing Economic Environment

When comparing firms, analysts must be alert to changes in general economic trends from year to year. Significant changes in fuel costs and interest rates in recent years make old rule-of-thumb guidelines for evaluating these factors obsolete. In addition, the presence or absence of inflation affects business prospects.

## Accounting Principles

Financial statement analysis is only as reliable as the data on which it is based. Although most companies follow generally accepted accounting principles, a wide variety of acceptable accounting methods is available from which to choose, including different inventory and depreciation methods, different schedules for recognizing revenue, and different ways to account for oil and gas exploration costs. Analyzing statements of companies that seem identical may produce noncomparable ratios if the companies used different accounting methods. Analysts may seek to improve comparability by trying to recast different companies' financial statements as if the same accounting methods had been applied.

Accrual accounting requires the use of many estimates; uncollectible accounts expense, warranty expense, asset lives, and salvage value are just a few. The reliability of the resulting financial reports depends on the expertise and integrity of the persons who make the estimates.

The quality and usefulness of accounting information are influenced by underlying accounting concepts. Two particular concepts, *conservatism* and *historical cost*, have a tremendous impact on financial reporting. Conservatism dictates recognizing estimated losses as soon as they occur, but gain recognition is almost always deferred until the gains are actually realized. Conservatism produces a negative bias in financial statements. There are persuasive arguments for the conservatism principle, but users should be alert to distortions it may cause in accounting information.

The pervasive use of the historical cost concept is probably the greatest single cause of distorted financial statement analysis results. The historical cost of an asset does not represent its current value. The asset purchased in 1980 for \$10,000 is not comparable in value to the asset purchased in 2010 for \$10,000 because of changes in the value of the dollar. Using historical cost produces financial statements that report dollars with differing purchasing power in the same statement. Combining these differing dollar values is akin to adding miles to kilometers. To get the most from analyzing financial statements, users should be cognizant of these limitations.

## CHECK Yourself 9.3

The return on equity for Gup Company is 23.4 percent and for Hunn Company is 17 percent. Does this mean Gup Company is better managed than Hunn Company?

**Answer** No single ratio can adequately measure management performance. Even analyzing a wide range of ratios provides only limited insight. Any useful interpretation requires the analyst to recognize the limitations of ratio analysis. For example, ratio norms typically differ between industries and may be affected by changing economic factors. In addition, companies' use of different accounting practices and procedures produces different ratio results even when underlying circumstances are comparable.

## A Look Back



Financial statement analysis involves many factors, among them user characteristics, information needs for particular types of decisions, and how financial information is analyzed. Analytical techniques include *horizontal*, *vertical*, and *ratio analysis*. Users commonly calculate ratios to measure a company's liquidity, solvency, and profitability. The specific ratios presented in this chapter are summarized in Exhibit 9.6. Although ratios are easy to calculate and provide useful insights into business operations, when interpreting analytical results, users should consider limitations resulting from differing industry characteristics, differing economic conditions, and the fundamental accounting principles used to produce reported financial information.

## A Look Forward



This chapter concludes the *financial* accounting portion of the text. Beginning with Chapter 10, we introduce various tools from a branch of the field called *managerial* accounting. Managerial accounting focuses on meeting the accounting information needs of decision makers inside, rather than outside, a company. In addition to financial statement data, inside users require detailed, forward looking information that includes nonfinancial as well as financial components. We begin with a chapter that discusses the value management accounting adds to the decision making process.



### SELF-STUDY REVIEW PROBLEM

Financial statements for Stallings Company follow.

INCOME STATEMENTS		
For the Years Ended December 31		
	2011	2010
Revenues		
Net sales	\$315,000	\$259,000
Expenses		
Cost of goods sold	(189,000)	(154,000)
General, selling, and administrative expenses	(54,000)	(46,000)
Interest expense	(4,000)	(4,500)
Income before taxes	68,000	54,500
Income tax expense (40%)	(27,200)	(21,800)
Net income	<u>\$ 40,800</u>	<u>\$ 32,700</u>



Balance Sheets as of December 31		
	2011	2010
<b>Assets</b>		
Current assets		
Cash	\$ 6,500	\$ 11,500
Accounts receivable	51,000	49,000
Inventories	155,000	147,500
Total current assets	212,500	208,000
Plant and equipment (net)	187,500	177,000
Total assets	<u>\$400,000</u>	<u>\$385,000</u>
<b>Liabilities and Stockholders' Equity</b>		
Liabilities		
Current liabilities		
Accounts payable	\$ 60,000	\$ 81,500
Other	25,000	22,500
Total current liabilities	85,000	104,000
Bonds payable	100,000	100,000
Total liabilities	185,000	204,000
Stockholders' equity		
Common stock (50,000 shares, \$3 par)	150,000	150,000
Paid-in capital in excess of par value	20,000	20,000
Retained earnings	45,000	11,000
Total stockholders' equity	215,000	181,000
Total liabilities and stockholders' equity	<u>\$400,000</u>	<u>\$385,000</u>

**Required**

- Use horizontal analysis to determine which expense item increased by the highest percentage from 2010 to 2011.
- Use vertical analysis to determine whether the inventory balance is a higher percentage of total assets at the end of 2010 or 2011.
- Calculate the following ratios for 2010 and 2011. When data limitations prohibit computing averages, use year-end balances in your calculations.
  - Net margin
  - Return on investment
  - Return on equity
  - Earnings per share
  - Price-earnings ratio (market price per share at the end of 2011 and 2010 was \$12.04 and \$8.86, respectively)
  - Book value per share of common stock
  - Times interest earned
  - Working capital
  - Current ratio
  - Acid-test ratio
  - Accounts receivable turnover
  - Inventory turnover
  - Debt to equity

**Solution to Requirement a**

Income tax expense increased by the greatest percentage. Computations follow.

$$\text{Cost of goods sold } (\$189,000 - \$154,000) \div \$154,000 = 22.73\%$$

$$\text{General, selling, and administrative } (\$54,000 - \$46,000) \div \$46,000 = 17.39\%$$

Interest expense decreased.

$$\text{Income tax expense } (\$27,200 - \$21,800) \div \$21,800 = 24.77\%$$

### Solution to Requirement b

$$2010: \$147,500 \div \$385,000 = 38.31\%$$

$$2011: \$155,000 \div \$400,000 = 38.75\%$$

Inventory is slightly larger relative to total assets at the end of 2011.

### Solution to Requirement c

	2011	2010
1. $\frac{\text{Net income}}{\text{Net sales}}$	$\frac{\$40,800}{\$315,000} = 12.95\%$	$\frac{\$32,700}{\$259,000} = 12.63\%$
2. $\frac{\text{Net income}}{\text{Average total assets}}$	$\frac{\$40,800}{\$392,500} = 10.39\%$	$\frac{\$32,700}{\$385,000} = 8.49\%$
3. $\frac{\text{Net income}}{\text{Average total stockholders' equity}}$	$\frac{\$40,800}{\$198,000} = 20.61\%$	$\frac{\$32,700}{\$181,000} = 18.07\%$
4. $\frac{\text{Net income}}{\text{Average common shares outstanding}}$	$\frac{\$40,800}{50,000 \text{ shares}} = \$0.816$	$\frac{\$32,700}{50,000 \text{ shares}} = \$0.654$
5. $\frac{\text{Market price per share}}{\text{Earnings per share}}$	$\frac{\$12.04}{\$0.816} = 14.75 \text{ times}$	$\frac{\$8.86}{\$0.654} = 13.55 \text{ times}$
6. $\frac{\text{Stockholders' equity} - \text{Preferred rights}}{\text{Outstanding common shares}}$	$\frac{\$215,000}{50,000 \text{ shares}} = \$4.30$	$\frac{\$181,000}{50,000 \text{ shares}} = \$3.62$
7. $\frac{\text{Net income} + \text{Taxes} + \text{Interest expense}}{\text{Interest expense}}$	$\frac{\$40,800 + \$27,200 + \$4,000}{\$4,000} = 18 \text{ times}$	$\frac{\$32,700 + \$21,800 + \$4,500}{\$4,500} = 13.1 \text{ times}$
8. $\text{Current assets} - \text{Current liabilities}$	$\$212,500 - \$85,000 = \$127,500$	$\$208,000 - \$104,000 = \$104,000$
9. $\frac{\text{Current assets}}{\text{Current liabilities}}$	$\frac{\$212,500}{\$85,000} = 2.5:1$	$\frac{\$208,000}{\$104,000} = 2:1$
10. $\frac{\text{Quick assets}}{\text{Current liabilities}}$	$\frac{\$57,500}{\$85,000} = 0.68:1$	$\frac{\$60,500}{\$104,000} = 0.58:1$
11. $\frac{\text{Net credit sales}}{\text{Average accounts receivable}}$	$\frac{\$315,000}{\$50,000} = 6.3 \text{ times}$	$\frac{\$259,000}{\$49,000} = 5.29 \text{ times}$
12. $\frac{\text{Cost of goods sold}}{\text{Average inventory}}$	$\frac{\$189,000}{\$151,250} = 1.25 \text{ times}$	$\frac{\$154,000}{\$147,500} = 1.04 \text{ times}$
13. $\frac{\text{Total liabilities}}{\text{Total stockholders' equity}}$	$\frac{\$185,000}{\$215,000} = 86.05\%$	$\frac{\$204,000}{\$181,000} = 112.71\%$

### KEY TERMS

Absolute amounts 325  
Accounts receivable turnover 331  
Acid-test ratio 330  
Asset turnover ratio 336  
Average number of days to collect receivables 332  
Average number of days to sell inventory 332

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### QUESTIONS

- Why are ratios and trends used in financial analysis?
- What do the terms *liquidity* and *solvency* mean?
- What is apparent from a horizontal presentation of financial statement information? A vertical presentation?
- What is the significance of inventory turnover, and how is it calculated?
- What is the difference between the current ratio and the quick ratio? What does each measure?
- Why are absolute amounts of limited use when comparing companies?
- What is the difference between return on investment and return on equity?

8. Which ratios are used to measure long-term debt-paying ability? How is each calculated?
9. What are some limitations of the earnings per share figure?
10. What is the formula for calculating return on investment (ROI)?
11. What is information overload?
12. What is the price-earnings ratio? Explain the difference between it and the dividend yield.
13. What environmental factors must be considered in analyzing companies?
14. How do accounting principles affect financial statement analysis?

## EXERCISES



### LO 4

**All applicable Exercises are available with McGraw-Hill Connect Accounting.**

#### Exercise 9-1 *Inventory turnover*

Selected financial information for Atwell Company for 2009 follows.

Sales	\$1,500,000
Cost of goods sold	1,200,000
Merchandise inventory	
Beginning of year	180,000
End of year	220,000

#### Required

Assuming that the merchandise inventory buildup was relatively constant, how many times did the merchandise inventory turn over during 2009?

### LO 5

#### Exercise 9-2 *Times interest earned*

The following data come from the financial records of Linton Corporation for 2008.

Sales	\$135,000
Interest expense	3,800
Income tax expense	22,500
Net income	30,700

#### Required

How many times was interest earned in 2008?

### LO 4



#### Exercise 9-3 *Current ratio*

Piper Corporation wrote off a \$900 uncollectible account receivable against the \$9,600 balance in its allowance account.

#### Required

Explain the effect of the write-off on Piper's current ratio.

### LO 4

#### Exercise 9-4 *Working capital and current ratio*

On June 30, 2008, Thorpe Company's total current assets were \$250,000 and its total current liabilities were \$125,000. On July 1, 2008, Thorpe issued a short-term note to a bank for \$25,000 cash.

#### Required

- a. Compute Thorpe's working capital before and after issuing the note.
- b. Compute Thorpe's current ratio before and after issuing the note.

### LO 4

#### Exercise 9-5 *Working capital and current ratio*

On June 30, 2008, Thorpe Company's total current assets were \$250,000 and its total current liabilities were \$125,000. On July 1, 2008, Thorpe issued a long-term note to a bank for \$25,000 cash.

### Required

- Compute Thorpe's working capital before and after issuing the note.
- Compute Thorpe's current ratio before and after issuing the note.

### Exercise 9-6 Horizontal analysis

LO 2

Hammond Corporation reported the following operating results for two consecutive years.



	2008	2007	Percentage Change
Sales	\$1,250,000	\$1,000,000	
Cost of goods sold	<u>750,000</u>	<u>600,000</u>	
Gross margin	500,000	400,000	
Operating expenses	<u>300,000</u>	<u>200,000</u>	
Income before taxes	200,000	200,000	
Income taxes	<u>61,000</u>	<u>53,000</u>	
Net income	<u>\$ 139,000</u>	<u>\$ 147,000</u>	

### Required

- Compute the percentage changes in Hammond Corporation's income statement components between the two years.
- Comment on apparent trends disclosed by the percentage changes computed in Requirement *a*.

### Exercise 9-7 Vertical analysis

LO 2

Garcia Company reported the following operating results for two consecutive years.

2008	Amount	Percent of Sales
Sales	\$600,000	
Cost of goods sold	<u>400,000</u>	
Gross margin	200,000	
Operating expenses	<u>130,000</u>	
Income before taxes	70,000	
Income taxes	<u>30,000</u>	
Net income	<u>\$ 40,000</u>	
2009	Amount	Percent of Sales
Sales	\$580,000	
Cost of goods sold	<u>377,000</u>	
Gross margin	203,000	
Operating expenses	<u>150,000</u>	
Income before taxes	53,000	
Income taxes	<u>23,000</u>	
Net income	<u>\$ 30,000</u>	

### Required

Express each income statement component for each of the two years as a percent of sales.

### Exercise 9-8 Ratio analysis

LO 4, 5

Balance sheet data for Ramsey Corporation follow.

Current assets	\$ 150,000
Long-term assets (net)	850,000
Total assets	<u>\$1,000,000</u>
Current liabilities	\$ 84,000
Long-term liabilities	492,000
Total liabilities	576,000
Total stockholders' equity	424,000
Total liabilities and stockholders' equity	<u>\$1,000,000</u>

**Required**

Compute the following:

Working capital	_____
Current ratio	_____
Debt to assets ratio	_____
Debt to equity ratio	_____

**LO 7****Exercise 9-9 Ratio analysis**

For 2008, Orchard Corporation reported after-tax net income of \$5,800,000. During the year, the number of shares of stock outstanding remained constant at 10,000 of \$100 par, 9 percent preferred stock and 400,000 shares of common stock. The company's total stockholders' equity was \$23,000,000 at December 31, 2008. Orchard Corporation's common stock was selling at \$52 per share at the end of its fiscal year. All dividends for the year had been paid, including \$4.80 per share to common stockholders.

**Required**

Compute the following:

- Earnings per share
- Book value per share of common stock
- Price-earnings ratio
- Dividend yield

**LO 4, 5, 6, 7****Exercise 9-10 Ratio analysis****Required**

Match each of the following ratios with the formula used to compute it.

_____ 1. Working capital	a. Net income ÷ Average total stockholders' equity
_____ 2. Current ratio	b. Cost of goods sold ÷ Average inventory
_____ 3. Quick ratio	c. Current assets – Current liabilities
_____ 4. Accounts receivable turnover	d. 365 ÷ Inventory turnover
_____ 5. Average number of days to collect receivables	e. Net income ÷ Average total assets
_____ 6. Inventory turnover	f. (Net income – Preferred dividends) ÷ Average outstanding common shares
_____ 7. Average number of days to sell inventory	g. (Current assets – Inventory – Prepaid items) ÷ Current liabilities
_____ 8. Debt to assets ratio	h. Total liabilities ÷ Total assets
_____ 9. Debt to equity ratio	i. 365 days ÷ Accounts receivable turnover
_____ 10. Return on investment	j. Total liabilities ÷ Total stockholders' equity
_____ 11. Return on equity	k. Net credit sales ÷ Average accounts receivables
_____ 12. Earnings per share	l. Current assets ÷ Current liabilities

### Exercise 9-11 *Horizontal and vertical analysis*

LO 2

Income statements for Sennett Company for 2008 and 2009 follow.

	2009	2008
Sales	<u>\$121,000</u>	<u>\$92,000</u>
Cost of goods sold	75,000	51,000
Selling expenses	20,000	11,000
Administrative expenses	12,000	14,000
Interest expense	<u>3,000</u>	<u>5,000</u>
Total expenses	<u>110,000</u>	<u>81,000</u>
Income before taxes	11,000	11,000
Income taxes expense	<u>3,000</u>	<u>2,000</u>
Net income	<u>\$ 8,000</u>	<u>\$ 9,000</u>

#### Required

- Perform a horizontal analysis, showing the percentage change in each income statement component between 2008 and 2009.
- Perform a vertical analysis, showing each income statement component as a percent of sales for each year.

### Exercise 9-12 *Ratio analysis*

LO 4, 5, 6, 7

Compute the specified ratios using Bryce Company's balance sheet at December 31, 2008.

<b>Assets</b>	
Cash	\$ 18,000
Marketable securities	8,000
Accounts receivable	13,000
Inventory	11,000
Property and equipment	170,000
Accumulated depreciation	<u>(12,500)</u>
Total assets	<u>\$207,500</u>
<b>Equities</b>	
Accounts payable	\$ 8,500
Current notes payable	3,500
Mortgage payable	7,500
Bonds payable	21,500
Common stock, \$50 par	110,000
Paid-in capital in excess of par value	4,000
Retained earnings	<u>52,500</u>
Total liabilities and stockholders' equity	<u>\$207,500</u>

The average number of common stock shares outstanding during 2008 was 880 shares. Net income for the year was \$15,000.

#### Required

Compute each of the following:

- Current ratio
- Earnings per share
- Quick (acid-test) ratio
- Return on investment
- Return on equity
- Debt to equity ratio



**LO 4, 5, 6, 7****Exercise 9-13 Comprehensive analysis****Required**

Indicate the effect of each of the following transactions on (1) the current ratio, (2) working capital, (3) stockholders' equity, (4) book value per share of common stock, (5) retained earnings. Assume that the current ratio is greater than 1.0.

- a. Collected account receivable.
- b. Wrote off account receivable.
- c. Purchased treasury stock.
- d. Purchased inventory on account.
- e. Declared cash dividend.
- f. Sold merchandise on account at a profit.
- g. Issued stock dividend.
- h. Paid account payable.
- i. Sold building at a loss.

**LO 4, 6****Exercise 9-14 Accounts receivable turnover, inventory turnover, and net margin**

Selected data from Anthony Company follow.

Balance Sheet Data As of December 31		
	2008	2007
Accounts receivable	\$490,000	\$380,000
Allowance for doubtful accounts	(40,000)	(30,000)
Net accounts receivable	<u>\$450,000</u>	<u>\$350,000</u>
Inventories, lower of cost or market	<u>\$600,000</u>	<u>\$480,000</u>

Income Statement Data For the Year Ended December 31		
	2008	2007
Net credit sales	\$2,000,000	\$1,760,000
Net cash sales	400,000	320,000
Net sales	<u>2,400,000</u>	<u>2,080,000</u>
Cost of goods sold	1,600,000	1,440,000
Selling, general, and administrative expenses	240,000	216,000
Other expenses	40,000	24,000
Total operating expenses	<u>\$1,880,000</u>	<u>\$1,680,000</u>

**Required**

Compute the following:

- a. The accounts receivable turnover for 2008.
- b. The inventory turnover for 2008.
- c. The net margin for 2008.

**LO 4, 5****Exercise 9-15 Comprehensive analysis**

The December 31, 2007, balance sheet for Grogan Inc. is presented here. These are the only accounts on Grogan's balance sheet. Amounts indicated by question marks (?) can be calculated using the additional information following the balance sheet.

### Assets

Cash	\$ 25,000
Accounts receivable (net)	?
Inventory	?
Property, plant, and equipment (net)	<u>294,000</u>
	<u>\$432,000</u>

### Liabilities and Stockholders' Equity

Accounts payable (trade)	\$ ?
Income taxes payable (current)	25,000
Long-term debt	?
Common stock	300,000
Retained earnings	<u>?</u>
	<u>\$ ?</u>

### Additional Information

Current ratio (at year end)	1.5 to 1.0
Total liabilities ÷ Total stockholders' equity	0.8
Gross margin percent	30%
Inventory turnover (Cost of goods sold ÷ Ending inventory)	10.5 times
Gross margin for 2007	\$315,000

### Required

Determine the following.

- The balance in trade accounts payable as of December 31, 2007.
- The balance in retained earnings as of December 31, 2007.
- The balance in the inventory account as of December 31, 2007.

## PROBLEMS

All applicable Problems are available with McGraw-Hill  
**Connect Accounting.**

connect  
ACCOUNTING

### Problem 9-16 Vertical analysis

LO 2

The following percentages apply to Walton Company for 2007 and 2008.

	2008	2007
Sales	100.0%	100.0%
Cost of goods sold	<u>61.0</u>	<u>64.0</u>
Gross margin	<u>39.0</u>	<u>36.0</u>
Selling and administrative expenses	26.5	20.5
Interest expense	<u>2.5</u>	<u>2.0</u>
Total expenses	<u>29.0</u>	<u>22.5</u>
Income before taxes	10.0	13.5
Income tax expense	<u>5.5</u>	<u>7.0</u>
Net income	<u>4.5%</u>	<u>6.5%</u>

### CHECK FIGURES

NI of 2008: \$28,800

Total expenses of 2007: \$108,000

### Required

Assuming that sales were \$480,000 in 2007 and \$640,000 in 2008, prepare income statements for the two years.

## LO 5, 6, 7



## CHECK FIGURES

- a. 2009: 12.22 times  
c. 2008: 7.0 times

Problem 9-17 *Ratio analysis*

Hood Company's income statement information follows.

	2009	2008
Net sales	\$210,000	\$130,000
Income before interest and taxes	55,000	42,500
Net income after taxes	27,500	31,500
Interest expense	4,500	4,000
Stockholders' equity, December 31 (2007: \$100,000)	158,500	117,500
Common stock, par \$50, December 31	130,000	115,000

The average number of shares outstanding was 2,600 for 2009 and 2,300 for 2008.

## Required

Compute the following ratios for Hood for 2009 and 2008.

- Times interest earned.
- Earnings per share based on the average number of shares outstanding.
- Price-earnings ratio (market prices: 2009, \$116 per share; 2008, \$96 per share).
- Return on average equity.
- Net margin.

## LO 4

Problem 9-18 *Effect of transactions on current ratio and working capital*

Gilchrist Manufacturing has a current ratio of 3:1 on December 31, 2008. Indicate whether each of the following transactions would increase (+), decrease (−), or have no affect (NA) Gilchrist's current ratio and its working capital.

## Required

- Paid cash for a trademark.
- Wrote off an uncollectible account receivable.
- Sold equipment for cash.
- Sold merchandise at a profit (cash).
- Declared a cash dividend.
- Purchased inventory on account.
- Scrapped a fully depreciated machine (no gain or loss).
- Issued a stock dividend.
- Purchased a machine with a long-term note.
- Paid a previously declared cash dividend.
- Collected accounts receivable.
- Invested in current marketable securities.

## LO 7



## CHECK FIGURE

- a. Earnings per share: \$5.02

Problem 9-19 *Ratio analysis*

Selected data for Koch Company for 2007 and additional information on industry averages follow.

Earnings (net income)		\$ 289,000
Preferred stock (19,800 shares at \$50 par, 4%)		\$ 990,000
Common stock (45,000 shares at \$1 par, market value \$56)		45,000
Paid-in capital in excess of par value—Common		720,000
Retained earnings		843,750
		<u>2,598,750</u>
Less: Treasury stock		
Preferred (1,800 shares)	\$81,000	
Common (1,800 shares)	<u>36,000</u>	117,000
Total stockholders' equity		<u>\$2,481,750</u>

Note: Dividends in arrears on preferred stock: \$36,000. The preferred stock can be called for \$51 per share.

Industry averages	
Earnings per share	\$ 5.20
Price-earnings ratio	9.50
Return on equity	11.20%

### Required

- Calculate and compare Koch Company's ratios with the industry averages.
- Discuss factors you would consider in deciding whether to invest in the company.

### Problem 9-20 Supply missing balance sheet numbers

LO 2

The bookkeeper for Andy's Country Music Bar went insane and left this incomplete balance sheet. Andy's working capital is \$95,000 and its debt to assets ratio is 40 percent.

### CHECK FIGURES

- \$342,500
- \$99,500

<b>Assets</b>	
Current assets	
Cash	\$ 21,000
Accounts receivable	42,000
Inventory	(A)
Prepaid items	9,000
Total current assets	(B)
Long-term assets	
Building	(C)
Less: Accumulated depreciation	(39,000)
Total long-term assets	210,000
Total assets	\$ (D)
<b>Liabilities and Stockholders' Equity</b>	
Liabilities	
Current liabilities	
Accounts payable	\$ (E)
Notes payable	12,000
Income tax payable	10,500
Total current liabilities	37,500
Long-term liabilities	
Mortgage payable	(F)
Total liabilities	(G)
Stockholders' equity	
Common stock	105,000
Retained earnings	(H)
Total stockholders' equity	(I)
Total liabilities and stockholders' equity	\$ (J)

### Required

Complete the balance sheet by supplying the missing amounts.

### Problem 9-21 Ratio analysis

LO 4, 5, 6, 7

The following financial statements apply to Keating Company.



	2009	2008
Revenues		
Net sales	\$210,000	\$175,000
Other revenues	4,000	5,000
Total revenues	214,000	180,000
		<i>continued</i>

### CHECK FIGURES

- 2009: \$0.72
- 2008: 5.47 times

	2009	2008
<b>Expenses</b>		
Cost of goods sold	126,000	103,000
Selling expenses	21,000	19,000
General and administrative expenses	11,000	10,000
Interest expense	3,000	3,000
Income tax expense	21,000	18,000
Total expenses	<u>182,000</u>	<u>153,000</u>
Earnings from continuing operations before extraordinary items	32,000	27,000
Extraordinary gain (net of \$3,000 tax)	4,000	0
Net earnings	<u>\$ 36,000</u>	<u>\$ 27,000</u>
<b>Assets</b>		
<b>Current assets</b>		
Cash	\$ 4,000	\$ 8,000
Marketable securities	1,000	1,000
Accounts receivable	35,000	32,000
Inventories	100,000	96,000
Prepaid items	3,000	2,000
Total current assets	<u>143,000</u>	<u>139,000</u>
Plant and equipment (net)	105,000	105,000
Intangibles	20,000	0
Total assets	<u>\$268,000</u>	<u>\$244,000</u>
<b>Liabilities and Stockholders' Equity</b>		
<b>Liabilities</b>		
<b>Current liabilities</b>		
Accounts payable	\$ 40,000	\$ 54,000
Other	17,000	15,000
Total current liabilities	<u>57,000</u>	<u>69,000</u>
Bonds payable	66,000	67,000
Total liabilities	<u>123,000</u>	<u>136,000</u>
<b>Stockholders' equity</b>		
Common stock (\$2 par)	100,000	100,000
Paid-in capital in excess of par value	15,000	15,000
Retained earnings	30,000	(7,000)
Total stockholders' equity	<u>145,000</u>	<u>108,000</u>
Total liabilities and stockholders' equity	<u>\$268,000</u>	<u>\$244,000</u>

**Required**

Calculate the following ratios for 2008 and 2009. When data limitations prohibit computing averages, use year-end balances in your calculations.

- Net margin
- Return on investment
- Return on equity
- Earnings per share
- Price-earnings ratio (market prices at the end of 2008 and 2009 were \$5.94 and \$4.77, respectively)
- Book value per share of common stock
- Times interest earned

- h. Working capital
- i. Current ratio
- j. Quick (acid-test) ratio
- k. Accounts receivable turnover
- l. Inventory turnover
- m. Debt to equity ratio
- n. Debt to assets ratio

### Problem 9-22 Horizontal analysis

LO 2

Financial statements for Thorn Company follow.

THORN COMPANY		
Balance Sheets		
As of December 31		
	2008	2007
<b>Assets</b>		
Current assets		
Cash	\$ 16,000	\$ 12,000
Marketable securities	20,000	6,000
Accounts receivable (net)	54,000	46,000
Inventories	135,000	143,000
Prepaid items	25,000	10,000
Total current assets	250,000	217,000
Investments	27,000	20,000
Plant (net)	270,000	255,000
Land	29,000	24,000
Total assets	<u>\$576,000</u>	<u>\$516,000</u>
<b>Liabilities and Stockholders' Equity</b>		
Liabilities		
Current liabilities		
Notes payable	\$ 17,000	\$ 6,000
Accounts payable	113,800	100,000
Salaries payable	21,000	15,000
Total current liabilities	151,800	121,000
Noncurrent liabilities		
Bonds payable	100,000	100,000
Other	32,000	27,000
Total noncurrent liabilities	132,000	127,000
Total liabilities	<u>283,800</u>	<u>248,000</u>
Stockholders' equity		
Preferred stock, par value \$10, 4% cumulative, non-participating; 7,000 shares authorized and issued; no dividends in arrears	70,000	70,000
Common stock, \$5 par value; 50,000 shares authorized; 10,000 shares issued	50,000	50,000
Paid-in capital in excess of par value—Preferred	10,000	10,000
Paid-in capital in excess of par value—Common	30,000	30,000
Retained earnings	132,200	108,000
Total stockholders' equity	<u>292,200</u>	<u>268,000</u>
Total liabilities and stockholders' equity	<u>\$576,000</u>	<u>\$516,000</u>

### CHECK FIGURES

Total Assets: +11.6%

Total Liabilities: +14.4%



THORN COMPANY		
Statements of Income and Retained Earnings		
For the Years Ended December 31		
	2008	2007
Revenues		
Sales (net)	\$230,000	\$210,000
Other revenues	8,000	5,000
Total revenues	<u>238,000</u>	<u>215,000</u>
Expenses		
Cost of goods sold	120,000	103,000
Selling, general, and administrative expenses	55,000	50,000
Interest expense	8,000	7,200
Income tax expense	23,000	22,000
Total expenses	<u>206,000</u>	<u>182,200</u>
Net earnings (net income)	32,000	32,800
Retained earnings, January 1	108,000	83,000
Less: Preferred stock dividends	2,800	2,800
Common stock dividends	5,000	5,000
Retained earnings, December 31	<u>\$132,200</u>	<u>\$108,000</u>

**Required**

Prepare a horizontal analysis of both the balance sheet and income statement.

LO 2, 3, 4, 5, 6, 7

**CHECK FIGURES**

k. 2008: 2.05:1

p. 2007: \$3.00

**Problem 9-23 Ratio analysis****Required**

Use the financial statements for Thorn Company from Problem 9-22 to calculate the following ratios for 2008 and 2007.

- Working capital
- Current ratio
- Quick ratio
- Accounts receivable turnover (beginning receivables at January 1, 2007, were \$47,000)
- Average number of days to collect accounts receivable
- Inventory turnover (beginning inventory at January 1, 2007, was \$140,000)
- Average number of days to sell inventory
- Debt to assets ratio
- Debt to equity ratio
- Times interest earned
- Plant assets to long-term debt
- Net margin
- Asset turnover
- Return on investment
- Return on equity
- Earnings per share
- Book value per share of common stock
- Price-earnings ratio (market price per share: 2007, \$11.75; 2008, \$12.50)
- Dividend yield on common stock

LO 2

**CHECK FIGURE**

2008 Retained Earnings: 23%

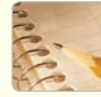
**Problem 9-24 Vertical analysis****Required**

Use the financial statements for Thorn Company from Problem 9-22 to perform a vertical analysis of both the balance sheets and income statements for 2008 and 2007.

## ANALYZE, THINK, COMMUNICATE

### ATC 9-1 Business Applications Case *Analyzing Best Buy Company and Circuit City Stores*

The following information relates to **Best Buy Company** and **Circuit City Stores, Inc.**, for their 2007 and 2006 fiscal years.



<b>BEST BUY COMPANY</b>		
Selected Financial Information		
(Amounts in millions, except per share amounts)		
	<b>March 3, 2007</b>	<b>February 25, 2006</b>
Total current assets	\$9,081	\$7,985
Merchandise inventories	4,028	3,338
Property and equipment, net of depreciation	2,938	2,712
Total assets	13,570	11,864
Total current liabilities	6,301	6,056
Total long-term liabilities	590	178
Total liabilities	7,369	6,607
Total shareholders equity	6,201	5,257
Revenue	35,934	30,848
Cost of goods sold	27,165	23,122
Gross profit	8,769	7,726
Operating income	1,999	1,644
Earnings from continuing operations		
before income tax expense	2,130	1,721
Income tax expense	752	581
Net earnings	1,377	1,140
Basic earnings per share	\$2.86	\$2.33

<b>CIRCUIT CITY STORES</b>		
Selected Financial Information		
(Amounts in millions except per share data)		
	<b>February 28, 2007</b>	<b>February 28, 2006</b>
Total current assets	\$2,884	\$2,833
Merchandise inventory	1,637	1,698
Property and equipment, net of depreciation	921	839
Total assets	4,007	4,069
Total current liabilities	1,714	1,622
Total long-term liabilities	502	492
Total liabilities	2,216	2,114
Total stockholders' equity	1,791	1,955
Revenues	12,430	11,598
Cost of sales, buying and warehousing	9,501	8,767
Gross profit	2,928	2,831
Earnings from continuing operations before		
income taxes	20	239
Provision for income taxes	31	88
Earnings from continuing operations	—10	151
Net earnings	—8	140
Basic earnings per share—		
Continuing operations:	(\$0.05)	\$0.79

**Required**

- a. Compute the following ratios for the companies' 2007 fiscal years:
  - (1) Current ratio.
  - (2) Average number of days to sell inventory. (Use average inventory.)
  - (3) Debt to assets ratio.
  - (4) Return on investment. (Use average assets and use "earnings from continuing operations" rather than "net earnings.")
  - (5) Gross margin percentage.
  - (6) Asset turnover. (Use average assets.)
  - (7) Return on sales. (Use "earnings from continuing operations" rather than "net earnings.")
  - (8) Plant assets to long-term debt ratio.
- b. Which company appears to be more profitable? Explain your answer and identify which of the ratio(s) from Requirement *a* you used to reach your conclusion.
- c. Which company appears to have the higher level of financial risk? Explain your answer and identify which of the ratio(s) from Requirement *a* you used to reach your conclusion.
- d. Which company appears to be charging higher prices for its goods? Explain your answer and identify which of the ratio(s) from Requirement *a* you used to reach your conclusion.
- e. Which company appears to be the more efficient at using its assets? Explain your answer and identify which of the ratio(s) from Requirement *a* you used to reach your conclusion.

**ATC 9-2 Group Assignment Ratio analysis and logic**

Presented here are selected data from the 10-K reports of four companies for the 2007 fiscal year. The four companies in alphabetical order are:

1. **AT&T**, a large telecommunications company.
2. **Deere & Co.**, a manufacturer of heavy machinery.
3. **Dollar General Corporation**, a company that owns and operates discount stores.
4. **Starbucks Corporation**, the world's largest specialty coffee-shop chain.

The data, presented below in the order of the amount of sales, are as follows. Dollar amounts are in millions.

	A	B	C	D
Sales	\$118,928	\$24,082.2	\$9,411.5	\$9,169.8
Cost of goods sold	46,055	16,252.8	3,999.1	6,801.6
Net earnings	11,951	1,821.7	672.6	137.9
Merchandise inventory	N/A	2,337.3	691.7	1,432.3
Accounts receivable	16,185	3,084.6	287.9	NA
Total assets	275,644	38,575.7	5,343.9	3,040.5

**Required**

- a. Divide the class into groups of four or five students per group and then organize the groups into four sections. Assign Task 1 to the first section of groups, Task 2 to the second section, Task 3 to the third section, and Task 4 to the fourth section.

**Group Tasks**

- (1) Assume that you represent AT&T. Identify the set of financial data (Column A, B, C, or D) that relates to your company.
- (2) Assume that you represent Deere & Co. Identify the set of financial data (Column A, B, C, or D) that relates to your company.
- (3) Assume that you represent Dollar General Corporation. Identify the set of financial data (Column A, B, C, or D) that relates to your company.

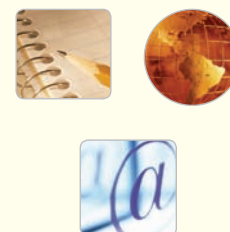
- (4) Assume that you represent Starbucks Corporation. Identify the set of financial data (Column A, B, C, or D) that relates to your company.

*Hint:* Use a gross margin ratio (gross margin  $\div$  sales), a net margin ratio (net income  $\div$  sales), and return on assets (net income  $\div$  total assets) to facilitate identifying the financial data related to your particular company.

- b. Select a representative from each section. Have the representatives explain the rationale for the group's selection. The explanation should include a set of ratios that support the group's conclusion.

### ATC 9-3 Research Assignment *Analyzing Whirlpool's Acquisition of Maytag*

To complete the requirements below you will need to obtain Whirlpool's income statements for 2005 and 2006, and its balance sheets for 2004, 2005, and 2006. The easiest way to obtain these income statements is to retrieve the company's 2006 and 2005 Form 10-Ks. To obtain the Form 10-Ks you can use either the EDGAR system following the instructions in Appendix A, or they can be found under the "Investors" link on the company's corporate website, [www.whirlpoolcorp.com](http://www.whirlpoolcorp.com). On March 31, 2006, Whirlpool Corporation acquired Maytag, another manufacturer of home appliances. The company's 2006 financial statements include the activities of Maytag; its 2005 and 2004 statements do not.



#### Required

- a. Compute the following ratios for 2006 and 2005. Show your calculations.

Gross margin percentage	Net margin
Return on investment	Return on equity
Current ratio	Debt to assets ratio

- b. Based on the ratios computed in Requirement a, comment on the apparent effects of Whirlpool's acquisition of Maytag. Assume any significant change in these ratios was the result of the acquisition.
- c. Based on this limited analysis, does it appear that the short-term effects of the acquisition were good or bad for Whirlpool?

### ATC 9-4 Writing Assignment *Interpreting ratios*

The following table provides the net earnings, total assets, and total liabilities for four companies from two different industries. The data are for the fiscal years ending in 2006. All numbers are millions of dollars.



	Net Earnings	Total Assets	Total Liabilities
Banking Industry			
Sun Trust Bank	\$2,110	\$182,162	\$164,348
Wells Fargo & Co.	8,482	481,996	436,120
Home Construction Industry			
Pulte Homes	687	13,177	6,600
Ryland Group	360	3,417	1,724

#### Required

- a. Briefly explain which company appears to be using its assets most efficiently. Be sure to include the computations of ratios you used to reach your conclusions.
- b. Briefly explain which company appears to be earning the best return for its owners. Be sure to include the computations of ratios you used to reach your conclusions.
- c. Briefly explain which company appears to have the greatest financial risk. Be sure to include the computations of ratios you used to reach your conclusions.

**ATC 9-5 Ethical Dilemma** *Making the ratios look good*

J. Talbot is the accounting manager for Kolla Waste Disposal Corporation. Kolla is having its worst financial year since its inception. The company is expected to report a net loss. In the midst of such bad news, Ms. Talbot surprised the company president, Mr. Winston, by suggesting that the company write off approximately 25 percent of its garbage trucks. Mr. Winston responded by noting that the trucks could still be operated for another two or three years. Ms. Talbot replied, “We may use them for two or three more years, but you couldn’t sell them on the street if you had to. Who wants to buy a bunch of old garbage trucks and besides, it will make next year’s financials so sweet. No one will care about the additional write-off this year. We are already showing a loss. Who will care if we lose a little bit more?”

**Required**

- a. How will the write-off affect the following year’s return on assets ratio?
- b. How will the write-off affect the asset and income growth percentages?
- c. Would writing off the garbage trucks for the reasons stated present any ethical concerns for Kolla? Explain.

**Comprehensive financial statements analysis projects are available at**  
[www.mhhe.com/edmonds/survey2e](http://www.mhhe.com/edmonds/survey2e).





# CHAPTER 10

## An Introduction *to* Managerial Accounting

### LEARNING OBJECTIVES

**After you have mastered the material in this chapter you will be able to:**

- 1** Distinguish between managerial and financial accounting.
- 2** Identify the cost components of a product made by a manufacturing company: the cost of materials, labor, and overhead.
- 3** Explain the effects on financial statements of product costs versus general, selling, and administrative costs.
- 4** Distinguish product costs from upstream and downstream costs.
- 5** Explain how product costing differs in service, merchandising, and manufacturing companies.
- 6** Show how just-in-time inventory can increase profitability.
- 7** Identify and explain the standards contained in IMA's Statement of Ethical Professional Practice.
- 8** Identify emerging trends in accounting (Appendix A).

### CHAPTER OPENING

Andy Grove, Senior Advisor to Executive Management of **Intel Corporation**, is credited with the motto "Only the paranoid survive." Mr. Grove describes a wide variety of concerns that make him paranoid. Specifically, he declares:

*I worry about products getting screwed up, and I worry about products getting introduced prematurely. I worry about factories not performing well, and I worry about having too many factories. I worry about*

*hiring the right people, and I worry about morale slacking off. And, of course, I worry about competitors. I worry about other people figuring out how to do what we do better or cheaper, and displacing us with our customers.*

Do Intel's historically based financial statements contain the information Mr. Grove needs? No. **Financial accounting** is not designed to satisfy all the information needs of business managers. Its scope is limited to the needs of external users such as investors and creditors. The field of accounting designed to meet the needs of internal users is called **managerial accounting**.

## The *Curious* Accountant

You previously learned how retailers, such as **Dick's Sporting Goods**, account for the cost of equipment that lasts more than one year. Recall that the equipment was recorded as an asset when purchased, and then it was depreciated over its expected useful life. The depreciation charge reduced the company's assets and increased its expenses. This approach was justified under the matching principle, which seeks to recognize costs as expenses in the same period that the cost (resource) is used to generate revenue.

Is depreciation always shown as an expense on the income statement? The answer may surprise you. Consider the following scenario. **Razor USA, LLC**, manufactures the E500s electric scooter that it sells to Dick's. In order to produce the scooters, Razor had to purchase a robotic machine that it expects can be used to produce 10,000 scooters.

Do you think Razor should account for depreciation on its manufacturing equipment the same way Dick's accounts for depreciation on its registers at the check-out counters? If not, how should Razor account for its depreciation? Remember the matching principle when thinking of your answer. (Answer on page 372.)



**LO 1**

Distinguish between managerial and financial accounting.

## DIFFERENCES BETWEEN MANAGERIAL AND FINANCIAL ACCOUNTING

While the information needs of internal and external users overlap, the needs of managers generally differ from those of investors or creditors. Some distinguishing characteristics are discussed in the following section.

### Users and Types of Information

Financial accounting provides information used primarily by investors, creditors, and others *outside* a business. In contrast, managerial accounting focuses on information used by executives, managers, and employees who work *inside* the business. These two user groups need different types of information.

Internal users need information to *plan, direct, and control* business operations. The nature of information needed is related to an employee's job level. Lower level employees use nonfinancial information such as work schedules, store hours, and customer service policies. Moving up the organizational ladder, financial information becomes increasingly important. Middle managers use a blend of financial and nonfinancial information, while senior executives concentrate on financial data. To a lesser degree, senior executives also use general economic data and nonfinancial operating information. For example, an executive may consider the growth rate of the economy before deciding to expand the company's workforce.

External users (investors and creditors) have greater needs for general economic information than do internal users. For example, an investor debating whether to purchase stock versus bond securities might be more interested in government tax policy than financial statement data. Exhibit 10.1 summarizes the information needs of different user groups.

### Level of Aggregation

External users generally desire *global information* that reflects the performance of a company as a whole. For example, an investor is not so much interested in the performance of a particular Sears store as she is in the performance of **Sears Roebuck Company** versus that of **JC Penney Company**. In contrast, internal users focus on detailed information about specific subunits of the company. To meet the needs of

#### EXHIBIT 10.1

##### Relationship Between Type of User and Type of Information

	Economic data	Financial data	Nonfinancial data
Outsiders	Investors and creditors		
Insiders		Senior executives	
		Middle managers	
			Operating employees

the different user groups, financial accounting data are more aggregated than managerial accounting data.

## Regulation

As previously discussed, the information in financial statements is highly regulated to protect the public interest.

Beyond financial statement data, much of the information generated by management accounting systems is proprietary information not available to the public. Since this information is not distributed to the public, it need not be regulated to protect the public interest. Management accounting is restricted only by the **value-added principle**. Management accountants are free to engage in any information gathering and reporting activity so long as the activity adds value in excess of its cost. For example, management accountants are free to provide forecasted information to internal users. In contrast, financial accounting as prescribed by GAAP does not permit forecasting.

## Information Characteristics

While financial accounting is characterized by its objectivity, reliability, consistency, and historical nature, managerial accounting is more concerned with relevance and timeliness. Managerial accounting uses more estimates and fewer facts than financial accounting. Financial accounting reports what happened yesterday; managerial accounting reports what is expected to happen tomorrow.

## Time Horizon and Reporting Frequency

Financial accounting information is reported periodically, normally at the end of a year. Management cannot wait until the end of the year to discover problems. Planning, controlling, and directing require immediate attention. Managerial accounting information is delivered on a continuous basis.

## Focus On INTERNATIONAL ISSUES

### FINANCIAL ACCOUNTING VERSUS MANAGERIAL ACCOUNTING— AN INTERNATIONAL PERSPECTIVE

This chapter has already explained some of the conceptual differences between financial and managerial accounting, but these differences have implications for international businesses as well. With respect to financial accounting, publicly traded companies in most countries must follow the generally accepted accounting principles (GAAP) for their country, but these rules can vary from country to country. Generally, companies that are audited under the auditing standards of the United States follow the standards established by the Financial Accounting Standards Board. European companies follow the standards established by the International Accounting Standards Board. For example, the United States is one of very few countries whose GAAP allow the use of the LIFO inventory cost flow assumption.

Conversely, most of the managerial accounting concepts introduced in this course can be used by businesses in any country. For example, *activity-based costing (ABC)* is used by many companies in the United States. Meanwhile, a study published in *Accountancy Ireland*\* found that approximately one-third of the companies surveyed in Ireland, the United Kingdom, and New Zealand are also either currently using ABC, or are considering adopting it.

\*Bernard Pierce, "Activity-Based Costing; the Irish Experience: True Innovation or Passing Fad?" *Accountancy Ireland*, October 2004, pp. 28–31.





**EXHIBIT 10.2****Comparative Features of Managerial versus Financial Accounting Information**

Features	Managerial Accounting	Financial Accounting
Users	Insiders including executives, managers, and operators	Outsiders including investors, creditors, government agencies, analysts, and reporters
Information type	Economic and physical data as well as financial data	Financial data
Level of aggregation	Local information on subunits of the organization	Global information on the company as a whole
Regulation	No regulation, limited only by the value-added principle	Regulation by SEC, FASB, and other determiners of GAAP
Information characteristics	Estimates that promote relevance and enable timeliness	Factual information that is characterized by objectivity, reliability, consistency, and accuracy
Time horizon	Past, present, and future	Past only, historically based
Reporting frequency	Continuous reporting	Delayed with emphasis on annual reports

Exhibit 10.2 summarizes significant differences between financial and managerial accounting.

**PRODUCT COSTING IN MANUFACTURING COMPANIES****LO 2**

Identify the cost components of a product made by a manufacturing company: the cost of materials, labor, and overhead.

A major focus for managerial accountants is determining **product cost**.<sup>1</sup> Managers need to know the cost of their products for a variety of reasons. For example, **cost-plus pricing** is a common business practice.<sup>2</sup> **Product costing** is also used to control business operations. It is useful in answering questions such as: Are costs higher or lower than expected? Who is responsible for the variances between expected and actual costs? What actions can be taken to control the variances?

The cost of making products includes the cost of materials, labor, and other resources (usually called **overhead**). To understand how these costs affect financial statements, consider the example of Tabor Manufacturing Company.

**Tabor Manufacturing Company**

Tabor Manufacturing Company makes wooden tables. The company spent \$1,000 cash to build four tables: \$390 for materials, \$470 for a carpenter's labor, and \$140 for tools used in making the tables. How much is Tabor's expense? The answer is zero. The \$1,000 cash has been converted into products (four tables). The cash payments for materials, labor, and tools (overhead) were *asset exchange* transactions. One asset (cash) decreased while another asset (tables) increased. Tabor will not recognize any expense until the tables are sold; in the meantime, the cost of the tables is held in an asset account called **Finished Goods Inventory**. Exhibit 10.3 illustrates how cash is transformed into inventory.

**Average Cost per Unit**

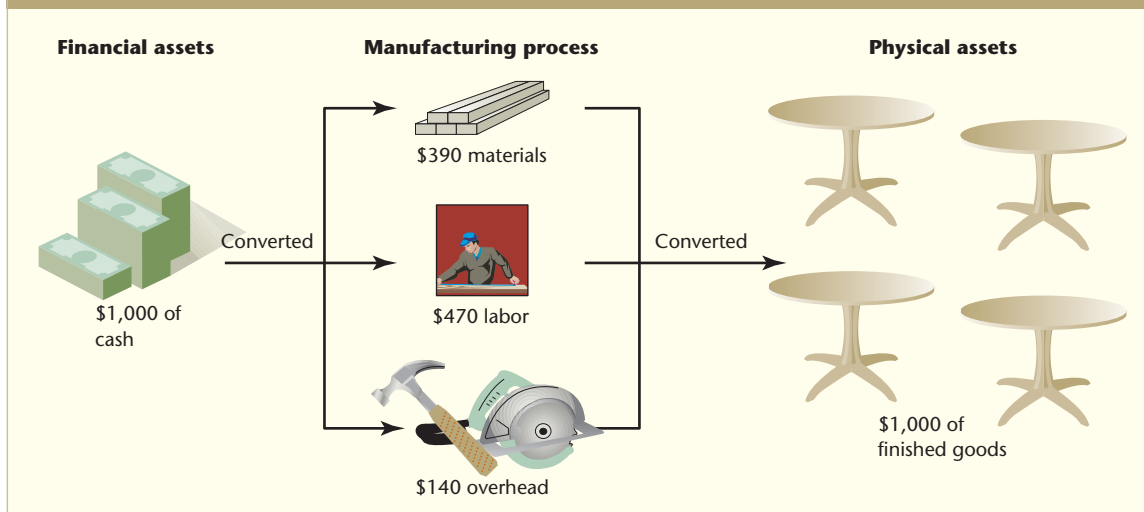
How much did each table made by Tabor cost? The *actual* cost of each of the four tables likely differs. The carpenter probably spent a little more time on some of the tables than others. Material and tool usage probably varied from table to table. Determining

<sup>1</sup>This text uses the term *product* in a generic sense to mean both goods and services.

<sup>2</sup>Other pricing strategies will be introduced in subsequent chapters.

### EXHIBIT 10.3

#### Transforming the Asset Cash Into the Asset Finished Goods Inventory



the exact cost of each table is virtually impossible. Minute details such as a second of labor time cannot be effectively measured. Even if Tabor could determine the exact cost of each table, the information would be of little use. Minor differences in the cost per table would make no difference in pricing or other decisions management needs to make. Accountants therefore normally calculate cost per unit as an *average*. In the case of Tabor Manufacturing, the **average cost** per table is \$250 ( $\$1,000 \div 4$  units). Unless otherwise stated, assume *cost per unit* means *average cost per unit*.

### CHECK Yourself 10.1

All boxes of **General Mills'** Total Raisin Bran cereal are priced at exactly the same amount in your local grocery store. Does this mean that the actual cost of making each box of cereal was exactly the same?

**Answer** No, making each box would not cost exactly the same amount. For example, some boxes contain slightly more or less cereal than other boxes. Accordingly, some boxes cost slightly more or less to make than others do. General Mills uses average cost rather than actual cost to develop its pricing strategy.

### Costs Can Be Assets or Expenses

It might seem odd that wages earned by production workers are recorded as inventory instead of being expensed. Remember, however, that expenses are assets used in the process of *earning revenue*. The cash paid to production workers is not used to produce revenue. Instead, the cash is used to produce inventory. Revenue will be earned when the inventory is used (sold). So long as the inventory remains on hand, all product costs (materials, labor, and overhead) remain in an inventory account.

When a table is sold, the average cost of the table is transferred from the Inventory account to the Cost of Goods Sold (expense) account. If some tables remain unsold at the end of the accounting period, part of the *product costs* is reported as an asset (inventory) on the balance sheet while the other part is reported as an expense (cost of goods sold) on the income statement.

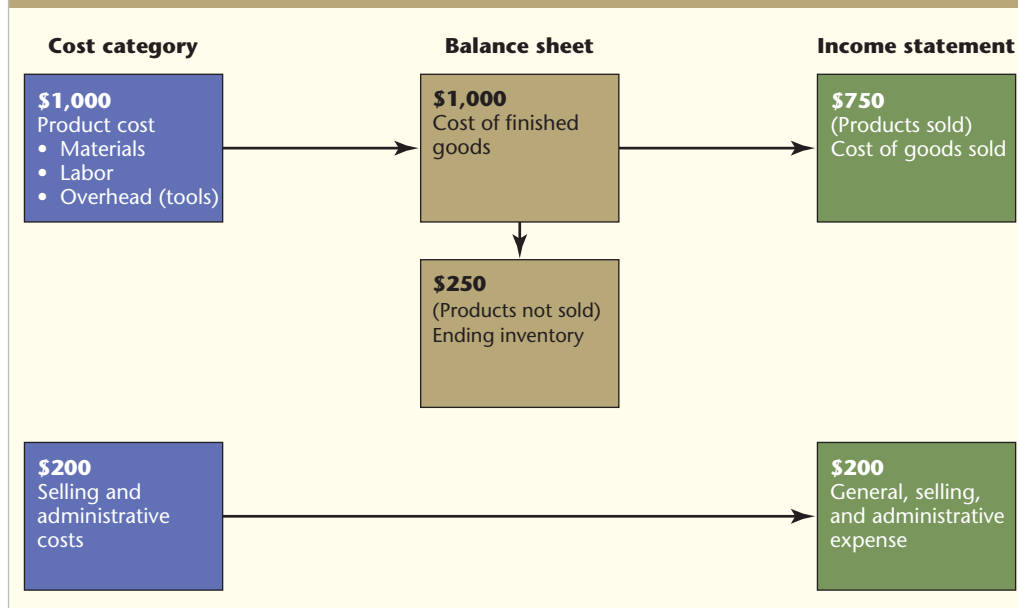


Costs that are not classified as product costs are normally expensed in the period in which they are incurred. These costs include *general operating costs*, *selling and administrative costs*, *interest costs*, and the *cost of income taxes*.

To illustrate, return to the Tabor Manufacturing example. Recall that Tabor made four tables at an average cost per unit of \$250. Assume Tabor pays an employee who sells three of the tables at a \$200 sales commission. The sales commission is expensed immediately. The total product cost for the three tables ( $3 \text{ tables} \times \$250 \text{ each} = \$750$ ) is expensed on the income statement as cost of goods sold. The portion of the total product cost remaining in inventory is \$250 ( $1 \text{ table} \times \$250$ ). Exhibit 10.4 shows the relationship between the costs incurred and the expenses recognized for Tabor Manufacturing Company.

### EXHIBIT 10.4

#### Cost Classification for Tabor Manufacturing Company



## EFFECT OF PRODUCT COSTS ON FINANCIAL STATEMENTS

### LO 3

Explain the effects on financial statements of product costs versus general, selling, and administrative costs.

We illustrate accounting for product costs in manufacturing companies with Patillo Manufacturing Company, a producer of ceramic pottery. Patillo, started on January 1, 2010, experienced the following accounting events during its first year of operations.<sup>3</sup> Assume that all transactions except 6, 8, and 10 are cash transactions.

1. Acquired \$15,000 cash by issuing common stock.
2. Paid \$2,000 for materials that were used to make products. All products started were completed during the period.
3. Paid \$1,200 for salaries of selling and administrative employees.
4. Paid \$3,000 for wages of production workers.
5. Paid \$2,800 for furniture used in selling and administrative offices.

<sup>3</sup>This illustration assumes that all inventory started during the period was completed during the period. Patillo therefore uses only one inventory account, Finished Goods Inventory. Many manufacturing companies normally have three categories of inventory on hand at the end of an accounting period: Raw Materials Inventory, Work in Process Inventory (inventory of partially completed units), and Finished Goods Inventory.

6. Recognized depreciation on the office furniture purchased in Event 5. The furniture was acquired on January 1, had a \$400 estimated salvage value, and a four-year useful life. The annual depreciation charge is \$600  $[(\$2,800 - \$400) \div 4]$ .
7. Paid \$4,500 for manufacturing equipment.
8. Recognized depreciation on the equipment purchased in Event 7. The equipment was acquired on January 1, had a \$1,500 estimated salvage value, and a three-year useful life. The annual depreciation charge is \$1,000  $[(\$4,500 - \$1,500) \div 3]$ .
9. Sold inventory to customers for \$7,500 cash.
10. The inventory sold in Event 9 cost \$4,000 to make.

The effects of these transactions on the balance sheet, income statement, and statement of cash flows are shown in Exhibit 10.5. Study each row in this exhibit, paying particular attention to how similar costs such as salaries for selling and administrative personnel and wages for production workers have radically different effects on the financial statements. The example illustrates the three elements of product costs, materials (Event 2), labor (Event 4), and overhead (Event 8). These events are discussed in more detail below.

### EXHIBIT 10.5

#### Effect of Product versus Selling and Administrative Costs on Financial Statements

Event No.	Assets								Equity									
	Cash	+	Inventory	+	Office Furn.*	+	Manuf. Equip.*	=	Com. Stk.	+	Ret. Earn.	Rev.	—	Exp.	=	Net Inc.	Cash Flow	
1	15,000							=	15,000								15,000 FA	
2	(2,000)	+	2,000														(2,000) OA	
3	(1,200)							=			(1,200)		—	1,200	=	(1,200)	(1,200) OA	
4	(3,000)	+	3,000														(3,000) OA	
5	(2,800)	+			2,800												(2,800) IA	
6					(600)			=			(600)		—	600	=	(600)		
7	(4,500)	+					4,500										(4,500) IA	
8			1,000	+			(1,000)											
9	7,500							=			7,500	7,500			=	7,500	7,500 OA	
10			(4,000)					=			(4,000)		—	4,000	=	(4,000)		
Totals	9,000	+	2,000	+	2,200	+	3,500	=	15,000	+	1,700	7,500	—	5,800	=	1,700	9,000 NC	

\*Negative amounts in these columns represent accumulated depreciation.

### Materials Costs (Event 2)

Materials used to make products are usually called **raw materials**. The cost of raw materials is first recorded in an asset account (Inventory). The cost is then transferred from the Inventory account to the Cost of Goods Sold account at the time the goods are sold. Remember that materials cost is only one component of total manufacturing costs. When inventory is sold, the combined cost of materials, labor, and overhead is expensed as *cost of goods sold*. The costs of materials that can be easily and conveniently traced to products are called **direct raw materials** costs.

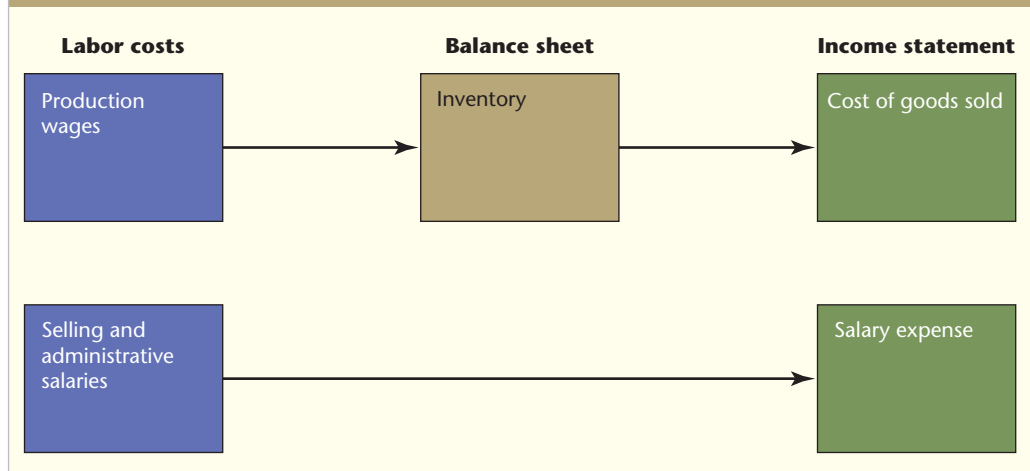
### Labor Costs (Event 4)

The salaries paid to selling and administrative employees (Event 3) and the wages paid to production workers (Event 4) are accounted for differently. Salaries paid to selling and administrative employees are expensed immediately, but the cost of

production wages is added to inventory. Production wages are expensed as part of cost of goods sold at the time the inventory is sold. Labor costs that can be easily and conveniently traced to products are called **direct labor** costs. The cost flow of wages for production employees versus salaries for selling and administrative personnel is shown in Exhibit 10.6.

### EXHIBIT 10.6

#### Flow of Labor Costs

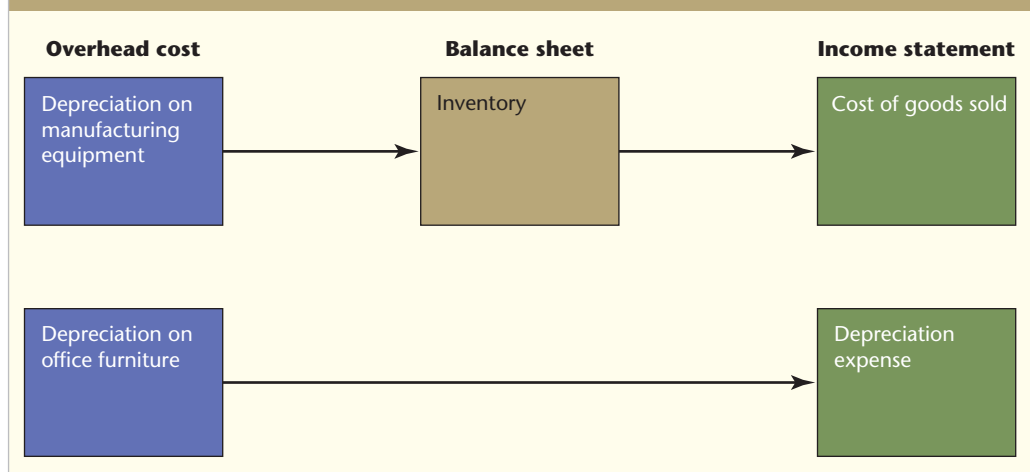


### Overhead Costs (Event 8)

Although depreciation cost totaled \$1,600 (\$600 on office furniture and \$1,000 on manufacturing equipment), only the \$600 of depreciation on the office furniture is expensed directly on the income statement. The depreciation on the manufacturing equipment is split between the income statement (cost of goods sold) and the balance sheet (inventory). The depreciation cost flow for the manufacturing equipment versus the office furniture is shown in Exhibit 10.7.

### EXHIBIT 10.7

#### Flow of Depreciation Costs



### Total Product Cost

A summary of Patillo Manufacturing's total product cost is shown in Exhibit 10.8.

## EXHIBIT 10.8

### Schedule of Inventory Costs

Materials	\$2,000
Labor	3,000
Manufacturing overhead*	<u>1,000</u>
Total product costs	6,000
Less: Cost of goods sold	<u>(4,000)</u>
Ending inventory balance	<u>\$2,000</u>

\*Depreciation  $(\$4,500 - \$1,500) \div 3$

## General, Selling, and Administrative Costs

**General, selling, and administrative costs (G,S,&A)** are normally expensed *in the period* in which they are incurred. Because of this recognition pattern, non-product expenses are sometimes called **period costs**. In Patillo's case, the salaries expense for selling and administrative employees and the depreciation on office furniture are period costs reported directly on the income statement.

The income statement, balance sheet, and statement of cash flows for Patillo Manufacturing are displayed in Exhibit 10.9.

The \$4,000 cost of goods sold reported on the income statement includes a portion of the materials, labor, and overhead costs incurred by Patillo during the year. Similarly, the \$2,000 of finished goods inventory on the balance sheet includes materials, labor, and overhead costs. These product costs will be recognized as expense in the next accounting period when the goods are sold. Initially classifying a cost as a product cost delays, but does not eliminate, its recognition as an expense. All product costs are ultimately recognized as expense (cost of goods sold). Cost classification does not affect cash flow. Cash inflows and outflows are recognized in the period that cash is collected or paid regardless of whether the cost is recorded as an asset or expensed on the income statement.

## Overhead Costs: A Closer Look

Costs such as depreciation on manufacturing equipment cannot be easily traced to products. Suppose that Patillo Manufacturing makes both tables and chairs. What part of the depreciation is caused by manufacturing tables versus manufacturing chairs? Similarly, suppose a production supervisor oversees employees who work on both tables and chairs. How much of the supervisor's salary relates to tables and how much to chairs? Likewise, the cost of glue used in the production department would be difficult to trace to tables versus chairs. You could count the drops of glue used on each product, but the information would not be useful enough to merit the time and money spent collecting the data.

Costs that cannot be traced to products and services in a *cost-effective* manner are called **indirect costs**. The indirect costs incurred to make products are called

## EXHIBIT 10.9

### PATILLO MANUFACTURING COMPANY

#### Financial Statements

#### Income Statement for 2010

Sales revenue	\$ 7,500
Cost of goods sold	<u>(4,000)</u>
Gross margin	3,500
G, S, & A expenses	
Salaries expense	(1,200)
Depreciation expense—office furniture	<u>(600)</u>
Net income	<u>\$ 1,700</u>

#### Balance Sheet as of December 31, 2010

Cash	\$ 9,000
Finished goods inventory	2,000
Office furniture	\$2,800
Accumulated depreciation	<u>(600)</u>
Book value	2,200
Manufacturing equipment	4,500
Accumulated depreciation	<u>(1,000)</u>
Book value	3,500
Total assets	<u>\$16,700</u>
Stockholders' equity	
Common stock	\$15,000
Retained earnings	1,700
Total stockholders' equity	<u>\$16,700</u>

#### Statement of Cash Flows for 2010

<b>Operating Activities</b>	
Inflow from revenue	\$ 7,500
Outflow for inventory	(5,000)
Outflow for S&A salaries	<u>(1,200)</u>
Net inflow from operating activities	1,300
<b>Investing Activities</b>	
Outflow for equipment and furniture	<u>(7,300)</u>
<b>Financing Activities</b>	
Inflow from stock issue	<u>15,000</u>
Net change in cash	9,000
Beginning cash balance	<u>-0-</u>
Ending cash balance	<u>\$ 9,000</u>

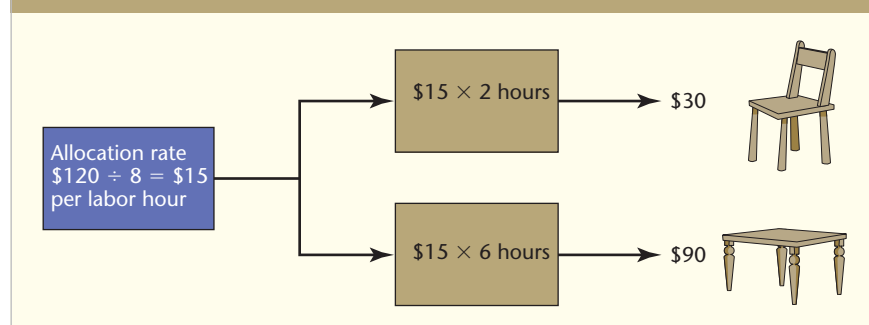
**manufacturing overhead.** Some of the items commonly included in manufacturing overhead are indirect materials, indirect labor, factory utilities, rent of manufacturing facilities, and depreciation on manufacturing assets.

Since indirect costs cannot be effectively traced to products, they are normally assigned to products using **cost allocation**, a process of dividing a total cost into parts and assigning the parts to relevant cost objects. To illustrate, suppose that production workers spend an eight-hour day making a chair and a table. The chair requires two hours to complete and the table requires six hours. Now suppose that \$120 of utilities cost is consumed during the day. How much of the \$120 should be assigned to each piece of furniture? The utility cost cannot be directly traced to each specific piece of furniture, but the piece of furniture that required more labor also likely consumed more of the utility cost. Using this line of reasoning, it is rational to allocate the utility cost to the two pieces of furniture based on *direct labor hours* at a rate of \$15 per hour ( $\$120 \div 8$  hours). The chair would be assigned \$30 ( $\$15 \times 2$  hours) of the utility cost and the table would be assigned the remaining \$90 ( $\$15 \times 6$  hours) of utility cost. The allocation of the utility cost is shown in Exhibit 10.10.

We discuss the details of cost allocation in a later chapter. For now, recognize that overhead costs are normally allocated to products rather than traced directly to them.

#### EXHIBIT 10.10

##### Cost Allocation



### Manufacturing Product Cost Summary

As explained, the cost of a product made by a manufacturing company is normally composed of three categories: direct materials, direct labor, and manufacturing overhead. Relevant information about these three cost components is summarized in Exhibit 10.11.

## Answers to The *Curious* Accountant

As you have seen, accounting for depreciation related to manufacturing assets is different from accounting for depreciation for nonmanufacturing assets. Depreciation on the checkout equipment at **Dick's Sporting Goods** is recorded as depreciation expense. Depreciation on manufacturing equipment at **Razor USA** is considered a product cost. It is included first as a part of the cost of inventory and eventually as a part of the expense, cost of goods sold. Recording depreciation on manufacturing equipment as an inventory cost is simply another example of the matching principle, because the cost does not become an expense until revenue from the product sale is recognized.

## EXHIBIT 10.11

### Components of Manufacturing Product Cost

#### Component 1—Direct Materials

Sometimes called *raw materials*. In addition to basic resources such as wood or metals, it can include manufactured parts. For example, engines, glass, and car tires can be considered as raw materials for an automotive manufacturer. If the amount of a material in a product is known, it can usually be classified as a direct material. The cost of direct materials can be easily traced to specific products.

#### Component 2—Direct Labor

The cost of wages paid to factory workers involved in hands-on contact with the products being manufactured. If the amount of time employees worked on a product can be determined, this cost can usually be classified as direct labor. Like direct materials, labor costs must be easily traced to a specific product in order to be classified as a direct cost.

#### Component 3—Manufacturing Overhead

Costs that cannot be easily traced to specific products. Accordingly, these costs are called indirect costs. They can include but are not limited to the following:

1. Indirect materials such as glue, nails, paper, and oil. Indeed, note that indirect materials used in the production process may not appear in the finished product. An example is a chemical solvent used to clean products during the production process but not a component material found in the final product.
2. Indirect labor such as the cost of salaries paid to production supervisors, inspectors, and maintenance personnel.
3. Rental cost for manufacturing facilities and equipment.
4. Utility costs.
5. Depreciation.
6. Security.
7. The cost of preparing equipment for the manufacturing process (i.e., setup costs).
8. Maintenance cost for the manufacturing facility and equipment.

## CHECK *Yourself* 10.2

Lawson Manufacturing Company paid production workers wages of \$100,000. It incurred materials costs of \$120,000 and manufacturing overhead costs of \$160,000. Selling and administrative salaries were \$80,000. Lawson started and completed 1,000 units of product and sold 800 of these units. The company sets sales prices at \$220 above the average per unit production cost. Based on this information alone, determine the amount of gross margin and net income. What is Lawson's pricing strategy called?

**Answer** Total product cost is \$380,000 (\$100,000 labor + \$120,000 materials + \$160,000 overhead). Cost per unit is \$380 (\$380,000 ÷ 1,000 units). The sales price per unit is \$600 (\$380 + \$220). Cost of goods sold is \$304,000 (\$380 × 800 units). Sales revenue is \$480,000 (\$600 × 800 units). Gross margin is \$176,000 (\$480,000 revenue – \$304,000 cost of goods sold). Net income is \$96,000 (\$176,000 gross margin – \$80,000 selling and administrative salaries). Lawson's pricing strategy is called *cost-plus* pricing.

## UPSTREAM AND DOWNSTREAM COSTS

Most companies incur product-related costs before and after, as well as during, the manufacturing process. For example, **Ford Motor Company** incurs significant research and development costs prior to mass producing a new car model. These **upstream costs** occur before the manufacturing process begins. Similarly, companies normally

### LO 4

Distinguish product costs from upstream and downstream costs.



incur significant costs after the manufacturing process is complete. Examples of **downstream costs** include transportation, advertising, sales commissions, and bad debts. While upstream and downstream costs are not considered to be product costs for financial reporting purposes, profitability analysis requires that they be considered in cost-plus pricing decisions. To be profitable, a company must recover the total cost of developing, producing, and delivering its products to customers.

## PRODUCT COSTING IN SERVICE AND MERCHANDISING COMPANIES

### LO 5

Explain how product costing differs in service, merchandising, and manufacturing companies.

Companies are frequently classified as being service, merchandising, or manufacturing businesses. As the name implies, service organizations provide services, rather than physical products, to consumers. For example, **St. Jude Children's Hospital** provides treatment programs aimed at healing patient diseases. Other common service providers include public accountants, lawyers, restaurants, dry cleaning establishments, and lawn care companies. Merchandising businesses are sometimes called retail or wholesale companies; they sell goods other companies make. **The Home Depot, Inc.**, **Costco Wholesale Corporation**, and **Best Buy Co., Inc.**, are merchandising companies. Manufacturing companies make the goods they sell to their customers. **Toyota Motor Corporation**, **Texaco, Inc.**, and **American Standard Companies, Inc.**, are manufacturing businesses.

How do manufacturing companies differ from service and merchandising businesses? Do service and merchandising companies incur materials, labor, and overhead costs? Yes. For example, **Ernst & Young**, a large accounting firm, must pay employees (labor costs), use office supplies (material costs), and incur utilities, depreciation, and so on (overhead costs) in the process of conducting audits. *The primary difference between manufacturing entities and service companies is that the products provided by service companies are consumed immediately.* In contrast, products made by manufacturing companies can be held in the form of inventory until they are sold to consumers. Similarly, most labor and overhead costs incurred by merchandising companies result from providing assistance to customers. These costs are normally treated as general, selling, and administrative expenses rather than accumulated in inventory accounts. Indeed, merchandising companies are often viewed as service companies rather than considered a separate business category.

The important point to remember is that all business managers are expected to control costs, improve quality, and increase productivity. Like managers of manufacturing companies, managers of service and merchandising businesses can benefit from the analysis of the cost of satisfying their customers. For example, **Wendy's**, a service company, can benefit from knowing how much a hamburger costs in the same manner that **Bayer Corporation**, a manufacturing company, benefits from knowing the cost of a bottle of aspirin.

### CHECK Yourself 10.3

The cost of making a **Burger King** hamburger includes the cost of materials, labor, and overhead. Does this mean that Burger King is a manufacturing company?

**Answer** No, Burger King is not a manufacturing company. It is a service company because its products are consumed immediately. In contrast, there may be a considerable delay between the time the product of a manufacturing company is made and the time it is consumed. For example, it could be several months between the time **Ford Motor Company** makes an Explorer and the time the Explorer is ultimately sold to a customer. The primary difference between service and manufacturing companies is that manufacturing companies have inventories of products and service companies do not.

## JUST-IN-TIME INVENTORY

Companies attempt to minimize the amount of inventory they maintain because of the high cost of holding it. Many **inventory holding costs** are obvious: financing, warehouse space, supervision, theft, damage, and obsolescence. Other costs are hidden: diminished motivation, sloppy work, inattentive attitudes, and increased production time.

Many businesses have been able to simultaneously reduce their inventory holding costs and increase customer satisfaction by making products available **just in time (JIT)** for customer consumption. For example, hamburgers that are cooked to order are fresher and more individualized than those that are prepared in advance and stored until a customer orders one. Many fast-food restaurants have discovered that JIT systems lead not only to greater customer satisfaction but also to lower costs through reduced waste.

### LO 6

Show how just-in-time inventory can increase profitability.

### Just-in-Time Illustration

To illustrate the benefits of a JIT system, consider Paula Elliot, a student at a large urban university. She helps support herself by selling flowers. Three days each week, Paula drives to a florist, purchases 25 single-stem roses, returns to the school, and sells the flowers to individuals from a location on a local street corner. She pays \$2 per rose and sells each one for \$3. Some days she does not have enough flowers to meet customer demand. Other days, she must discard one or two unsold flowers; she believes quality is important and refuses to sell flowers that are not fresh. During May, she purchased 300 roses and sold 280. She calculated her driving cost to be \$45. Exhibit 10.12 displays Paula's May income statement.

After studying just-in-time inventory systems in her managerial accounting class, Paula decided to apply the concepts to her small business. She *reengineered* her distribution system by purchasing her flowers from a florist within walking distance of her sales location. She had considered purchasing from this florist earlier but had rejected the idea because the florist's regular selling price of \$2.25 per rose was too high. After learning about *most-favored customer status*, she developed a strategy to get a price reduction. By guaranteeing that she would buy at least 30 roses per week, she was able to convince the local florist to match her current cost of \$2.00 per rose. The local florist agreed that she could make purchases in batches of any size so long as the total amounted to at least 30 per week. Under this arrangement, Paula was able to buy roses *just in time* to meet customer demand. Each day she purchased a small number of flowers. When she ran out, she simply returned to the florist for additional ones.

The JIT system also enabled Paula to eliminate the cost of the *nonvalue-added activity* of driving to her former florist. Customer satisfaction actually improved because no one was ever turned away because of the lack of inventory. In June, Paula was able to buy and sell 310 roses with no waste and no driving expense. The June income statement is shown in Exhibit 10.13.

#### EXHIBIT 10.12

##### Income Statement for May

Sales revenue (280 units × \$3 per unit)	\$840
Cost of goods sold (280 units × \$2 per unit)	(560)
Gross margin	280
Driving expense	(45)
Waste (20 units × \$2 per unit)	40
Net income	<u>\$195</u>

#### EXHIBIT 10.13

##### Income Statement for June

Sales revenue (310 units × \$3 per unit)	\$930
Cost of goods sold (310 units × \$2 per unit)	(620)
Gross margin	310
Driving expense	0
Net income	<u>\$310</u>

Paula was ecstatic about her \$115 increase in profitability (\$310 in June – \$195 in May = \$115 increase), but she was puzzled about the exact reasons for the change. She had saved \$40 (20 flowers × \$2 each) by avoiding waste and eliminated \$45 of driving expenses. These two factors explained only \$85 (\$40 waste + \$45 driving expense) of the \$115 increase. What had caused the remaining \$30 (\$115 – \$85) increase in profitability? Paula asked her accounting professor to help her identify the remaining \$30 difference.

The professor explained that May sales had suffered from *lost opportunities*. Recall that under the earlier inventory system, Paula had to turn away some prospective customers because she sold out of flowers before all customers were served. Sales increased from 280 roses in May to 310 roses in June. A likely explanation for the 30 unit difference (310 – 280) is that customers who would have purchased flowers in May were unable to do so because of a lack of availability. May's sales suffered from the lost opportunity to earn a gross margin of \$1 per flower on 30 roses, a \$30 **opportunity cost**. This opportunity cost is the missing link in explaining the profitability difference between May and June. The total \$115 difference consists of (1) \$40 savings from waste elimination, (2) \$45 savings from eliminating driving expense, and (3) opportunity cost of \$30. The subject of opportunity cost has widespread application and is discussed in more depth in subsequent chapters of the text.

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### CHECK *Yourself* 10.4

A strike at a **General Motors** brake plant caused an almost immediate shutdown of many of the company's assembly plants. What could have caused such a rapid and widespread shutdown?

**Answer** A rapid and widespread shutdown could have occurred because General Motors uses a just-in-time inventory system. With a just-in-time inventory system, there is no stockpile of inventory to draw on when strikes or other forces disrupt inventory deliveries. This illustrates a potential negative effect of using a just-in-time inventory system.

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## STATEMENT OF ETHICAL PROFESSIONAL PRACTICE

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### LO 7

Identify and explain the standards contained in IMA's Statement of Ethical Professional Practice.

Management accountants must be prepared not only to make difficult choices between legitimate alternatives but also to face conflicts of a more troubling nature, such as pressure to

1. Undertake duties they have not been trained to perform competently.
2. Disclose confidential information.
3. Compromise their integrity through falsification, embezzlement, bribery, and so on.
4. Issue biased, misleading, or incomplete reports.

In Chapter 2 we explained how the American Institute of Certified Public Accountants' Code of Professional Conduct provides guidance for CPAs to avoid unethical behavior. To provide Certified Management Accountants (CMAs) with guidance for ethical conduct the Institute of Management Accountants (IMA) issued a *Statement of Ethical Professional Practice*, which is shown in Exhibit 10.14. Management accountants are also frequently required to abide by organizational codes of ethics. Failure to adhere to professional and organizational ethical standards can lead to personal disgrace, loss of employment, or imprisonment.

## EXHIBIT 10.14

### Statement of Ethical Professional Practice

Members of IMA shall behave ethically. A commitment to ethical professional practice includes overarching principles that express our values, and standards that guide our conduct. IMA's overarching ethical principles include: Honesty, Fairness, Objectivity, and Responsibility. Members shall act in accordance with these principles and shall encourage others within their organizations to adhere to them. A member's failure to comply with the following standards may result in disciplinary action.

**Competence** Each member has a responsibility to

- Maintain an appropriate level of professional expertise by continually developing knowledge and skills.
- Perform professional duties in accordance with relevant laws, regulations, and technical standards.
- Provide decision support information and recommendations that are accurate, clear, concise, and timely.
- Recognize and communicate professional limitations or other constraints that would preclude responsible judgment or successful performance of an activity.

**Confidentiality** Each member has a responsibility to

- Keep information confidential except when disclosure is authorized or legally required.
- Inform all relevant parties regarding appropriate use of confidential information. Monitor subordinates' activities to ensure compliance.
- Refrain from using confidential information for unethical or illegal advantage.

**Integrity** Each member has a responsibility to

- Mitigate actual conflicts of interest and avoid apparent conflicts of interest. Advise all parties of any potential conflicts.
- Refrain from engaging in any conduct that would prejudice carrying out duties ethically.
- Abstain from engaging in or supporting any activity that might discredit the profession.

**Credibility** Each member has a responsibility to

- Communicate information fairly and objectively.
- Disclose all relevant information that could reasonably be expected to influence an intended user's understanding of the reports, analyses, or recommendations.
- Disclose delays or deficiencies in information, timeliness, processing, or internal controls in conformance with organization policy and/or applicable law.

**Resolution of Ethical Conflict** In applying these standards, you may encounter problems identifying unethical behavior or resolving an ethical conflict. When faced with ethical issues, follow your organization's established policies on the resolution of such conflict. If these policies do not resolve the ethical conflict, consider the following courses of action.

- Discuss the issue with your immediate supervisor except when it appears that the supervisor is involved. In that case, present the issue to the next level. If you cannot achieve a satisfactory resolution, submit the issue to the next management level. Communication of such problems to authorities or individuals not employed or engaged by the organization is not considered appropriate, unless you believe there is a clear violation of the law.
- Clarify relevant ethical issues by initiating a confidential discussion with an IMA Ethics Counselor or other impartial advisor to obtain a better understanding of possible courses of action.
- Consult your own attorney as to legal obligations and rights concerning the ethical conflict.

## Reality BYTES

In March 2002, Gene Morse, an accountant employed by **WorldCom**, discovered accounting fraud at the company. He relayed his findings to his boss, Cynthia Cooper, the company's vice president of internal audit. After further investigation, Ms. Cooper reported her findings to WorldCom's board of directors in June 2002, and the chief financial officer, Scott Sullivan, was fired.

If company management had refused to let Ms. Cooper address the board, would it have been appropriate for her and Mr. Morse to tell the press about the fraud? If they were members of the Institute of Management Accountants (IMA) it would probably have been unethical for them to be "whistleblowers." IMA standards require a management accountant who is unable to satisfactorily resolve an ethical conflict between himself and his employer to resign from the organization and to submit an informative memorandum to an appropriate representative of the organization. Disclosing such conflicts outside the organization is an inappropriate breach of confidentiality unless required by law. The audit committee of the company's board of directors is an "appropriate representative." In a matter as significant as the WorldCom fraud, the employee would be well advised to seek legal counsel.

For more details on this story, see "How Three Unlikely Sleuths Discovered Fraud at WorldCom," by Susan Pullman and Deborah Solomon, *The Wall Street Journal*, October 30, 2002, pp. 1 and 16.



## A Look Back

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*Managerial accounting* focuses on the information needs of *internal* users, while *financial accounting* focuses on the information needs of *external* users. Managerial accounting uses economic, operating, and nonfinancial, as well as financial, data. Managerial accounting information is local (pertains to the company's subunits), is limited by cost/benefit considerations, is more concerned with relevance and timeliness, and is future oriented. Financial accounting information, on the other hand, is more global than managerial accounting information. It supplies information that applies to the whole company. Financial accounting is regulated by numerous authorities, is characterized by objectivity, is focused on reliability and accuracy, and is historical in nature.

Both managerial and financial accounting are concerned with product costing. Financial accountants need product cost information to determine the amount of inventory reported on the balance sheet and the amount of cost of goods sold reported on the income statement. Managerial accountants need to know the cost of products for pricing decisions and for control and evaluation purposes. When determining unit product costs, managers use the average cost per unit. Determining the actual cost of each product requires an unreasonable amount of time and record keeping and it makes no difference in product pricing and product cost control decisions.

*Product costs* are the costs incurred to make products: the costs of direct materials, direct labor, and overhead. *Overhead costs* are product costs that cannot be cost effectively traced to a product; therefore, they are assigned to products using *cost allocation*. Overhead costs include indirect materials, indirect labor, depreciation, rent, and utilities for manufacturing facilities. Product costs are first accumulated in an asset account (Inventory). They are expensed as cost of goods sold in the period the inventory is sold. The difference between sales revenue and cost of goods sold is called *gross margin*.

*General, selling, and administrative costs* are classified separately from product costs. They are subtracted from gross margin to determine net income. General, selling, and administrative costs can be divided into two categories. Costs incurred before the manufacturing process begins (research and development costs) are *upstream costs*. Costs incurred after manufacturing is complete (transportation) are *downstream costs*. Service companies, like manufacturing companies, incur materials, labor, and overhead costs, but the products provided by service companies are consumed immediately. Therefore, service company product costs are not accumulated in an Inventory account.

A code of ethical conduct is needed in the accounting profession because accountants hold positions of trust and face conflicts of interest. In recognition of the temptations that accountants face, the IMA has issued a *Statement of Ethical Professional Practice*, which provides accountants guidance in resisting temptations and in making difficult decisions.

Emerging trends such as *just-in-time inventory* and *activity-based management* are methods that many companies have used to reengineer their production and delivery systems to eliminate waste, reduce errors, and minimize costs. Activity-based management seeks to eliminate or reduce *nonvalue-added activities* and to create new *value-added activities*. Just-in-time inventory seeks to reduce inventory holding costs and to lower prices for customers by making inventory available just in time for customer consumption.



## A Look Forward

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In addition to distinguishing costs by product versus G, S, & A classification, other classifications can be used to facilitate managerial decision making. In the next chapter, costs are classified according to the *behavior* they exhibit when the number of units of product increases or decreases (volume of activity changes). You will learn to distinguish between costs that vary with activity volume changes versus costs that remain fixed with activity volume changes. You will learn not only to recognize *cost behavior* but also how to use such recognition to evaluate business risk and opportunity.



## APPENDIX A

### Emerging Trends in Managerial Accounting

Global competition has forced many companies to reengineer their production and delivery systems to eliminate waste, reduce errors, and minimize costs. A key ingredient of successful **reengineering** is benchmarking. **Benchmarking** involves identifying the **best practices** used by world-class competitors. By studying and mimicking these practices, a company uses benchmarking to implement highly effective and efficient operating methods. Best practices employed by world-class companies include total quality management (TQM), activity-based management (ABM), and value-added assessment.

LO 8

Identify emerging trends in accounting.

#### Total Quality Management

To promote effective and efficient operations, many companies practice **total quality management (TQM)**. TQM is a two-dimensional management philosophy using (1) a systematic problem-solving philosophy that encourages frontline workers to achieve *zero defects* and (2) an organizational commitment to achieving *customer satisfaction*. A key component of TQM is **continuous improvement**, an ongoing process through which employees strive to eliminate waste, reduce response time, minimize defects, and simplify the design and delivery of products and services to customers.

#### Activity-Based Management

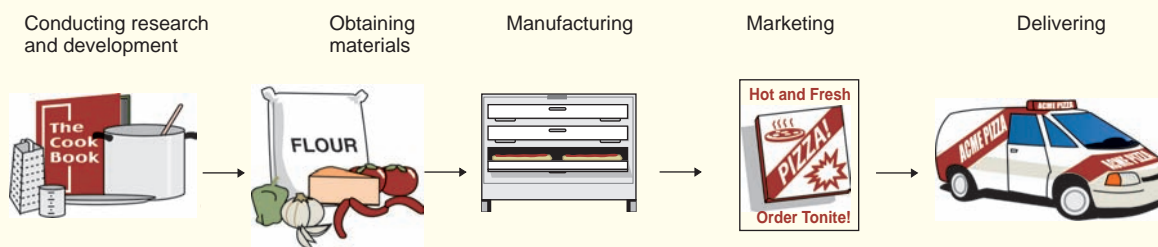
Simple changes in perspective can have dramatic results. For example, imagine how realizing the world is round instead of flat changed the nature of travel. A recent change in perspective developing in management accounting is the realization that an organization cannot manage *costs*. Instead, it manages the *activities* that cause costs to be incurred. **Activities** represent the measures an organization takes to accomplish its goals.

The primary goal of all organizations is to provide products (goods and services) their customers *value*. The sequence of activities used to provide products is called a **value chain**. **Activity-based management** assesses the value chain to create new or refine existing **value-added activities** and to eliminate or reduce *nonvalue-added activities*. A value-added activity is any unit of work that contributes to a product's ability to satisfy customer needs. For example, cooking is an activity that adds value to food served to a hungry customer. **Nonvalue-added activities** are tasks undertaken that do not contribute to a product's ability to satisfy customer needs. Waiting for the oven to preheat so that food can be cooked does not add value. Most customers value cooked food, but they do not value waiting for it.

To illustrate, consider the value-added activities undertaken by a pizza restaurant. Begin with a customer who is hungry for pizza; certain activities must occur to satisfy that hunger. These activities are pictured in Exhibit 10.15. At a minimum, the restaurant must conduct research and development (devise a recipe), obtain raw materials

#### EXHIBIT 10.15

##### Value Chain





(acquire the ingredients), manufacture the product (combine and bake the ingredients), market the product (advertise its availability), and deliver the product (transfer the pizza to the customer).

Businesses gain competitive advantages by adding activities that satisfy customer needs. For example, **Domino's Pizza** grew briskly by recognizing the value customers placed on the convenience of home pizza delivery. Alternatively, **Little Caesar's** has been highly successful by satisfying customers who value low prices. Other restaurants capitalize on customer values pertaining to taste, ambience, or location. Businesses can also gain competitive advantages by identifying and eliminating nonvalue-added activities, providing products of comparable quality at lower cost than competitors.

### Value Chain Analysis Across Companies

Comprehensive value chain analysis extends from obtaining raw materials to the ultimate disposition of finished products. It encompasses the activities performed not only by a particular organization but also by that organization's suppliers and those who service its finished products. For example, **PepsiCo** must be concerned with the activities of the company that supplies the containers for its soft drinks as well as the retail companies that sell its products. If cans of Pepsi fail to open properly, the customer is more likely to blame PepsiCo than the supplier of the cans. Comprehensive value chain analysis can lead to identifying and eliminating nonvalue-added activities that occur between companies. For example, container producers could be encouraged to build manufacturing facilities near Pepsi's bottling factories, eliminating the nonvalue-added activity of transporting empty containers from the manufacturer to the bottling facility. The resulting cost savings benefits customers by reducing costs without affecting quality.



### SELF-STUDY REVIEW PROBLEM

Tuscan Manufacturing Company makes a unique headset for use with mobile phones. During 2010, its first year of operations, Tuscan experienced the following accounting events. Other than the adjusting entries for depreciation, assume that all transactions are cash transactions.

1. Acquired \$850,000 cash from the issue of common stock.
2. Paid \$50,000 of research and development costs to develop the headset.
3. Paid \$140,000 for the materials used to make headsets, all of which were started and completed during the year.
4. Paid salaries of \$82,200 to selling and administrative employees.
5. Paid wages of \$224,000 to production workers.
6. Paid \$48,000 to purchase furniture used in selling and administrative offices.
7. Recognized depreciation on the office furniture. The furniture, acquired January 1, had an \$8,000 estimated salvage value and a four-year useful life. The amount of depreciation is computed as  $([\text{cost} - \text{salvage}] \div \text{useful life})$ . Specifically,  $(\$48,000 - \$8,000) \div 4 = \$10,000$ .
8. Paid \$65,000 to purchase manufacturing equipment.
9. Recognized depreciation on the manufacturing equipment. The equipment, acquired January 1, had a \$5,000 estimated salvage value and a three-year useful life. The amount of depreciation is computed as  $([\text{cost} - \text{salvage}] \div \text{useful life})$ . Specifically,  $(\$65,000 - \$5,000) \div 3 = \$20,000$ .
10. Paid \$136,000 for rent and utility costs on the manufacturing facility.

11. Paid \$41,000 for inventory holding expenses for completed headsets (rental of warehouse space, salaries of warehouse personnel, and other general storage costs).
12. Tuscan started and completed 20,000 headset units during 2010. The company sold 18,400 headsets at a price of \$38 per unit.
13. Compute the average product cost per unit and recognize the appropriate amount of cost of goods sold.

### Required

- a. Show how these events affect the balance sheet, income statement, and statement of cash flows by recording them in a horizontal financial statements model.
- b. Explain why Tuscan's recognition of cost of goods sold expense had no impact on cash flow.
- c. Prepare a formal income statement for the year.
- d. Distinguish between the product costs and the upstream and downstream costs that Tuscan incurred.
- e. The company president believes that Tuscan could save money by buying the inventory that it currently makes. The warehouse supervisor said that would not be possible because the purchase price of \$27 per unit was above the \$26 average cost per unit of making the product. Assuming the purchased inventory would be available on demand, explain how the company president could be correct and why the warehouse supervisor could be biased in his assessment of the option to buy the inventory.

### Solution to Requirement a

Event No.	Assets					=	Equity							
	Cash	+ Inventory	+ Office Furn.*	+ Manuf. Equip.*	=	Com. Stk.	+ Ret. Earn.		Rev.	- Exp.	= Net Inc.		Cash Flow	
1	850,000				=	850,000							850,000	FA
2	(50,000)				=		(50,000)		-	50,000	= (50,000)		(50,000)	OA
3	(140,000)	+ 140,000											(140,000)	OA
4	(82,200)				=		(82,200)		-	82,200	= (82,200)		(82,200)	OA
5	(224,000)	+ 224,000											(224,000)	OA
6	(48,000)		48,000										(48,000)	IA
7			(10,000)		=		(10,000)		-	10,000	= (10,000)			
8	(65,000)			65,000									(65,000)	IA
9		20,000		(20,000)										
10	(136,000)	+ 136,000											(136,000)	OA
11	(41,000)				=		(41,000)		-	41,000	= (41,000)		(41,000)	OA
12	699,200				=		699,200		699,200		= 699,200		699,200	OA
13		(478,400)			=		(478,400)		-	478,400	= (478,400)			
Totals	763,000	+ 41,600	+ 38,000	+ 45,000	=	850,000	+ 37,600		699,200	- 661,600	= 37,600		763,000	NC

\*Negative amounts in these columns represent accumulated depreciation.

The average cost per unit of product is determined by dividing the total product cost by the number of headsets produced. Specifically,  $(\$140,000 + \$224,000 + \$20,000 + \$136,000) \div 20,000 = \$26$ . Cost of goods sold is \$478,400 ( $\$26 \times 18,400$ ).

### Solution to Requirement b

The impact on cash flow occurs when Tuscan pays for various product costs. In this case, cash outflows occurred when Tuscan paid for materials, labor, and overhead. The cash flow consequences of these transactions were recognized before the cost of goods sold expense was recognized.

**Solution to Requirement c**

TUSCAN MANUFACTURING COMPANY	
Income Statement	
For the Year Ended December 31, 2010	
Sales revenue (18,400 units $\times$ \$38)	\$699,200
Cost of goods sold (18,400 $\times$ \$26)	(478,400)
Gross margin	220,800
R & D expenses	(50,000)
Selling and admin. salary expense	(82,200)
Admin. depreciation expense	(10,000)
Inventory holding expense	(41,000)
Net income	<u>\$ 37,600</u>

**Solution to Requirement d**

Inventory product costs for manufacturing companies focus on the costs necessary to make the product. The cost of research and development (Event 2) occurs before the inventory is made and is therefore an upstream cost, not an inventory (product) cost. The inventory holding costs (Event 11) are incurred after the inventory has been made and are therefore downstream costs, not product costs. Selling costs (included in Events 4 and 7) are normally incurred after products have been made and are therefore usually classified as downstream costs. Administrative costs (also included in Events 4 and 7) are not related to making products and are therefore not classified as product costs. Administrative costs may be incurred before, during, or after products are made, so they may be classified as either upstream or downstream costs. Only the costs of materials, labor, and overhead that are actually incurred for the purpose of making goods (Events 3, 5, 9, and 10) are classified as product costs.

**Solution to Requirement e**

Since the merchandise would be available on demand, Tuscan could operate a just-in-time inventory system thereby eliminating the inventory holding expense. Since the additional cost to purchase is \$1 per unit (\$27 – \$26), it would cost Tuscan an additional \$20,000 (\$1  $\times$  20,000 units) to purchase its product. However, the company would save \$41,000 of inventory holding expense. The warehouse supervisor could be biased by the fact that his job would be lost if the company purchased its products and thereby could eliminate the need for warehousing inventory. If Tuscan does not maintain inventory, it would not need a warehouse supervisor.

**KEY TERMS**

Activities 379	Direct labor 370	Just in time (JIT) 375	Raw materials 369
Activity-based management (ABM) 379	Direct raw materials 369	Managerial accounting 363	Reengineering 379
Average cost 367	Downstream costs 374	Manufacturing overhead 372	Total quality management (TQM) 379
Benchmarking 379	Financial accounting 363	Nonvalue-added activities 379	Upstream costs 373
Best practices 379	Finished Goods Inventory 366	Opportunity cost 376	Value-added activity 379
Continuous improvement 379	General, selling, and administrative costs 371	Overhead 366	Value-added principle 365
Cost allocation 372	Indirect costs 371	Period costs 371	Value chain 379
Cost-plus pricing 366	Inventory holding costs 375	Product costs 366	
		Product costing 366	

**QUESTIONS**

- What are some differences between financial and managerial accounting?
- What does the value-added principle mean as it applies to managerial accounting information? Give an example of value-added information that may be included in managerial accounting reports but is not shown in publicly reported financial statements.
- How does product costing used in financial accounting differ from product costing used in managerial accounting?

4. What does the statement “costs can be assets or expenses” mean?
5. Why are the salaries of production workers accumulated in an inventory account instead of being directly expensed on the income statement?
6. How do product costs affect the financial statements? How does the classification of product cost (as an asset vs. an expense) affect net income?
7. What is an indirect cost? Provide examples of product costs that would be classified as indirect.
8. How does a product cost differ from a general, selling, and administrative cost? Give examples of each.
9. Why is cost classification important to managers?
10. What is cost allocation? Give an example of a cost that needs to be allocated.
11. What are some of the common ethical conflicts that accountants encounter?
12. What costs should be considered in determining the sales price of a product?
13. What is a just-in-time (JIT) inventory system? Name some inventory costs that can be eliminated or reduced by its use.
14. What are the two dimensions of a total quality management (TQM) program? Why is TQM being used in business practice? (Appendix)
15. What does the term *reengineering* mean? Name some reengineering practices. (Appendix)
16. How has the Institute of Management Accountants responded to the need for high standards of ethical conduct in the accounting profession? (Appendix)
17. What does the term *activity-based management* mean? (Appendix)
18. What is a value chain? (Appendix)
19. What do the terms *value-added activity* and *nonvalue-added activity* mean? Provide an example of each type of activity. (Appendix)

## EXERCISES

All applicable Exercises are available with McGraw-Hill  
*Connect Accounting*.

connect  
ACCOUNTING

### Exercise 10-1 *Identifying financial versus managerial accounting characteristics*

LO 1

#### Required

Indicate whether each of the following is representative of managerial or of financial accounting.

- a. Information includes economic and nonfinancial data as well as financial data.
- b. Information is global and pertains to the company as a whole.
- c. Information is provided to insiders including executives, managers, and operators.
- d. Information is factual and is characterized by objectivity, reliability, consistency, and accuracy.
- e. Information is reported continuously and has a current or future orientation.
- f. Information is provided to outsiders including investors, creditors, government agencies, analysts, and reporters.
- g. Information is regulated by the SEC, FASB, and other sources of GAAP.
- h. Information is based on estimates that are bounded by relevance and timeliness.
- i. Information is historically based and usually reported annually.
- j. Information is local and pertains to subunits of the organization.

### Exercise 10-2 *Identifying product versus general, selling, and administrative costs*

LO 2

#### Required

Indicate whether each of the following costs should be classified as a product cost or as a general, selling, and administrative cost.

- a. Research and development costs incurred to create new drugs for a pharmaceutical company.
- b. The cost of secretarial supplies used in a doctor's office.
- c. Depreciation on the office furniture of the company president.
- d. Direct materials used in a manufacturing company.
- e. Indirect materials used in a manufacturing company.
- f. Salaries of employees working in the accounting department.

- g. Commissions paid to sales staff.
- h. Interest on the mortgage for the company's corporate headquarters.
- i. Indirect labor used to manufacture inventory.
- j. Attorney's fees paid to protect the company from frivolous lawsuits.

**LO 2****Exercise 10-3** *Classifying costs: product or G, S, & A/asset or expense***Required**

Use the following format to classify each cost as a product cost or a general, selling, and administrative (G, S, & A) cost. Also indicate whether the cost would be recorded as an asset or an expense. The first item is shown as an example.

Cost Category	Product/ G, S, & A	Asset/ Expense
Production supplies	Product	Asset
Depreciation on administration building		
Depreciation on manufacturing equipment		
Research and development costs		
Cost to set up manufacturing equipment		
Utilities used in factory		
Cars for sales staff		
Distributions to stockholders		
General office supplies		
Raw materials used in the manufacturing process		
Cost to rent office equipment		
Wages of production workers		
Advertising costs		
Promotion costs		

**LO 2, 3****Exercise 10-4** *Identifying effect of product versus general, selling, and administrative costs on financial statements***Required**

Kohler Industries recognized accrued compensation cost. Use the following model to show how this event would affect the company's financial statement under the following two assumptions: (1) the compensation is for office personnel and (2) the compensation is for production workers. Use pluses or minuses to show the effect on each element. If an element is not affected, indicate so by placing the letters NA under the appropriate heading.

	Assets	=	Liab.	+	Equity	Rev.	-	Exp.	=	Net Inc.	Cash Flow
1.											
2.											

**LO 2, 3****Exercise 10-5** *Identify effect of product versus general, selling, and administrative costs on financial statements***Required**

Milby Industries recognized the annual cost of depreciation on December 31, 2010. Using the following horizontal financial statements model, indicate how this event affected the company's

financial statements under the following two assumptions: (1) the depreciation was on office furniture and (2) the depreciation was on manufacturing equipment. Indicate whether the event increases (I), decreases (D), or has no affect (NA) on each element of the financial statements. Also, in the Cash column, indicate whether the cash flow is for operating activities (OA), investing activities (IA), or financing activities (FA). (Note: Show accumulated depreciation as a decrease in the book value of the appropriate asset account.)

Event No.	Assets								Equity						Cash Flow	
	Cash	+	Inventory	+	Manuf. Equip.	+	Office Furn.	=	Com. Stk.	+						Ret. Earn.
1.																
2.																

### Exercise 10-6 Identifying product costs in a manufacturing company

LO 2

Emily Thompson was talking to another accounting student, Victor Sanchez. Upon discovering that the accounting department offered an upper-level course in cost measurement, Emily remarked to Victor, “How difficult can it be? My parents own a toy store. All you have to do to figure out how much something costs is look at the invoice. Surely you don’t need an entire course to teach you how to read an invoice.”

#### Required

- Identify the three main components of product cost for a manufacturing entity.
- Explain why measuring product cost for a manufacturing entity is more complex than measuring product cost for a retail toy store.
- Assume that Emily’s parents rent a store for \$8,000 per month. Different types of toys use different amounts of store space. For example, displaying a bicycle requires more store space than displaying a deck of cards. Also, some toys remain on the shelf longer than others. Fad toys sell quickly, but traditional toys sell more slowly. Under these circumstances, how would you determine the amount of rental cost required to display each type of toy? Identify two other costs incurred by a toy store that may be difficult to allocate to individual toys.

### Exercise 10-7 Identifying product versus general, selling, and administrative costs

LO 2, 3

A review of the accounting records of Feldman Manufacturing indicated that the company incurred the following payroll costs during the month of August.

- Salary of the company president—\$100,000.
- Salary of the vice president of manufacturing—\$40,000.
- Salary of the chief financial officer—\$40,000.
- Salary of the vice president of marketing—\$25,000.
- Salaries of middle managers (department heads, production supervisors) in manufacturing plant—\$120,000.
- Wages of production workers—\$3,940,000.
- Salaries of administrative secretaries—\$81,000.
- Salaries of engineers and other personnel responsible for maintaining production equipment—\$125,000.
- Commissions paid to sales staff—\$126,000.

#### Required

- What amount of payroll cost would be classified as general, selling, and administrative expense?
- Assuming that Feldman made 5,000 units of product and sold 4,000 of them during the month of August, determine the amount of payroll cost that would be included in cost of goods sold.



**LO 2, 3****Exercise 10-8** *Recording product versus general, selling, and administrative costs in a financial statements model*

Millard Manufacturing experienced the following events during its first accounting period.

1. Recognized depreciation on manufacturing equipment.
2. Recognized depreciation on office furniture.
3. Recognized revenue from cash sale of products.
4. Recognized cost of goods sold from sale referenced in Event 3.
5. Acquired cash by issuing common stock.
6. Paid cash to purchase raw materials that were used to make products.
7. Paid wages to production workers.
8. Paid salaries to administrative staff.

**Required**

Use the following horizontal financial statements model to show how each event affects the balance sheet, income statement, and statement of cash flows. Indicate whether the event increases (I), decreases (D), or has no effect (NA) on each element of the financial statements. In the Cash Flow column, indicate whether the cash flow is for operating activities (OA), investing activities (IA), or financing activities (FA). The first transaction has been recorded as an example. (*Note:* Show accumulated depreciation as decrease in the book value of the appropriate asset account.)

Event No.	Assets							Equity									
	Cash	+	Inventory	+	Manuf. Equip.	+	Office Furn.	=	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
1.	NA		I		D		NA		NA		NA	NA		NA		NA	NA

**LO 2, 3****Exercise 10-9** *Allocating product costs between ending inventory and cost of goods sold*

Anthony Manufacturing Company began operations on January 1. During the year, it started and completed 3,400 units of product. The company incurred the following costs.

1. Raw materials purchased and used—\$6,300.
2. Wages of production workers—\$7,060.
3. Salaries of administrative and sales personnel—\$3,990.
4. Depreciation on manufacturing equipment—\$8,740.
5. Depreciation on administrative equipment—\$3,670.

Anthony sold 2,040 units of product.

**Required**

- a. Determine the total product cost for the year.
- b. Determine the total cost of the ending inventory.
- c. Determine the total of cost of goods sold.

**LO 5****Exercise 10-10** *Financial statement effects for manufacturing versus service organizations*

The following financial statements model shows the effects of recognizing depreciation in two different circumstances. One circumstance represents recognizing depreciation on a machine used in a factory. The other circumstance recognizes depreciation on computers used in a consulting firm. The effects of each event have been recorded using the letter (I) to represent increase, (D) for decrease, and (NA) for no effect.

Event No.	Assets						Equity								
	Cash	+	Inventory	+	Equip.	=	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow
1.	NA		NA		D		NA		D	NA		I		D	NA
2.	NA		I		D		NA		NA	NA		NA		NA	NA

### Required

- Identify the event that represents depreciation on the computers.
- Explain why recognizing depreciation on equipment used in a manufacturing company affects financial statements differently from recognizing depreciation on equipment used in a service organization.

### Exercise 10-11 *Identifying the effect of product versus general, selling, and administrative cost on the income statement and statement of cash flows*

LO 3

Each of the following events describes acquiring an asset that requires a year-end adjusting entry.

- Paid \$7,000 cash on January 1 to purchase printers to be used for administrative purposes. The printers had an estimated useful life of three years and a \$1,000 salvage value.
- Paid \$7,000 cash on January 1 to purchase manufacturing equipment. The equipment had an estimated useful life of three years and a \$1,000 salvage value.
- Paid \$6,000 cash in advance on May 1 for a one-year rental contract on administrative offices.
- Paid \$6,000 cash in advance on May 1 for a one-year rental contract on manufacturing facilities.
- Paid \$1,000 cash to purchase supplies to be used by the marketing department. At the end of the year, \$200 of supplies were still on hand.
- Paid \$1,000 cash to purchase supplies to be used in the manufacturing process. At the end of the year, \$200 of supplies were still on hand.

### Required

Explain how acquiring the asset and making the adjusting entry affect the amount of net income and the cash flow reported on the year-end financial statements. Also, in the Cash Flow column, indicate whether the cash flow is for operating activities (OA), investing activities (IA), or financing activities (FA). Use (NA) for no effect. Assume a December 31 annual closing date. The first event has been recorded as an example. Assume that any products that have been made have not been sold.

Event No.	Net Income	Cash Flow
	Amount of Change	Amount of Change
1. Purchase of printers	NA	(7,000) IA
1. Make adjusting entry	(2,000)	NA

### Exercise 10-12 *Upstream and downstream costs*

LO 4

During 2009, Earwood Manufacturing Company incurred \$8,000,000 of research and development (R&D) costs to create a long-life battery to use in computers. In accordance with FASB standards, the entire R&D cost was recognized as an expense in 2009. Manufacturing costs (direct materials, direct labor, and overhead) were expected to be \$22 per unit. Packaging,

shipping, and sales commissions were expected to be \$8 per unit. Earwood expected to sell 200,000 batteries before new research renders the battery design technologically obsolete. During 2009, Earwood made 21,000 batteries and sold 18,000 of them.

#### Required

- Identify the upstream and downstream costs.
- Determine the 2009 amount of cost of goods sold and the ending inventory balance.
- Determine the sales price assuming that Earwood desired to earn a profit margin equal to 25 percent of the *total cost* of developing, making, and distributing the batteries.
- Prepare an income statement for 2009. Use the sales price developed in Requirement c.
- Why would Earwood price the batteries at a level that would generate a loss for the 2009 accounting period?

### LO 7

#### Exercise 10-13 *Statement of Ethical Professional Practice*

In February 2006 former senator Warren Rudman of New Hampshire completed a 17-month investigation of an \$11 billion accounting scandal at Fannie Mae (a major enterprise involved in home mortgage financing). The Rudman investigation concluded that Fannie Mae's CFO and controller used an accounting gimmick to manipulate financial statements in order to meet earnings-per-share (EPS) targets. Meeting the EPS targets triggered bonus payments for the executives.

#### Required

Review the principles of ethical professional practice shown in Exhibit 10.14. Identify and comment on which of the ethical principles the CFO and controller violated.

### LO 6



#### Exercise 10-14 *Using JIT to minimize waste and lost opportunity*

Julie Kent, a teacher at Tingle Middle School, is in charge of ordering the T-shirts to be sold for the school's annual fund-raising project. The T-shirts are printed with a special Tingle School logo. In some years, the supply of T-shirts has been insufficient to satisfy the number of sales orders. In other years, T-shirts have been left over. Excess T-shirts are normally donated to some charitable organization. T-shirts cost the school \$5 each and are normally sold for \$6 each. Ms. Kent has decided to order 800 shirts.

#### Required

- If the school receives actual sales orders for 725 shirts, what amount of profit will the school earn? What is the cost of waste due to excess inventory?
- If the school receives actual sales orders for 825 shirts, what amount of profit will the school earn? What amount of opportunity cost will the school incur?
- Explain how a JIT inventory system could maximize profitability by eliminating waste and opportunity cost.

### LO 6

#### Exercise 10-15 *Using JIT to minimize holding costs*

Tubb Pet Supplies purchases its inventory from a variety of suppliers, some of which require a six-week lead time before delivery. To ensure that she has a sufficient supply of goods on hand, Ms. Gibson, the owner, must maintain a large supply of inventory. The cost of this inventory averages \$42,000. She usually finances the purchase of inventory and pays a 9 percent annual finance charge. Ms. Gibson's accountant has suggested that she establish a relationship with a single large distributor who can satisfy all of her orders within a two-week time period. Given this quick turnaround time, she will be able to reduce her average inventory balance to \$8,000. Ms. Gibson also believes that she could save \$8,000 per year by reducing phone bills, insurance, and warehouse rental space costs associated with ordering and maintaining the larger level of inventory.

#### Required

- Is the new inventory system available to Ms. Gibson a pure or approximate just-in-time system?
- Based on the information provided, how much of Ms. Gibson's inventory holding cost could be eliminated by taking the accountant's advice?

### Exercise 10-16 Value chain analysis (Appendix)

LO 8



Soundwave Company manufactures and sells high-quality audio speakers. The speakers are encased in solid walnut cabinets supplied by Herrin Cabinet Inc. Herrin packages the speakers in durable moisture-proof boxes and ships them by truck to Soundwave's manufacturing facility, which is located 50 miles from the cabinet factory.

#### Required

Identify the nonvalue-added activities that occur between the companies described in the above scenario. Explain how these nonvalue-added activities could be eliminated.

## PROBLEMS

All applicable Problems are available with McGraw-Hill  
*Connect Accounting*.

connect  
ACCOUNTING

### Problem 10-17 Product versus general, selling, and administrative costs

LO 3

Walton Manufacturing Company was started on January 1, 2008, when it acquired \$85,000 cash by issuing common stock. Walton immediately purchased office furniture and manufacturing equipment costing \$10,000 and \$54,000, respectively. The office furniture had a five-year useful life and a zero salvage value. The manufacturing equipment had a \$4,000 salvage value and an expected useful life of five years. The company paid \$11,000 for salaries of administrative personnel and \$16,000 for wages to production personnel. Finally, the company paid \$16,000 for raw materials that were used to make inventory. All inventory was started and completed during the year. Walton completed production on 7,000 units of product and sold 6,000 units at a price of \$15 each in 2008. (Assume all transactions are cash transactions.)

#### Required

- Determine the total product cost and the average cost per unit of the inventory produced in 2008.
- Determine the amount of cost of goods sold that would appear on the 2008 income statement.
- Determine the amount of the ending inventory balance that would appear on the December 31, 2008, balance sheet.
- Determine the amount of net income that would appear on the 2008 income statement.
- Determine the amount of retained earnings that would appear on the December 31, 2008, balance sheet.
- Determine the amount of total assets that would appear on the December 31, 2008, balance sheet.
- Determine the amount of net cash flow from operating activities that would appear on the 2008 statement of cash flows.
- Determine the amount of net cash flow from investing activities that would appear on the 2008 statement of cash flows.

#### CHECK FIGURES

- Average Cost per Unit: \$6.00
- \$126,000

### Problem 10-18 Effect of product versus period costs on financial statements

LO 3

Excel

Polk Manufacturing Company experienced the following accounting events during its first year of operation. With the exception of the adjusting entries for depreciation, all transactions are cash transactions.

- Acquired \$70,000 cash by issuing common stock.
- Paid \$9,500 for the materials used to make products, all of which were started and completed during the year.
- Paid salaries of \$5,400 to selling and administrative employees.
- Paid wages of \$6,400 to production workers.
- Paid \$11,900 for furniture used in selling and administrative offices. The furniture was acquired on January 1. It had a \$1,400 estimated salvage value and a four-year useful life.

#### CHECK FIGURES

Cash balance: \$38,800  
Net income: \$11,975

6. Paid \$38,000 for manufacturing equipment. The equipment was acquired on January 1. It had a \$2,000 estimated salvage value and a three-year useful life.
7. Sold inventory to customers for \$40,000 that had cost \$20,000 to make.

**Required**

Explain how these events would affect the balance sheet, income statement, and statement of cash flows by recording them in a horizontal financial statements model as indicated here. The first event is recorded as an example. In the Cash Flow column, indicate whether the amounts represent financing activities (FA), investing activities (IA), or operating activities (OA).

Event No.	Assets						Equity											
	Cash	+	Inventory	+	Manuf. Equip.*	+	Office Furn.*	=	Com. Stk.	+	Ret. Earn.	Rev.	−	Exp.	=	Net Inc.	Cash Flow	
1	70,000								70,000								70,000	FA

\*Record accumulated depreciation as negative amounts in these columns.

**LO 3****CHECK FIGURES**

Net income: \$36  
Total assets: \$2,396

**Problem 10-19 Product versus general, selling, and administrative costs**

The following transactions pertain to 2009, the first year operations of Lepper Company. All inventory was started and completed during 2009. Assume that all transactions are cash transactions.

1. Acquired \$2,360 cash by issuing common stock.
2. Paid \$720 for materials used to produce inventory.
3. Paid \$1,800 to production workers.
4. Paid \$540 rental fee for production equipment.
5. Paid \$180 to administrative employees.
6. Paid \$144 rental fee for administrative office equipment.
7. Produced 300 units of inventory of which 200 units were sold at a price of \$12 each.

**Required**

Prepare an income statement, balance sheet, and statement of cash flows.

**LO 3, 5****Problem 10-20 Service versus manufacturing companies**

Mazzel Company began operations on January 1, 2008, by issuing common stock for \$33,000 cash. During 2008, Mazzel received \$39,000 cash from revenue and incurred costs that required \$66,000 of cash payments.

**Required**

Prepare an income statement, balance sheet, and statement of cash flows for Mazzel Company for 2008, under each of the following independent scenarios.

- a. Mazzel is a promoter of rock concerts. The \$66,000 was paid to provide a rock concert that produced the revenue.
- b. Mazzel is in the car rental business. The \$66,000 was paid to purchase automobiles. The automobiles were purchased on January 1, 2008, had four-year useful lives and no expected salvage value. Mazzel uses straight-line depreciation. The revenue was generated by leasing the automobiles.
- c. Mazzel is a manufacturing company. The \$66,000 was paid to purchase the following items.
  - (1) Paid \$5,900 cash to purchase materials that were used to make products during the year.
  - (2) Paid \$25,000 cash for wages of factory workers who made products during the year.
  - (3) Paid \$2,100 cash for salaries of sales and administrative employees.

**CHECK FIGURES**

- a. Net loss: \$27,000
- b. Total assets: \$55,500
- c. Net income: \$11,225



- (4) Paid \$33,000 cash to purchase manufacturing equipment. The equipment was used solely to make products. It had a three-year life and a \$7,200 salvage value. The company uses straight-line depreciation.
  - (5) During 2008, Mazzel started and completed 2,000 units of product. The revenue was earned when Mazzel sold 1,300 units of product to its customers.
- d. Refer to Requirement c. Could Mazzel determine the actual cost of making the 500th unit of product? How likely is it that the actual cost of the 500th unit of product was exactly the same as the cost of producing the 501st unit of product? Explain why management may be more interested in average cost than in actual cost.

### Problem 10-21 *Importance of cost classification and ethics*

Young Manufacturing Company (YMC) was started when it acquired \$40,000 by issuing common stock. During the first year of operations, the company incurred specifically identifiable product costs (materials, labor, and overhead) amounting to \$24,000. YMC also incurred \$16,000 of engineering design and planning costs. There was a debate regarding how the design and planning costs should be classified. Advocates of Option 1 believe that the costs should be classified as upstream general, selling, and administrative costs. Advocates of Option 2 believe it is more appropriate to classify the design and planning costs as product costs. During the year, YMC made 4,000 units of product and sold 3,000 units at a price of \$24 each. All transactions were cash transactions.

#### Required

- a. Prepare an income statement, balance sheet, and statement of cash flows under each of the two options.
- b. Assume that YMC provides an incentive bonus to the CFO who is a CMA. The bonus is equal to 13 percent of net income. Compute the amount of the bonus under each of the two options. Identify the option that provides the CFO with the higher bonus.
- c. Assume the CFO knows that the design and planning costs are upstream costs that must be recognized as general, selling, and administrative expenses (Option 1). Even so, the CFO convinces management to classify the upstream costs as product cost in order to increase his bonus. Identify two principles in the Statement of Ethical Professional Practice that are violated by the CFO's behavior.

### Problem 10-22 *Using JIT to reduce inventory holding costs*

Nash Manufacturing Company obtains its raw materials from a variety of suppliers. Nash's strategy is to obtain the best price by letting the suppliers know that it buys from the lowest bidder. Approximately four years ago, unexpected increased demand resulted in materials shortages. Nash was unable to find the materials it needed even though it was willing to pay premium prices. Because of the lack of raw materials, Nash was forced to close its manufacturing facility for two weeks. Its president vowed that her company would never again be at the mercy of its suppliers. She immediately ordered her purchasing agent to perpetually maintain a one-month supply of raw materials. Compliance with the president's orders resulted in a raw materials inventory amounting to approximately \$2,000,000. Warehouse rental and personnel costs to maintain the inventory amounted to \$10,000 per month. Nash has a line of credit with a local bank that calls for a 12 percent annual rate of interest. Assume that Nash finances the raw materials inventory with the line of credit.

#### Required

- a. Based on the information provided, determine the annual holding cost of the raw materials inventory.
- b. Explain how a JIT system could reduce Nash's inventory holding cost.
- c. Explain how most-favored customer status could enable Nash to establish a JIT inventory system without risking the raw materials shortages experienced in the past.

### Problem 10-23 *Using JIT to minimize waste and lost opportunity*

CMA Review Inc. provides review courses for students studying to take the CMA exam. The cost of textbooks is included in the registration fee. Text material requires constant updating

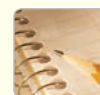
LO 3, 4, 7



#### CHECK FIGURES

- a. Option 1: NI = \$38,000
- Option 2: Total Assets = \$82,000

LO 6



#### CHECK FIGURE

- a. \$360,000

LO 6





**CHECK FIGURES**

- a. \$900
- b. \$3,700

and is useful for only one course. To minimize printing costs and ensure availability of books on the first day of class, CMA Review has books printed and delivered to its offices two weeks in advance of the first class. To ensure that enough books are available, CMA Review normally orders 10 percent more than expected enrollment. Usually there is an oversupply of books that is thrown away. However, demand occasionally exceeds expectations by more than 10 percent and there are too few books available for student use. CMA Review had been forced to turn away students because of a lack of textbooks. CMA Review expects to enroll approximately 100 students per course. The tuition fee is \$800 per student. The cost of teachers is \$25,000 per course, textbooks cost \$60 each, and other operating expenses are estimated to be \$35,000 per course.

**Required**

- a. Prepare an income statement, assuming that 95 students enroll in a course. Determine the cost of waste associated with unused books.
- b. Prepare an income statement, assuming that 115 students attempt to enroll in the course. Note that five students are turned away because of too few textbooks. Determine the amount of lost profit resulting from the inability to serve the five additional students.
- c. Suppose that textbooks can be produced through a high-speed copying process that permits delivery *just in time* for class to start. The cost of books made using this process, however, is \$65 each. Assume that all books must be made using the same production process. In other words, CMA Review cannot order some of the books using the regular copy process and the rest using the high-speed process. Prepare an income statement under the JIT system assuming that 95 students enroll in a course. Compare the income statement under JIT with the income statement prepared in Requirement *a*. Comment on how the JIT system would affect profitability.
- d. Assume the same facts as in Requirement *c* with respect to a JIT system that enables immediate delivery of books at a cost of \$65 each. Prepare an income statement under the JIT system, assuming that 115 students enroll in a course. Compare the income statement under JIT with the income statement prepared in Requirement *b*. Comment on how the JIT system would affect profitability.
- e. Discuss the possible effect of the JIT system on the level of customer satisfaction.

**LO 8****Problem 10-24 Value chain analysis (Appendix)**

Palmer Company invented a new process for manufacturing ice cream. The ingredients are mixed in high-tech machinery that forms the product into small round beads. Like a bag of balls, the ice cream beads are surrounded by air pockets in packages. This design has numerous advantages. First, each bite of ice cream melts quickly in a person's mouth, creating a more flavorful sensation when compared to ordinary ice cream. Also, the air pockets mean that a typical serving includes a smaller amount of ice cream. This not only reduces materials cost but also provides the consumer with a low-calorie snack. A cup appears full of ice cream, but it is really half full of air. The consumer eats only half the ingredients that are contained in a typical cup of blended ice cream. Finally, the texture of the ice cream makes scooping it out of a large container easy. The frustration of trying to get a spoon into a rock-solid package of blended ice cream has been eliminated. Palmer Company named the new product Sonic Cream.

Like many other ice cream producers, Palmer Company purchases its raw materials from a food wholesaler. The ingredients are mixed in Palmer's manufacturing plant. The packages of finished product are distributed to privately owned franchise ice cream shops that sell Sonic Cream directly to the public.

Palmer provides national advertising and is responsible for all research and development costs associated with making new flavors of Sonic Cream.

**Required**

- a. Based on the information provided, draw a comprehensive value chain for Palmer Company that includes its suppliers and customers.
- b. Identify the place in the chain where Palmer Company is exercising its opportunity to create added value beyond that currently being provided by its competitors.

## ANALYZE, THINK, COMMUNICATE

### ATC 10-1 Business Applications Case *Financial versus managerial accounting*

An article in the April 12, 2004, edition of *BusinessWeek*, “The Costco Way—Higher Wages Mean Higher Profits,” compared **Costco Wholesale Corporation** data with **Wal-Mart’s Sam’s Club** data. The tables below present some of the data used to support the article’s claim.



#### How Costco Spends More on Employees

	Costco	Sam’s Club
Average hourly wage rate	\$15.97	\$11.53
Employees covered by a health-care plan	82%	47%
Average annual health-care costs per employee	\$5,735	\$3,500
Employees covered by a retirement plan	91%	64%
Average annual retirement costs per employee	\$1,330	\$747

#### Benefits to Costco from Spending More on Employees

	Costco	Sam’s Club
Annual employee turnover	6%	21%
Labor and overhead cost as a percent of sales	9.8%	17%
Annual sales per square foot	\$795	\$516
Annual profit per employee	\$13,647	\$11,039

#### Required

- Is the information in the tables above best described as primarily financial accounting data or managerial accounting data in nature? Explain.
- Provide additional examples of managerial and financial accounting information that could apply to Costco.
- Explain why a manager of an individual Costco store needs different kinds of information than someone who is considering lending the company money or investing in its common stock.

### ATC 10-2 Group Assignment *Product versus upstream and downstream costs*

Victor Holt, the accounting manager of Sexton Inc., gathered the following information for 2006. Some of it can be used to construct an income statement for 2006. Ignore items that do not appear on an income statement. Some computations may be required. For example, the cost of manufacturing equipment would not appear on the income statement. However, the cost of manufacturing equipment is needed to compute the amount of depreciation. All units of product were started and completed in 2006.



- Issued \$864,000 of common stock.
- Paid engineers in the product design department \$10,000 for salaries that were accrued at the end of the previous year.
- Incurred advertising expenses of \$70,000.
- Paid \$720,000 for materials used to manufacture the company’s product.
- Incurred utility costs of \$160,000. These costs were allocated to different departments on the basis of square footage of floor space. Mr. Holt identified three departments and determined the square footage of floor space for each department to be as shown in the table below.

Department	Square Footage
Research and development	10,000
Manufacturing	60,000
Selling and administrative	30,000
Total	<u>100,000</u>

6. Paid \$880,000 for wages of production workers.
7. Paid cash of \$658,000 for salaries of administrative personnel. There was \$16,000 of accrued salaries owed to administrative personnel at the end of 2006. There was no beginning balance in the Salaries Payable account for administrative personnel.
8. Purchased manufacturing equipment two years ago at a cost of \$10,000,000. The equipment had an eight-year useful life and a \$2,000,000 salvage value.
9. Paid \$390,000 cash to engineers in the product design department.
10. Paid a \$258,000 cash dividend to owners.
11. Paid \$80,000 to set up manufacturing equipment for production.
12. Paid a one-time \$186,000 restructuring cost to redesign the production process to implement a just-in-time inventory system.
13. Prepaid the premium on a new insurance policy covering nonmanufacturing employees. The policy cost \$72,000 and had a one-year term with an effective starting date of May 1. Four employees work in the research and development department and eight employees in the selling and administrative department. Assume a December 31 closing date.
14. Made 69,400 units of product and sold 60,000 units at a price of \$70 each.

### Required

- a. Divide the class into groups of four or five students per group, and then organize the groups into three sections. Assign Task 1 to the first section of groups, Task 2 to the second section of groups, and Task 3 to the third section of groups.

### Group Tasks

- (1) Identify the items that are classified as product costs and determine the amount of cost of goods sold reported on the 2006 income statement.
- (2) Identify the items that are classified as upstream costs and determine the amount of upstream cost expensed on the 2006 income statement.
- (3) Identify the items that are classified as downstream costs and determine the amount of downstream cost expensed on the 2006 income statement.
- b. Have the class construct an income statement in the following manner. Select a member of one of the groups assigned the first group task identifying the product costs. Have that person go to the board and list the costs included in the determination of cost of goods sold. Anyone in the other groups who disagrees with one of the classifications provided by the person at the board should voice an objection and explain why the item should be classified differently. The instructor should lead the class to a consensus on the disputed items. After the amount of cost of goods sold is determined, the student at the board constructs the part of the income statement showing the determination of gross margin. The exercise continues in a similar fashion with representatives from the other sections explaining the composition of the upstream and downstream costs. These items are added to the income statement started by the first group representative. The final result is a completed income statement.

### ATC 10-3 Research Assignment *Identifying product costs at Snap-on, Inc.*



Use the 2006 Form 10-K for **Snap-on, Inc.**, to complete the requirements below. To obtain the Form 10-K you can use the EDGAR system following the instructions in Appendix A, or it can be found under “Corporate Information” on the company’s corporate website: [www.snapon.com](http://www.snapon.com). Read carefully the following portions of the document.

- “Products and Services” on page 5.
- “Consolidated Statement of Earnings” on page 51.
- The following parts of Note 1 on page 56:
  - “Shipping and handling”
  - “Advertising and promotion”
- “Note 4: Inventories” on page 61.
- “Note 5: Property and Equipment” on page 62.

### Required

- a. Does the level of detail that Snap-on provides regarding costs incurred to manufacture its products suggest the company’s financial statements are designed primarily to meet the needs of external or internal users?

- b. Does Snap-on treat shipping and handling costs as product or nonproduct costs?
- c. Does Snap-on treat advertising and promotion costs as product or nonproduct costs?
- d. In Chapter 3 you learned about a class of inventory called merchandise inventory. What categories of inventory does Snap-on report in its annual report?

#### ATC 10-4 Writing Assignment *Emerging practices in managerial accounting*

In January of 2008 **Yahoo, Inc.**, announced through the Reuters news agency and other news outlets that it

*has embarked on a multiyear transformation that includes making some tough decisions about the business to help the company grow. Yahoo plans to invest in some areas, reduce emphasis in others and eliminate some areas of the business that don't support the company's priorities.*

Several reports stated that around 1,000 Yahoo employees were expected to lose their jobs as a result of the restructuring.

#### Required

Assume that you are Yahoo's vice president of human relations. Write a letter to the employees who are affected by the restructuring. The letter should explain why it was necessary for the company to undertake the restructuring. Your explanation should refer to the ideas discussed in the Appendix, "Emerging Trends in Managerial Accounting," of this chapter.

#### ATC 10-5 Ethical Dilemma *Product cost versus selling and administrative expense*

Eddie Emerson is a proud woman with a problem. Her daughter has been accepted into a prestigious law school. While Ms. Emerson beams with pride, she is worried sick about how to pay for the school; she is a single parent who has to support herself and her three children. She had to go heavily into debt to finance her own education. Even though she now has a good job, family needs have continued to outpace her income and her debt burden is staggering. She knows she will be unable to borrow the money needed for her daughter's law school.

Ms. Emerson is the controller of a small manufacturing company. She has just accepted a new job offer. She has not yet told her employer that she will be leaving in a month. She is concerned that her year-end incentive bonus may be affected if her boss learns of her plans to leave. She plans to inform the company immediately after receiving the bonus. She knows her behavior is less than honorable, but she believes that she has been underpaid for a long time. Her boss, a relative of the company's owner, makes twice what she makes and does half the work. Why should she care about leaving with a little extra cash? Indeed, she is considering an opportunity to boost the bonus.

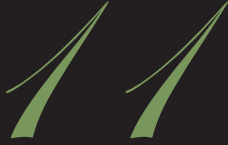
Ms. Emerson's bonus is based on a percentage of net income. Her company recently introduced a new product line that required substantial production start-up costs. Ms. Emerson is fully aware that GAAP requires these costs to be expensed in the current accounting period, but no one else in the company has the technical expertise to know exactly how the costs should be treated. She is considering misclassifying the start-up costs as product costs. If the costs are misclassified, net income will be significantly higher, resulting in a nice boost in her incentive bonus. By the time the auditors discover the misclassification, Ms. Emerson will have moved on to her new job. If the matter is brought to the attention of her new employer, she will simply plead ignorance. Considering her daughter's needs, Ms. Emerson decides to classify the start-up costs as product costs.

#### Required

- a. Based on this information, indicate whether Ms. Emerson believes the number of units of product sold will be equal to, less than, or greater than the number of units made. Write a brief paragraph explaining the logic that supports your answer.
- b. Explain how the misclassification could mislead an investor or creditor regarding the company's financial condition.
- c. Identify the factors that contributed to the breach of ethical conduct. When constructing your answer, you may want to refer to the section "Common Features of Criminal and Ethical Misconduct" in Chapter 2 of this text.
- d. Review the Statement of Ethical Professional Practice shown in Exhibit 10.14 and identify at least two principles that Ms. Emerson's misclassification of the start-up costs violated.



## CHAPTER



# Cost Behavior, Operating Leverage, *and* Profitability Analysis

## LEARNING OBJECTIVES

**After you have mastered the material in this chapter you will be able to:**

- 1** Identify and describe fixed, variable, and mixed cost behavior.
- 2** Demonstrate the effects of operating leverage on profitability.
- 3** Prepare an income statement using the contribution margin approach.
- 4** Calculate the magnitude of operating leverage.
- 5** Demonstrate how the relevant range and decision context affect cost behavior.
- 6** Calculate the break-even point.
- 7** Calculate the sales volume required to attain a target profit.
- 8** Calculate the margin of safety in units, dollars, and percentage.

## CHAPTER OPENING

Three college students are planning a vacation. One of them suggests inviting a fourth person along, remarking that four can travel for the same cost as three. Certainly, some costs will be the same whether three or four people go on the trip. For example, the hotel room costs \$800 per week, regardless of whether three or four people stay in the room. In accounting terms the cost of the hotel room is a **fixed cost**. The total amount of a fixed cost does not change when volume changes. The total hotel room cost is \$800 whether 1, 2, 3, or 4 people use the room. In contrast, some costs vary in direct proportion with changes in volume. When volume increases, total variable cost increases; when volume decreases, total variable cost decreases. For example, the cost of tickets to a theme park is a **variable cost**. The total cost of tickets increases proportionately with each vacationer who goes to the theme park. Cost behavior (fixed versus variable) can significantly impact profitability. This chapter explains cost behavior and ways it can be used to increase profitability.



## The *Curious* Accountant

*News flash!* On June 28, 2007, **Monsanto, Inc.**, announced that its third quarter's earnings increased 71 percent compared to the same quarter in 2006, yet its revenues had increased only 23 percent. That same day, **Palm Company** announced that a decrease in revenue of 0.5 percent for the just-ended quarter would cause its earnings to decrease 44 percent compared to the same quarter in 2006.

On July 12, 2007, **Ruby Tuesday** reported that its revenue for the quarter had declined 2 percent compared to the previous year, but its earnings declined by 22 percent. Two weeks later, **Southern Company** announced that a 5 percent increase in quarterly revenue had increased its earnings by 11 percent.

Can you explain why such relatively small changes in these companies' revenues resulted in such relatively large changes in their earnings or losses? In other words, if a company's sales increase 10 percent, why do its earnings not also increase 10 percent? (Answer on page 402.)





## LO 1

Identify and describe fixed, variable, and mixed cost behavior.



## FIXED COST BEHAVIOR

How much more will it cost to send one additional employee to a sales meeting? If more people buy our products, can we charge less? If sales increase by 10 percent, how will profits be affected? Managers seeking answers to such questions must consider **cost behavior**. Knowing how costs behave relative to the level of business activity enables managers to more effectively plan and control costs. To illustrate, consider the entertainment company Star Productions, Inc. (SPI).

SPI specializes in promoting rock concerts. It is considering paying a band \$48,000 to play a concert. Obviously, SPI must sell enough tickets to cover this cost. In this example, the relevant activity base is the number of tickets sold. The cost of the band is a **fixed cost** because it does not change regardless of the number of tickets sold. Exhibit 11.1 illustrates the fixed cost behavior pattern, showing the *total cost* and the *cost per unit* at three different levels of activity.

*Total* versus *per-unit* fixed costs behave differently. The total cost for the band remains constant (fixed) at \$48,000. In contrast, fixed cost per unit decreases as volume (number of tickets sold) increases. The term *fixed cost* is consistent with the behavior of *total cost*. Total fixed cost remains constant (fixed) when activity changes. However, there is a contradiction between the term *fixed cost per unit* and the *per-unit behavior pattern of a fixed cost*. Fixed cost per unit is *not* fixed. It changes with the number of tickets sold. This contradiction in terminology can cause untold confusion. Study carefully the fixed cost behavior patterns in Exhibit 11.2.

### EXHIBIT 11.1

#### Fixed Cost Behavior

Number of tickets sold (a)	2,700	3,000	3,300
Total cost of band (b)	\$48,000	\$48,000	\$48,000
Cost per ticket sold (b ÷ a)	\$17.78	\$16.00	\$14.55

### EXHIBIT 11.2

#### Fixed Cost Behavior

	When Activity Increases	When Activity Decreases
<b>Total</b> fixed cost	Remains constant	Remains constant
Fixed cost <b>per unit</b>	Decreases	Increases

The fixed cost data in Exhibit 11.1 help SPI's management decide whether to sponsor the concert. For example, the information influences potential pricing choices. The per-unit costs represent the minimum ticket prices required to cover the fixed cost at various levels of activity. SPI could compare these per-unit costs to the prices of competing entertainment events (such as the prices of movies, sporting events, or theater tickets). If the price is not competitive, tickets will not sell and the concert will lose money. Management must also consider the number of tickets to be sold. The volume data in Exhibit 11.1 can be compared to the band's track record of ticket sales at previous concerts. A proper analysis of these data can reduce the risk of undertaking an unprofitable venture.

## OPERATING LEVERAGE

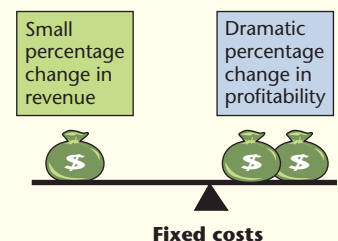
## LO 2

Demonstrate the effects of operating leverage on profitability.

Heavy objects can be moved with little effort using *physical* leverage. Business managers apply **operating leverage** to magnify small changes in revenue into dramatic changes in profitability. The *lever* managers use to achieve disproportionate changes between revenue and profitability is fixed costs. The leverage relationships between revenue, fixed costs, and profitability are displayed in Exhibit 11.3.

### EXHIBIT 11.3

#### Operating Leverage



## Focus On INTERNATIONAL ISSUES

### FIXED COSTS BRING INTERNATIONAL INTRIGUE INTO THE AUTOMOBILE INDUSTRY

In 2000, amidst great fanfare, **General Motors (GM)** and **Fiat S.p.A.** of Italy announced that GM had purchased a 20 percent equity stake in Fiat for \$2.4 billion. The two automakers planned to combine some operations that had been separate, reducing the operating costs for both companies. In some cases these savings were achieved. A special clause in the contract, however, became problematic for GM in 2005.

As part of the financial agreement, Fiat insisted on the right to require GM to purchase all of Fiat between 2005 and 2010. This arrangement is called a *put option*. When the deal was struck neither company thought Fiat would ever exercise the option, but if it did, the two companies would have to negotiate a purchase price. By late 2004, circumstances had changed.

Fiat's CEO suggested he might force GM to purchase Fiat unless GM paid a significant price to void the put option. GM did not want to make such a payment, and the two sides entered difficult negotiations with legal action looking likely. What caused this drastic change in conditions? As *The Wall Street Journal* put it, "Fiat Auto . . . is caught in a trap of high fixed costs and shrinking market share." The same could be said of GM and the automobile manufacturing business in general. Manufacturing vehicles requires high fixed costs. By 2005 automakers' worldwide *excess* capacity was 24 million units. In 2004, GM, the largest company in the auto industry, produced only 9.1 million vehicles worldwide. GM was already at risk of experiencing a downgrade in its debt rating and did not need the added burden of Fiat's unprofitable operations and high debt. Facing high fixed costs and the inability to raise prices due to the glut of cars on the market, Fiat was at risk of bankruptcy without a new source of cash.

Both companies faced difficult choices. The heavily fixed-cost structure of the auto industry, coupled with excess capacity, is a major source of their problems. If a company had only variable costs, it would have no excess capacity, but it would have no economies of scale either. When times are good and sales are expanding, fixed costs can cause profits to soar. In recent years, however, the auto industry has not experienced great sales growth, so its high fixed costs have created problems for many manufacturers.

In March of 2005, GM agreed to pay Fiat \$2 billion to cancel the deal described above.

Source: Company data and "Separation Anxiety: For GM and Fiat, a Messy Breakup Could Be in the Works," *The Wall Street Journal*, January 24, 2005, pp. A-1 and A-13.



When all costs are fixed, every sales dollar contributes one dollar toward the potential profitability of a project. Once sales dollars cover fixed costs, each additional sales dollar represents pure profit. As a result, a small change in sales volume can significantly affect profitability. To illustrate, assume SPI estimates it will sell 3,000 tickets for \$18 each. A 10 percent difference in actual sales volume will produce a 90 percent difference in profitability. Examine the data in Exhibit 11.4 to verify this result.<sup>1</sup>

#### EXHIBIT 11.4

##### Effect of Operating Leverage on Profitability

Number of tickets sold	2,700	← -10% ←	3,000	⇒ +10% ⇒	3,300
Sales revenue (\$18 per ticket)	\$48,600		\$54,000		\$59,400
Cost of band (fixed cost)	(48,000)		(48,000)		(48,000)
Gross margin	\$ 600	← -90% ←	\$ 6,000	⇒ +90% ⇒	\$11,400

<sup>1</sup>Do not confuse operating leverage with financial leverage. Companies employ *financial leverage* when they use debt to profit from investing money at a higher rate of return than the rate they pay on borrowed money. Companies employ *operating leverage* when they use proportionately more fixed costs than variable costs to magnify the effect on earnings of changes in revenues.

## Calculating Percentage Change

The percentages in Exhibit 11.4 are computed as follows.

$$(\text{Alternative measure} - \text{Base measure}) \div \text{Base measure} = \% \text{ change}$$

The *base measure* is the starting point. To illustrate, compute the percentage change in gross margin when moving from 3,000 units (base measure) to 3,300 units (the alternative measure).

$$(\text{Alternative measure} - \text{Base measure}) \div \text{Base measure} = \% \text{ change}$$

$$(\$11,400 - \$6,000) \div \$6,000 = 90\%$$

The percentage *decline* in profitability is similarly computed:

$$(\text{Alternative measure} - \text{Base measure}) \div \text{Base measure} = \% \text{ change}$$

$$(\$600 - \$6,000) \div \$6,000 = (90\%)$$

## Risk and Reward Assessment

*Risk* refers to the possibility that sacrifices may exceed benefits. A fixed cost represents a commitment to an economic sacrifice. It represents the ultimate risk of undertaking a particular business project. If SPI pays the band but nobody buys a ticket, the company will lose \$48,000. SPI can avoid this risk by substituting *variable costs* for the *fixed cost*.

## Reality BYTES

Stella, a business student, works part time at **Costco Wholesale, Inc.**, to help pay her college expenses. She is currently taking a managerial accounting course, and has heard her instructor refer to depreciation as a fixed cost. However, as a requirement for her first accounting course, Stella reviewed Costco's financial statements for 2004, 2005, and 2006. The depreciation expense increased about 17 percent over these three years. She is not sure why depreciation expense would be considered a fixed cost.

Stella's accounting instructor reminded her that when an accountant says a cost is fixed, he or she means the cost is fixed in relation to one particular factor. A cost that is fixed in relation to one factor can be variable when compared to some other factor. For example, the depreciation for a retailer may be fixed relative to the number of customers who visit a particular store, but variable relative to the number of stores the company opens. In fact, Costco's depreciation increased from 2004 to 2006 mainly because the company built and opened additional stores.

Stella's instructor suggested Costco's depreciation expense would be more stable if analyzed on a per store basis, rather than in total. Being curious, Stella prepared the following table, where costs are in thousands. Over the three years, she noted that total depreciation expense increased 16.9 percent, while depreciation per store increased only 6.5 percent. Although the costs on a per store basis were more stable than the total depreciation costs, they still were not fixed, so she asked her instructor for further explanation.

Fiscal year	Total Depreciation Expense	Average Depreciation Expense per Store
2004	\$440,721	\$1,056.9
2005	481,838	1,112.8
2006	515,285	1,125.1

The instructor suggested Costco's average per store depreciation costs were increasing because the equipment and buildings purchased for the new stores (opened from 2004 to 2006) probably cost more than those purchased for the older stores. This would raise the average depreciation expense per store. The instructor also reminded her that in the real world very few costs are perfectly fixed or perfectly variable.

## VARIABLE COST BEHAVIOR

To illustrate variable cost behavior, assume SPI arranges to pay the band \$16 per ticket sold instead of a fixed \$48,000. Exhibit 11.5 shows the total cost of the band and the cost per ticket sold at three different levels of activity.

### LO 1

Identify and describe fixed, variable, and mixed cost behavior.

#### EXHIBIT 11.5

##### Variable Cost Behavior

Number of tickets sold (a)	2,700	3,000	3,300
Total cost of band (b)	\$43,200	\$48,000	\$52,800
Cost per ticket sold (b ÷ a)	\$16	\$16	\$16

Since SPI will pay the band \$16 for each ticket sold, the *total* variable cost increases in direct proportion to the number of tickets sold. If SPI sells one ticket, total band cost will be \$16 ( $1 \times \$16$ ); if SPI sells two tickets, total band cost will be \$32 ( $2 \times \$16$ ); and so on. The total cost of the band increases proportionately as ticket sales move from 2,700 to 3,000 to 3,300. The variable cost *per ticket* remains \$16, however, regardless of whether the number of tickets sold is 1, 2, 3, or 3,000. The behavior of variable cost *per unit* is contradictory to the word *variable*. Variable cost per unit remains *constant* regardless of how many tickets are sold. Study carefully the variable cost behavior patterns in Exhibit 11.6.

#### EXHIBIT 11.6

##### Variable Cost Behavior

	When Activity Increases	When Activity Decreases
Total variable cost	Increases proportionately	Decreases proportionately
Variable cost <i>per unit</i>	Remains constant	Remains constant

## Risk and Reward Assessment

Shifting the cost structure from fixed to variable enables SPI to avoid the fixed cost risk. If no one buys a ticket, SPI loses nothing because it incurs no cost. If only one person buys a ticket at an \$18 ticket price, SPI earns a \$2 profit (\$18 sales revenue – \$16 cost of band). Should managers therefore avoid fixed costs whenever possible? Not necessarily.

Shifting the cost structure from fixed to variable reduces not only the level of risk but also the potential for profits. Managers cannot avoid the risk of fixed costs without also sacrificing the benefits. Variable costs do not offer operating leverage. Exhibit 11.7 shows that a variable cost structure produces a proportional relationship between sales and profitability. A 10 percent increase or decrease in sales results in a corresponding 10 percent increase or decrease in profitability.

### LO 2

Demonstrate the effects of operating leverage on profitability.

#### EXHIBIT 11.7

##### Variable Cost Eliminates Operating Leverage

Number of tickets sold	2,700	← –10% ←	3,000	⇒ +10% ⇒	3,300
Sales revenue (\$18 per ticket)	\$48,600		\$54,000		\$59,400
Cost of band (\$16 variable cost)	(43,200)		(48,000)		(52,800)
Gross margin	\$ 5,400	← –10% ←	\$ 6,000	⇒ +10% ⇒	\$ 6,600

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**CHECK Yourself 11.1**

Suppose that you are sponsoring a political rally at which Ralph Nader will speak. You estimate that approximately 2,000 people will buy tickets to hear Mr. Nader's speech. The tickets are expected to be priced at \$12 each. Would you prefer a contract that agrees to pay Mr. Nader \$10,000 or one that agrees to pay him \$5 per ticket purchased?

**Answer** Your answer would depend on how certain you are that 2,000 people will purchase tickets. If it were likely that many more than 2,000 tickets would be sold, you would be better off with a fixed cost structure, agreeing to pay Mr. Nader a flat fee of \$10,000. If attendance numbers are highly uncertain, you would be better off with a variable cost structure thereby guaranteeing a lower cost if fewer people buy tickets.

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## Answers to The *Curious* Accountant

The explanation for how a company's earnings can rise faster, as a percentage, than its revenue rises is operating leverage, and operating leverage is due entirely to fixed costs. As the chapter explains, when a company's output goes up, its fixed cost per unit goes down. As long as it can keep prices about the same, this lower unit cost will result in higher profit per unit sold. In real-world companies, the relationship between changing sales levels and changing earnings levels can be very complex, but the existence of fixed costs helps to explain why a 23 percent rise in revenue can cause a 71 percent rise in net earnings.

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**CHECK Yourself 11.2**

If both **Kroger Food Stores** and **Delta Airlines** were to experience a 5 percent increase in revenues, which company would be more likely to experience a higher percentage increase in net income?

**Answer** Delta would be more likely to experience a higher percentage increase in net income because a large portion of its cost (e.g., employee salaries and depreciation) is fixed, while a large portion of Kroger's cost is variable (e.g., cost of goods sold).

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## AN INCOME STATEMENT UNDER THE CONTRIBUTION MARGIN APPROACH

### LO 3

Prepare an income statement using the contribution margin approach.

The impact of cost structure on profitability is so significant that managerial accountants frequently construct income statements that classify costs according to their behavior patterns. Such income statements first subtract variable costs from revenue; the resulting subtotal is called the **contribution margin**. The contribution margin represents the amount available to cover fixed expenses and thereafter to provide company profits. Net income is computed by subtracting the fixed costs from the contribution margin. A contribution margin style income statement cannot be used for public reporting (GAAP prohibits its use in external financial reports), but it is widely used

for internal reporting purposes. Exhibit 11.8 illustrates income statements prepared using the contribution margin approach.

### EXHIBIT 11.8

#### Income Statements

	Company Name	
	Bragg	Biltmore
Variable cost per unit (a)	\$ 6	\$ 12
Sales revenue (10 units × \$20)	\$200	\$200
Variable cost (10 units × a)	(60)	(120)
Contribution margin	140	80
Fixed cost	(120)	(60)
Net income	\$ 20	\$ 20

## MEASURING OPERATING LEVERAGE USING CONTRIBUTION MARGIN

A contribution margin income statement allows managers to easily measure operating leverage. The magnitude of operating leverage can be determined as follows.

$$\text{Magnitude of operating leverage} = \frac{\text{Contribution margin}}{\text{Net income}}$$

LO 4

Calculate the magnitude of operating leverage.

Applying this formula to the income statement data reported for Bragg Company and Biltmore Company in Exhibit 11.8 produces the following measures.

Bragg Company:

$$\text{Magnitude of operating leverage} = \frac{140}{20} = 7$$

Biltmore Company:

$$\text{Magnitude of operating leverage} = \frac{80}{20} = 4$$

The computations show that Bragg is more highly leveraged than Biltmore. Bragg's change in profitability will be seven times greater than a given percentage change in revenue. In contrast, Biltmore's profits change by only four times the percentage change in revenue. For example, a 10 percent increase in revenue produces a 70 percent increase (10 percent × 7) in profitability for Bragg Company and a 40 percent increase (10 percent × 4) in profitability for Biltmore Company. The income statements in Exhibits 11.9 and 11.10 confirm these expectations.

### EXHIBIT 11.9

#### Comparative Income Statements for Bragg Company

Units (a)	10		11
Sales revenue (\$20 × a)	\$200	⇒ +10% ⇒	\$220
Variable cost (\$6 × a)	(60)		(66)
Contribution margin	140		154
Fixed cost	(120)		(120)
Net income	\$ 20	⇒ +70% ⇒	\$ 34

### EXHIBIT 11.10

#### Comparative Income Statements for Biltmore Company

Units (a)	10		11
Sales revenue (\$20 × a)	\$200	⇒ +10% ⇒	\$220
Variable cost (\$12 × a)	(120)		(132)
Contribution margin	80		88
Fixed cost	(60)		(60)
Net income	\$ 20	⇒ +40% ⇒	\$ 28



Operating leverage itself is neither good nor bad; it represents a strategy that can work to a company's advantage or disadvantage, depending on how it is used. The next section explains how managers can use operating leverage to create a competitive business advantage.

### CHECK Yourself 11.3

**Boeing Company's** 2001 10K annual report filed with the Securities and Exchange Commission refers to "higher commercial airlines segment margins." Is Boeing referring to gross margins or contribution margins?

**Answer** Since the data come from the company's external annual report, the reference must be to gross margins (revenue — cost of goods sold), a product cost measure. The contribution margin (revenue — variable cost) is a measure used in internal reporting.

## COST BEHAVIOR SUMMARIZED

### LO 1

Identify and describe fixed, variable, and mixed cost behavior.

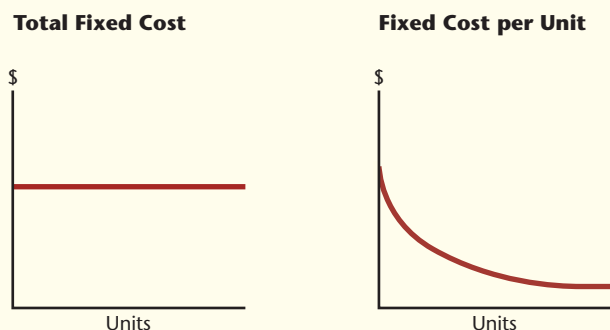
The term *fixed* refers to the behavior of *total* fixed cost. The cost *per unit* of a fixed cost *varies inversely* with changes in the level of activity. As activity increases, fixed cost per unit decreases. As activity decreases, fixed cost per unit increases. These relationships are graphed in Exhibit 11.11.

The term *variable* refers to the behavior of *total* variable cost. Total variable cost increases or decreases proportionately with changes in the volume of activity. In contrast, variable cost *per unit* remains *fixed* at all levels of activity. These relationships are graphed in Exhibit 11.12.

The relationships between fixed and variable costs are summarized in the chart in Exhibit 11.13. Study these relationships thoroughly.

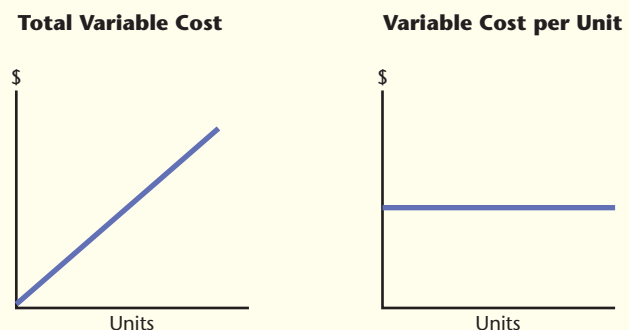
#### EXHIBIT 11.11

##### Graphical Presentation of Fixed Cost Behavior



#### EXHIBIT 11.12

##### Graphical Presentation of Variable Cost Behavior



#### EXHIBIT 11.13

##### Fixed and Variable Cost Behavior

###### When Activity Level Changes

Fixed costs  
Variable costs

###### Total Cost

Remains constant  
Changes in direct proportion

###### Cost per Unit

Changes *inversely*  
Remains constant

## Mixed Costs (Semivariable Costs)

**Mixed costs (semivariable costs)** include both fixed and variable components. For example, Star Productions, Inc., frequently arranges backstage parties at which VIP guests meet members of the band. Party costs typically include a room rental fee and the costs of refreshments. The room rental fee is fixed; it remains unchanged regardless of the number of party guests. In contrast, the refreshments costs are variable; they depend on the number of people attending the party. The total party cost is a mixed cost.

Assuming a room rental fee of \$1,000 and refreshments costs of \$20 per person, the total mixed cost at any volume of activity can be computed as follows.

$$\text{Total cost} = \text{Fixed cost} + (\text{Variable cost per party guest} \times \text{Number of guests})$$

If 60 people attend the backstage party the total mixed cost is

$$\text{Total cost} = \$1,000 + (\$20 \times 60) = \$2,200$$

If 90 people attend the backstage party the total mixed cost is

$$\text{Total cost} = \$1,000 + (\$20 \times 90) = \$2,800$$

Exhibit 11.14 illustrates a variety of mixed costs businesses commonly encounter.

### EXHIBIT 11.14

#### Examples of Mixed Costs

Type of Cost	Fixed Cost Component(s)	Variable Cost Component(s)
Cost of sales staff	Monthly salary	Bonus based on sales volume
Truck rental	Monthly rental fee	Cost of gas, tires, and maintenance
Legal fees	Monthly retainer	Reimbursements to attorney for out-of-pocket costs (copying, postage, travel, filing fees)
Outpatient service cost	Salaries of doctors and nurses, depreciation of facility, utilities	Medical supplies such as bandages, sterilization solution, and paper products
Phone services	Monthly connection fee	Per-minute usage fee
LP gas utility cost	Container rental fee	Cost of gas consumed
Cable TV services	Monthly fee	Pay-per-view charges
Training cost	Instructor salary, facility cost	Textbooks, supplies
Shipping and handling	Salaries of employees who process packages	Boxes, packing supplies, tape, and other shipping supplies, postage
Inventory holding cost	Depreciation on inventory warehouse, salaries of employees managing inventory	Delivery costs, interest on funds borrowed to finance inventory, cost of supplies

## The Relevant Range

Suppose SPI, the rock concert promoter mentioned earlier, must pay \$5,000 to rent a concert hall with a seating capacity of 4,000 people. Is the cost of the concert hall fixed or variable? Since total cost remains unchanged regardless of whether one ticket, 4,000 tickets, or any number in between is sold, the cost is fixed relative to ticket sales. However, what if demand for tickets is significantly more than 4,000? In that case, SPI might rent a larger concert hall at a higher cost. In other words, *the cost is fixed only for a designated range of activity (1 to 4,000)*.

A similar circumstance affects many variable costs. For example, a supplier may offer a volume discount to buyers who purchase more than a specified number of products. The point is that descriptions of cost behavior pertain to a specified range of activity. The range of activity over which the definitions of fixed and variable costs are valid is commonly called the **relevant range**.

### LO 5

Demonstrate how the relevant range and decision context affect cost behavior.

## Context-Sensitive Definitions of Fixed and Variable

The behavior pattern of a particular cost may be either fixed or variable, depending on the context. For example, the cost of the band was fixed at \$48,000 when SPI was considering hiring it to play a single concert. Regardless of how many tickets SPI sold, the total band cost was \$48,000. However, the band cost becomes variable if SPI decides to hire it to perform at a series of concerts. The total cost and the cost per concert for one, two, three, four, or five concerts are shown in Exhibit 11.15.

In this context, the total cost of hiring the band increases proportionately with the number of concerts while cost per concert remains constant. The band cost is therefore variable. The same cost can behave as either a fixed cost or a variable cost, depending on the **activity base**. When identifying a cost as fixed or variable, first ask, fixed or variable *relative to what activity base*? The cost of the band is fixed relative to *the number of tickets sold for a specific concert*; it is variable relative to *the number of concerts produced*.

### EXHIBIT 11.15

#### Cost Behavior Relative to Number of Concerts

Number of concerts (a)	1	2	3	4	5
Cost per concert (b)	\$48,000	\$48,000	\$ 48,000	\$ 48,000	\$ 48,000
Total cost (a × b)	\$48,000	\$96,000	\$144,000	\$192,000	\$240,000

### CHECK *Yourself* 11.4

Is the compensation cost for managers of **Pizza Hut Restaurants** a fixed cost or a variable cost?

**Answer** The answer depends on the context. For example, since a store manager's salary remains unchanged regardless of how many customers enter a particular restaurant, it can be classified as a fixed cost relative to the number of customers at a particular restaurant. However, the more restaurants that Pizza Hut operates, the higher the total managers' compensation cost will be. Accordingly, managers' salary cost would be classified as a variable cost relative to the number of restaurants opened.

## DETERMINING THE BREAK-EVEN POINT

### LO 6

Calculate the break-even point.

Bright Day Distributors sells nonprescription health food supplements including vitamins, herbs, and natural hormones in the northwestern United States. Bright Day recently obtained the rights to distribute the new herb mixture Delatine. Recent scientific research found that Delatine delayed aging in laboratory animals. The researchers hypothesized that the substance would have a similar effect on humans. Their theory could not be confirmed because of the relatively long human life span. The news media reported the research findings; as stories turned up on television and radio news, talk shows, and in magazines, demand for Delatine increased.

Bright Day plans to sell the Delatine at a price of \$36 per bottle. Delatine costs \$24 per bottle. Bright Day's management team suspects that enthusiasm for Delatine will abate quickly as the news media shift to other subjects. To attract customers immediately, the product managers consider television advertising. The marketing

manager suggests running a campaign of several hundred cable channel ads at an estimated cost of \$60,000.

Bright Day's first concern is whether it can sell enough units to cover its costs. The president made this position clear when he said, "We don't want to lose money on this product. We have to sell at least enough units to break even." In accounting terms, the **break-even point** is where profit (income) equals zero. So how many bottles of Delatine must be sold to produce a profit of zero? The break-even point is commonly computed using either the *equation method*, or the *contribution margin per unit method*. Both of these approaches produce the same result. They are merely different ways to arrive at the same conclusion.

## Equation Method

The **equation method** begins by expressing the income statement as follows.

$$\text{Sales} - \text{Variable costs} - \text{Fixed costs} = \text{Profit (Net income)}$$

As previously stated, profit at the break-even point is zero. Therefore, the break-even point for Delatine is computed as follows.

$$\text{Sales} - \text{Variable costs} - \text{Fixed costs} = \text{Profit}$$

$$\$36N - \$24N - \$60,000 = \$0$$

$$\$12N = \$60,000$$

$$N = \$60,000 \div \$12$$

$$N = 5,000 \text{ Units}$$

Where:

N = Number of units

\$36 = Sales price per unit

\$24 = Variable cost per unit

\$60,000 = Fixed costs

## CHECK Yourself 11.5

B-Shoc is an independent musician who is considering whether to independently produce and sell a CD. B-Shoc estimates fixed costs of \$5,400 and variable costs of \$2.00 per unit. The expected selling price is \$8.00 per CD. Use the equation method to determine B-Shoc's break-even point.

**Answer**

$$\text{Sales} - \text{Variable costs} - \text{Fixed costs} = \text{Profit}$$

$$\$8N - \$2N - \$5,400 = \$0$$

$$\$6N = \$5,400$$

$$N = \$5,400 \div \$6$$

$$N = 900 \text{ Units (CDs)}$$

Where:

N = Number of units

\$8 = Sales price per unit

\$2 = Variable cost per unit

\$5,400 = Fixed costs

## Contribution Margin Per Unit Method

Recall that the *total contribution margin* is the amount of sales minus total variable cost. The **contribution margin per unit** is the sales price per unit minus the variable cost per unit. Therefore, the contribution margin per unit for Delatine is

Sales price per unit	\$36
Less: Variable cost per unit	(24)
Contribution margin per unit	<u>\$12</u>

For every bottle of Delatine it sells, Bright Day earns a \$12 contribution margin. In other words, every time Bright Day sells a bottle of Delatine, it receives enough money to pay \$24 to cover the variable cost of the bottle of Delatine and still has \$12 left to go toward paying the fixed cost. Bright Day will reach the break-even point when it sells enough bottles of Delatine to cover its fixed costs. Therefore the break-even point can be determined as follows.

$$\text{Break-even point in units} = \frac{\text{Fixed costs}}{\text{Contribution margin per unit}}$$

$$\text{Break-even point in units} = \frac{\$60,000}{\$12}$$

$$\text{Break-even point in units} = 5,000 \text{ Units}$$

This result is the same as that determined under the equation method. Indeed, the contribution margin per unit method formula is an abbreviated version of the income statement formula used in the equation method. The proof is provided in the footnote below.<sup>2</sup>

Both the *equation method* and the *contribution margin per unit method* yield the amount of break-even sales measured *in units*. To determine the amount of break-even sales measured *in dollars*, multiply the number of units times the sales price per unit. For Delatine the break-even point measured in dollars is \$180,000 (5,000 units × \$36 per unit). The following income statement confirms this result.

Sales revenue (5,000 units × \$36)	\$180,000
Total variable expenses (5,000 units × \$24)	<u>(120,000)</u>
Total contribution margin (5,000 units × \$12)	60,000
Fixed expenses	<u>(60,000)</u>
Net income	<u>\$ 0</u>

<sup>2</sup>The formula for the *contribution margin per unit method* is (where N is the number of units at the break-even point).

$$N = \text{Fixed costs} \div \text{Contribution margin per unit}$$

The income statement formula for the *equation method* produces the same result as shown below (where N is the number of units at the break-even point).

$$\text{Sales} - \text{Variable costs} - \text{Fixed costs} = \text{Profit}$$

$$\text{Sales price per unit (N)} - \text{Variable cost per unit (N)} - \text{Fixed costs} = \text{Profit}$$

$$\text{Contribution margin per unit (N)} - \text{Fixed costs} = \text{Profit}$$

$$\text{Contribution margin per unit (N)} - \text{Fixed costs} = 0$$

$$\text{Contribution margin per unit (N)} = \text{Fixed costs}$$

$$N = \text{Fixed costs} \div \text{Contribution margin per unit}$$

## DETERMINING THE SALES VOLUME NECESSARY TO REACH A DESIRED PROFIT

Bright Day's president decides the ad campaign should produce a \$40,000 profit. He asks the accountant to determine the sales volume that is required to achieve this level of profitability. Using the *equation method*, the sales volume in units required to attain the desired profit is computed as follows.

$$\begin{aligned}\text{Sales} - \text{Variable costs} - \text{Fixed costs} &= \text{Profit} \\ \$36N - \$24N - \$60,000 &= \$40,000 \\ \$12N &= \$60,000 + \$40,000 \\ N &= \$100,000 \div \$12 \\ N &= 8,333 \text{ Units}\end{aligned}$$

Where:

N = Number of units

\$36 = Sales price per unit

\$24 = Variable cost per unit

\$60,000 = Fixed costs

\$40,000 = Desired profit

The accountant used the *contribution margin per unit method* to confirm these computations as follows.

$$\begin{aligned}\text{Sales volume in units} &= \frac{\text{Fixed costs} + \text{Desired profit}}{\text{Contribution margin per unit}} \\ &= \frac{\$60,000 + \$40,000}{\$12} = 8,333.33 \text{ Units}\end{aligned}$$

The required volume in sales dollars is this number of units multiplied by the sales price per unit (8,333.33 units  $\times$  \$36 = \$300,000). The following income statement confirms this result; all amounts are rounded to the nearest whole dollar.

Sales revenue (8,333.33 units $\times$ \$36)	\$300,000
Total variable expenses (8,333.33 units $\times$ \$24)	(200,000)
Total contribution margin (8,333.33 units $\times$ \$12)	100,000
Fixed expenses	(60,000)
Net income	<u>\$ 40,000</u>

In practice, the company will not sell partial bottles of Delatine. The accountant rounds 8,333.33 bottles to whole units. For planning and decision making, managers frequently make decisions using approximate data. Accuracy is desirable, but it is not as important as relevance. Do not be concerned when computations do not produce whole numbers. Rounding and approximation are common characteristics of managerial accounting data.

### CHECK Yourself 11.6

VolTech Company manufactures small engines that it sells for \$130 each. Variable costs are \$70 per unit. Fixed costs are expected to be \$100,000. The management team has established a target profit of \$188,000. Use the contribution margin per unit method to determine how many engines VolTech must sell to attain the target profit.

**Answer**

$$\text{Sales volume in units} = \frac{\text{Fixed costs} + \text{Desired profit}}{\text{Contribution margin per unit}} = \frac{\$100,000 + \$188,000}{\$130 - \$70} = 4,800 \text{ Units}$$

LO 7

Calculate the sales volume required to attain a target profit.



## Focus On INTERNATIONAL ISSUES

### COST-VOLUME-PROFIT ANALYSIS AT A GERMAN CHEMICAL COMPANY

The greater the percentage of a company's total costs that are fixed, the more sensitive the company's earnings are to changes in revenue or volume. Operating leverage, the relationship between the changes in revenue and changes in earnings, introduced earlier, applies to companies throughout the world, large or small.

Large chemical manufacturers have significant fixed costs. It takes a lot of buildings and equipment to produce chemicals. **BASF** claims to be the largest chemical company in the world. It has its headquarters in Ludwigshafen, Germany. From 2004 through 2006 BASF's revenues increased 40.2 percent, but its earnings increased 60.4 percent. In other words, its earnings grew one and one-half times faster than its revenues.

Studying BASF offers insight into a true global enterprise. Though headquartered in Germany, it has manufacturing facilities at 150 locations throughout the world. Only 21 percent of its 2006 revenue came from sales within Germany, which was 1 percent less than the revenue it earned in the United States. Although its financial statements are presented in euros and prepared in accordance with international financial accounting standards, its stock is traded on the New York Stock Exchange as well as on the Frankfurt Stock Exchange.



### CALCULATING THE MARGIN OF SAFETY

#### LO 8

Calculate the margin of safety in units, dollars, and percentage.

Based on the sales records of other products, Bright Day's marketing department believes that budgeted sales of 8,333 units is an attainable goal. Even so, the company president is concerned because Delatine is a new product and no one can be certain about how the public will react to it. He is willing to take the risk of introducing a new product that fails to produce a profit, but he does not want to take a loss on the product. He therefore focuses on the gap between the budgeted sales and the sales required to break even. The amount of this gap, called the *margin of safety*, can be measured in units or in sales dollars as shown here.

	In Units	In Dollars
Budgeted sales	8,333	\$300,000
Break-even sales	(5,000)	(180,000)
Margin of safety	<u>3,333</u>	<u>\$120,000</u>

The **margin of safety** measures the cushion between budgeted sales and the break-even point. It quantifies the amount by which actual sales can fall short of expectations before the company will begin to incur losses.

To help compare diverse products or companies of different sizes, the margin of safety can be expressed as a percentage. Divide the margin of safety by the budgeted sales volume<sup>3</sup> as shown here.

$$\text{Margin of safety} = \frac{\text{Budgeted sales} - \text{Break-even sales}}{\text{Budgeted sales}}$$

$$\text{Margin of safety} = \frac{\$300,000 - \$180,000}{\$300,000} \times 100 = 40\%$$

<sup>3</sup>The margin of safety percentage can be based on actual as well as budgeted sales. For example, an analyst could compare the margins of safety of two companies under current operating conditions by substituting actual sales for budgeted sales in the computation, as follows:  $(\text{Actual sales} - \text{Break-even sales}) \div \text{Actual sales}$ .

This analysis suggests actual sales would have to fall short of expected sales by 40 percent before Bright Day would experience a loss on Delatine. The large margin of safety suggests the proposed advertising program to market Delatine has minimal risk.

## CHECK Yourself 11.7

Suppose that Bright Day is considering the possibility of selling a protein supplement that will cost Bright Day \$5 per bottle. Bright Day believes that it can sell 4,000 bottles of the supplement for \$25 per bottle. Fixed costs associated with selling the supplement are expected to be \$42,000. Does the supplement have a wider margin of safety than Delatine?

**Answer** Calculate the break-even point for the protein supplement.

$$\text{Break-even volume in units} = \frac{\text{Fixed costs}}{\text{Contribution margin per unit}} = \frac{\$42,000}{\$25 - \$5} = 2,100 \text{ units}$$

Calculate the margin of safety. Note that the margin of safety expressed as a percentage can be calculated using the number of units or sales dollars. Using either units or dollars yields the same percentage.

$$\text{Margin of safety} = \frac{\text{Budgeted sales} - \text{Break-even sales}}{\text{Budgeted sales}} = \frac{4,000 - 2,100}{4,000} = 47.5\%$$

The margin of safety for Delatine (40.0 percent) is below that for the protein supplement (47.5 percent). This suggests that Bright Day is more likely to incur losses selling Delatine than selling the supplement.

## A Look Back



To plan and control business operations effectively, managers need to understand how different costs behave in relation to changes in the volume of activity. Total *fixed cost* remains constant when activity changes. Fixed cost per unit decreases with increases in activity and increases with decreases in activity. In contrast, total *variable cost* increases proportionately with increases in activity and decreases proportionately with decreases in activity. Variable cost per unit remains constant regardless of activity levels. The definitions of fixed and variable costs have meaning only within the context of a specified range of activity (the relevant range) for a defined period of time. In addition, cost behavior depends on the relevant volume measure (a store manager's salary is fixed relative to the number of customers visiting a particular store but is variable relative to the number of stores operated). A mixed cost has both fixed and variable cost components.

Fixed costs allow companies to take advantage of *operating leverage*. With operating leverage, each additional sale decreases the cost per unit. This principle allows a small percentage change in volume of revenue to cause a significantly larger percentage change in profits. The *magnitude of operating leverage* can be determined by dividing the contribution margin by net income. When all costs are fixed and revenues have covered fixed costs, each additional dollar of revenue represents pure profit. Having a fixed cost structure (employing operating leverage) offers a company both risks and rewards. If sales volume increases, costs do not increase, allowing profits to soar. Alternatively, if sales volume decreases, costs do not decrease and profits decline significantly more than revenues. Companies with high variable costs in relation to fixed costs do not experience as great a level of operating leverage. Their costs increase or decrease in proportion to changes in revenue. These companies face less risk but fail to reap disproportionately higher profits when volume soars.

Under the contribution margin approach, variable costs are subtracted from revenue to determine the *contribution margin*. Fixed costs are then subtracted from the contribution margin to determine net income. The contribution margin represents the amount available to pay fixed costs and provide a profit. Although not permitted by GAAP for external reporting, many companies use the contribution margin format for internal reporting purposes.

The *break-even point* (the point where total revenue equals total cost) in units can be determined by dividing fixed costs by the contribution margin per unit. The break-even point in sales dollars can be determined by multiplying the number of break-even units by the sales price per unit. To determine sales in units to obtain a designated profit, the sum of fixed costs and desired profit is divided by the contribution margin per unit.

The *margin of safety* is the number of units or the amount of sales dollars by which actual sales can fall below expected sales before a loss is incurred. The margin of safety can also be expressed as a percentage to permit comparing different size companies. The margin of safety can be computed as a percentage by dividing the difference between budgeted sales and break-even sales by the amount of budgeted sales.



## A Look Forward

The next chapter begins investigating cost measurement. Accountants seek to determine the cost of certain objects. A cost object may be a product, a service, a department, a customer, or any other thing for which the cost is being determined. Some costs can be directly traced to a cost object, while others are difficult to trace. Costs that are difficult to trace to cost objects are called *indirect costs*, or *overhead*. Indirect costs are assigned to cost objects through *cost allocation*. The next chapter introduces the basic concepts and procedures of cost allocation.



### SELF-STUDY REVIEW PROBLEM 1

Mensa Mountaineering Company (MMC) provides guided mountain climbing expeditions in the Rocky Mountains. Its only major expense is guide salaries; it pays each guide \$4,800 per climbing expedition. MMC charges its customers \$1,500 per expedition and expects to take five climbers on each expedition.

#### Part 1

Base your answers on the preceding information.

#### Required

- Determine the total cost of guide salaries and the cost of guide salaries per climber assuming that four, five, or six climbers are included in a trip. Relative to the number of climbers in a single expedition, is the cost of guides a fixed or a variable cost?
- Relative to the number of expeditions, is the cost of guides a fixed or a variable cost?
- Determine the profit of an expedition assuming that five climbers are included in the trip.
- Determine the profit assuming a 20 percent increase (six climbers total) in expedition revenue. What is the percentage change in profitability?
- Determine the profit assuming a 20 percent decrease (four climbers total) in expedition revenue. What is the percentage change in profitability?
- Explain why a 20 percent shift in revenue produces more than a 20 percent shift in profitability. What term describes this phenomenon?

#### Part 2

Assume that the guides offer to make the climbs for a percentage of expedition fees. Specifically, MMC will pay guides \$960 per climber on the expedition. Assume also that the expedition fee charged to climbers remains at \$1,500 per climber.

### Required

- g. Determine the total cost of guide salaries and the cost of guide salaries per climber assuming that four, five, or six climbers are included in a trip. Relative to the number of climbers in a single expedition, is the cost of guides a fixed or a variable cost?
- h. Relative to the number of expeditions, is the cost of guides a fixed or a variable cost?
- i. Determine the profit of an expedition assuming that five climbers are included in the trip.
- j. Determine the profit assuming a 20 percent increase (six climbers total) in expedition revenue. What is the percentage change in profitability?
- k. Determine the profit assuming a 20 percent decrease (four climbers total) in expedition revenue. What is the percentage change in profitability?
- l. Explain why a 20 percent shift in revenue does not produce more than a 20 percent shift in profitability.

### Solution to Part 1, Requirement a

Number of climbers (a)	4	5	6
Total cost of guide salaries (b)	\$4,800	\$4,800	\$4,800
Cost per climber (b ÷ a)	1,200	960	800

Since the total cost remains constant (fixed) regardless of the number of climbers on a particular expedition, the cost is classified as fixed. Note that the cost per climber decreases as the number of climbers increases. This is the *per unit* behavior pattern of a fixed cost.

### Solution to Part 1, Requirement b

Since the total cost of guide salaries changes proportionately each time the number of expeditions increases or decreases, the cost of salaries is variable relative to the number of expeditions.

### Solution to Part 1, Requirements c, d, and e

Number of Climbers	4	Percentage Change	5	Percentage Change	6
Revenue (\$1,500 per climber)	\$6,000	←(20%) ←	\$7,500	⇒ +20% ⇒	\$9,000
Cost of guide salaries (fixed)	<u>4,800</u>		<u>4,800</u>		<u>4,800</u>
Profit	<u>\$1,200</u>	←(55.6%) ←	<u>\$2,700</u>	⇒ +55.6% ⇒	<u>\$4,200</u>

Percentage change in revenue:  $\pm \$1,500 \div \$7,500 = \pm 20\%$

Percentage change in profit:  $\pm \$1,500 \div \$2,700 = \pm 55.6\%$

### Solution to Part 1, Requirement f

Since the cost of guide salaries remains fixed while volume (number of climbers) changes, the change in net income, measured in absolute dollars, exactly matches the change in revenue. More specifically, each time MMC increases the number of climbers by one, revenue and net income increase by \$1,500. Since the base figure for net income (\$2,700) is lower than the base figure for revenue (\$7,500), the percentage change in net income ( $\$1,500 \div \$2,700 = 55.6\%$ ) is higher than percentage change in revenue ( $\$1,500 \div \$7,500$ ). This phenomenon is called *operating leverage*.

### Solution for Part 2, Requirement g

Number of climbers (a)	4	5	6
Per climber cost of guide salaries (b)	\$ 960	\$ 960	\$ 960
Cost per climber (b × a)	3,840	4,800	5,760

Since the total cost changes in proportion to changes in the number of climbers, the cost is classified as variable. Note that the cost per climber remains constant (stays the same) as the number of climbers increases or decreases. This is the *per unit* behavior pattern of a variable cost.

**Solution for Part 2, Requirement h**

Since the total cost of guide salaries changes proportionately with changes in the number of expeditions, the cost of salaries is also variable relative to the number of expeditions.

**Solution for Part 2, Requirements i, j, and k**

Number of Climbers	4	Percentage Change	5	Percentage Change	6
Revenue (\$1,500 per climber)	\$6,000	$\Leftarrow (20\%) \Leftarrow$	\$7,500	$\Rightarrow +20\% \Rightarrow$	\$9,000
Cost of guide salaries (variable)	<u>3,840</u>		<u>4,800</u>		<u>5,760</u>
Profit	<u>\$2,160</u>	$\Leftarrow (20\%) \Leftarrow$	<u>\$2,700</u>	$\Rightarrow +20\% \Rightarrow$	<u>\$3,240</u>

Percentage change in revenue:  $\pm \$1,500 \div \$7,500 = \pm 20\%$

Percentage change in profit:  $\pm \$540 \div \$2,700 = \pm 20\%$

**Solution for Part 2, Requirement l**

Since the cost of guide salaries changes when volume (number of climbers) changes, the change in net income is proportionate to the change in revenue. More specifically, each time the number of climbers increases by one, revenue increases by \$1,500 and net income increases by \$540 ( $\$1,500 - \$960$ ). Accordingly, the percentage change in net income will always equal the percentage change in revenue. This means that there is no operating leverage when all costs are variable.

**SELF-STUDY REVIEW PROBLEM 2**

**A step-by-step audio-narrated series of slides is provided on the text website at [www.mhhe.com/edmonds2009](http://www.mhhe.com/edmonds2009).**

Sharp Company makes and sells pencil sharpeners. The variable cost of each sharpener is \$20. The sharpeners are sold for \$30 each. Fixed operating expenses amount to \$40,000.

**Required**

- Determine the break-even point in units and sales dollars.
- Determine the sales volume in units and dollars that is required to attain a profit of \$12,000. Verify your answer by preparing an income statement using the contribution margin format.
- Determine the margin of safety between sales required to attain a profit of \$12,000 and break-even sales.

**Solution to Requirement a****Formula for Computing Break-even Point in Units**

Sales – Variable costs – Fixed costs = Profit

Sales price per unit (N) – Variable cost per unit (N) – Fixed costs = Profit

Contribution margin per unit (N) – Fixed costs = Profit

$N = (\text{Fixed costs} + \text{Profit}) \div \text{Contribution profit per unit}$

$N = (\$40,000 + 0) \div (\$30 - \$20) = 4,000 \text{ Units}$

**Break-even Point in Sales Dollars**

Sales price	\$ 30
× Number of units	<u>4,000</u>
Sales volume in dollars	<u>\$120,000</u>

### Solution to Requirement b

#### Formula for Computing Unit Sales Required to Attain Desired Profit

$\text{Sales} - \text{Variable costs} - \text{Fixed costs} = \text{Profit}$   
 $\text{Sales price per unit (N)} - \text{Variable cost per unit (N)} - \text{Fixed costs} = \text{Profit}$   
 $\text{Contribution margin per unit (N)} - \text{Fixed costs} = \text{Profit}$   
 $N = (\text{Fixed costs} + \text{Profit}) \div \text{Contribution profit per unit}$   
 $N = (\$40,000 + 12,000) \div (\$30 - \$20) = 5,200 \text{ Units}$

#### Sales Dollars Required to Attain Desired Profit

Sales price	\$ 30
× Number of units	5,200
Sales volume in dollars	<u>\$156,000</u>

#### Income Statement

Sales volume in units (a)	5,200
Sales revenue (a × \$30)	\$156,000
Variable costs (a × \$20)	(104,000)
Contribution margin	52,000
Fixed costs	(40,000)
Net income	<u>\$ 12,000</u>

### Solution to Requirement c

Margin of Safety Computations	Units	Dollars
Budgeted sales	5,200	\$156,000
Break-even sales	(4,000)	(120,000)
Margin of safety	<u>1,200</u>	<u>\$ 36,000</u>

#### Percentage Computation

$$\frac{\text{Margin of safety in \$}}{\text{Budgeted sales}} = \frac{\$36,000}{\$156,000} = 23.08\%$$

## KEY TERMS

Activity base 406  
 Break-even point 407  
 Contribution  
 margin 402

Contribution margin per  
 unit 408  
 Cost behavior 398  
 Equation method 407

Fixed cost 398  
 Margin of safety 410  
 Mixed costs (semivariable  
 costs) 405

Operating leverage 398  
 Relevant range 405  
 Variable cost 396



## QUESTIONS

1. Define *fixed cost* and *variable cost* and give an example of each.
2. How can knowing cost behavior relative to volume fluctuations affect decision making?
3. Define the term *operating leverage* and explain how it affects profits.
4. How is operating leverage calculated?
5. Explain the limitations of using operating leverage to predict profitability.
6. If volume is increasing, would a company benefit more from a pure variable or a pure fixed cost structure? Which cost structure would be advantageous if volume is decreasing?
7. Explain the risk and rewards to a company that result from having fixed costs.
8. Are companies with predominately fixed cost structures likely to be most profitable?
9. How is the relevant range of activity related to fixed and variable cost? Give an example of how the definitions of these costs become invalid when volume is outside the relevant range.
10. Which cost structure has the greater risk? Explain.
11. The president of Bright Corporation tells you that he sees a dim future for his company. He feels that his hands are tied because fixed costs are too high. He says that fixed costs do not change and therefore the situation is hopeless. Do you agree? Explain.
12. All costs are variable because if a business ceases operations, its costs fall to zero. Do you agree with the statement? Explain.
13. Verna Salsbury tells you that she thinks the terms fixed cost and variable cost are confusing. She notes that fixed cost per unit changes when the number of units changes. Furthermore, variable cost per unit remains fixed regardless of how many units are produced. She concludes that the terminology seems to be backward. Explain why the terminology appears to be contradictory.
14. What does the term *break-even point* mean? Name the two ways it can be measured.
15. How does a contribution margin income statement differ from the income statement used in financial reporting?
16. If Company A has a projected margin of safety of 22 percent while Company B has a margin of safety of 52 percent, which company is at greater risk when actual sales are less than budgeted?
17. Mary Hartwell and Jane Jamail, college roommates, are considering the joint purchase of a computer that they can share to prepare class assignments. Ms. Hartwell wants a particular model that costs \$2,000; Ms. Jamail prefers a more economical model that costs \$1,500. In fact, Ms. Jamail is adamant about her position, refusing to contribute more than \$750 toward the purchase. If Ms. Hartwell is also adamant about her position, should she accept Ms. Jamail's \$750 offer and apply that amount toward the purchase of the more expensive computer?

## EXERCISES



### LO 1, 5

All applicable Exercises are available with McGraw-Hill  
**Connect Accounting.**

### Exercise 11-1 Identifying cost behavior

Bluffpark Kitchen, a fast-food restaurant company, operates a chain of restaurants across the nation. Each restaurant employs eight people; one is a manager paid a salary plus a bonus equal to 3 percent of sales. Other employees, two cooks, one dishwasher, and four waitresses, are paid salaries. Each manager is budgeted \$3,000 per month for advertising cost.

#### Required

Classify each of the following costs incurred by Bluffpark Kitchen as fixed, variable, or mixed.

- a. Advertising costs relative to the number of customers for a particular restaurant.
- b. Rental costs relative to the number of restaurants.
- c. Cooks' salaries at a particular location relative to the number of customers.
- d. Cost of supplies (cups, plates, spoons, etc.) relative to the number of customers.
- e. Manager's compensation relative to the number of customers.
- f. Waitresses' salaries relative to the number of restaurants.

### LO 1

### Exercise 11-2 Identifying cost behavior

At the various activity levels shown, Johnston Company incurred the following costs.

	Units Sold	20	40	60	80	100
a.	Depreciation cost per unit	240.00	120.00	80.00	60.00	48.00
b.	Total rent cost	3,200.00	3,200.00	3,200.00	3,200.00	3,200.00
c.	Total cost of shopping bags	2.00	4.00	6.00	8.00	10.00
d.	Cost per unit of merchandise sold	90.00	90.00	90.00	90.00	90.00
e.	Rental cost per unit of merchandise sold	36.00	18.00	12.00	9.00	7.20
f.	Total phone expense	80.00	100.00	120.00	140.00	160.00
g.	Cost per unit of supplies	1.00	1.00	1.00	1.00	1.00
h.	Total insurance cost	480.00	480.00	480.00	480.00	480.00
i.	Total salary cost	\$1,200.00	\$1,600.00	\$2,000.00	\$2,400.00	\$2,800.00
j.	Total cost of goods sold	1,800.00	3,600.00	5,400.00	7,200.00	9,000.00

### Required

Identify each of these costs as fixed, variable, or mixed.

### Exercise 11-3 Determining fixed cost per unit

LO 1

Bender Corporation incurs the following annual fixed costs.

Item	Cost
Depreciation	\$ 34,000
Officers' salaries	120,000
Long-term lease	42,000
Property taxes	9,000

### Required

Determine the total fixed cost per unit of production, assuming that Bender produces 4,000, 4,500, or 5,000 units.

### Exercise 11-4 Determining total variable cost

LO 1

The following variable production costs apply to goods made by Zell Manufacturing Corporation.

Item	Cost per Unit
Materials	\$6.00
Labor	2.50
Variable overhead	0.20
Total	<u>\$8.70</u>

### Required

Determine the total variable production cost, assuming that Zell makes 5,000, 15,000, or 25,000 units.

### Exercise 11-5 Fixed versus variable cost behavior

LO 1

Thompson Company's cost and production data for two recent months included the following.

	January	February
Production (units)	90	230
Rent	\$1,500	\$1,500
Utilities	\$ 450	\$1,150



**Required**

- Separately calculate the rental cost per unit and the utilities cost per unit for both January and February.
- Identify which cost is variable and which is fixed. Explain your answer.

**LO 1****Exercise 11-6 Fixed versus variable cost behavior**

Parker Trophies makes and sells trophies it distributes to little league ballplayers. The company normally produces and sells between 8,000 and 14,000 trophies per year. The following cost data apply to various activity levels.

Number of Trophies	8,000	10,000	12,000	14,000
Total costs incurred				
Fixed	\$48,000			
Variable	<u>48,000</u>			
Total costs	<u>\$96,000</u>			
Cost per unit				
Fixed	\$ 6.00			
Variable	<u>6.00</u>			
Total cost per trophy	<u>\$12.00</u>			

**Required**

- Complete the preceding table by filling in the missing amounts for the levels of activity shown in the first row of the table. Round all cost per unit figures to the nearest whole penny.
- Explain why the total cost per trophy decreases as the number of trophies increases.

**LO 1, 5****Exercise 11-7 Fixed versus variable cost behavior**

Walter Entertainment sponsors rock concerts. The company is considering a contract to hire a band at a cost of \$75,000 per concert.

**Required**

- What are the total band cost and the cost per person if concert attendance is 2,000, 2,500, 3,000, 3,500, or 4,000?
- Is the cost of hiring the band a fixed or a variable cost?
- Draw a graph and plot total cost and cost per unit if attendance is 2,000, 2,500, 3,000, 3,500, or 4,000.
- Identify Walter's major business risks and explain how they can be minimized.

**LO 1****Exercise 11-8 Fixed versus variable cost behavior**

Walter Entertainment sells souvenir T-shirts at each rock concert that it sponsors. The shirts cost \$9 each. Any excess shirts can be returned to the manufacturer for a full refund of the purchase price. The sales price is \$15 per shirt.

**Required**

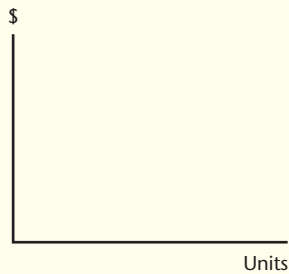
- What are the total cost of shirts and cost per shirt if sales amount to 2,000, 2,500, 3,000, 3,500, or 4,000?
- Is the cost of T-shirts a fixed or a variable cost?
- Draw a graph and plot total cost and cost per shirt if sales amount to 2,000, 2,500, 3,000, 3,500, or 4,000.
- Comment on Walter's likelihood of incurring a loss due to its operating activities.

### Exercise 11-9 *Graphing fixed cost behavior*

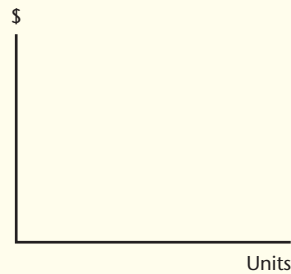
LO 1

The following graphs depict the dollar amount of fixed cost on the vertical axes and the level of activity on the horizontal axes.

**Total fixed cost**



**Fixed cost per unit**



#### Required

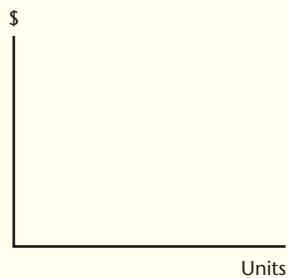
- Draw a line that depicts the relationship between total fixed cost and the level of activity.
- Draw a line that depicts the relationship between fixed cost per unit and the level of activity.

### Exercise 11-10 *Graphing variable cost behavior*

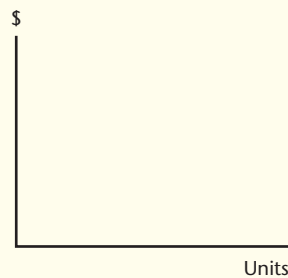
LO 1

The following graphs depict the dollar amount of variable cost on the vertical axes and the level of activity on the horizontal axes.

**Total variable cost**



**Variable cost per unit**



#### Required

- Draw a line that depicts the relationship between total variable cost and the level of activity.
- Draw a line that depicts the relationship between variable cost per unit and the level of activity.

### Exercise 11-11 *Mixed cost at different levels of activity*

LO 1

Leon Corporation paid one of its sales representatives \$5,600 during the month of March. The rep is paid a base salary plus \$13 per unit of product sold. During March, the rep sold 200 units.

#### Required

Calculate the total monthly cost of the sales representative's salary for each of the following months.

Month	April	May	June	July
Number of units sold	230	180	280	150
Total variable cost				
Total fixed cost				
Total salary cost				

## LO 1, 2

**Exercise 11-12** *Using fixed cost as a competitive business strategy*

The following income statements illustrate different cost structures for two competing companies.

Income Statements		
	Company Name	
	Vector	Sector
Number of customers (a)	70	70
Sales revenue ( $a \times \$200$ )	\$14,000	\$14,000
Variable cost ( $a \times \$160$ )	N/A	(11,200)
Variable cost ( $a \times \$0$ )	0	N/A
Contribution margin	14,000	2,800
Fixed cost	(11,200)	0
Net income	<u>\$ 2,800</u>	<u>\$ 2,800</u>

**Required**

- Reconstruct Vector's income statement, assuming that it serves 140 customers when it lures 70 customers away from Sector by lowering the sales price to \$120 per customer.
- Reconstruct Sector's income statement, assuming that it serves 140 customers when it lures 70 customers away from Vector by lowering the sales price to \$120 per customer.
- Explain why the price-cutting strategy increased Vector Company's profits but caused a net loss for Sector Company.

## LO 3, 4

**Exercise 11-13** *Using a contribution margin format income statement to measure the magnitude of operating leverage*

The following income statement was drawn from the records of Bechem Company, a merchandising firm.

BECHEM COMPANY	
Income Statement	
For the Year Ended December 31, 2008	
Sales revenue (3,500 units $\times$ \$123)	\$430,500
Cost of goods sold (3,500 units $\times$ \$68)	(238,000)
Gross margin	192,500
Sales commissions (10% of sales)	(43,050)
Administrative salaries expense	(61,500)
Advertising expense	(22,000)
Depreciation expense	(25,000)
Shipping and handling expenses (3,500 units $\times$ \$4.00)	(14,000)
Net income	<u>\$ 26,950</u>

**Required**

- Reconstruct the income statement using the contribution margin format.
- Calculate the magnitude of operating leverage.
- Use the measure of operating leverage to determine the amount of net income Bechem will earn if sales increase by 10 percent.

### Exercise 11-14 *Assessing the magnitude of operating leverage*

LO 4

The following income statement applies to Cohen Company for the current year.

Income Statement	
Sales revenue (350 units $\times$ \$25)	\$8,750
Variable cost (350 units $\times$ \$10)	<u>3,500</u>
Contribution margin	5,250
Fixed costs	<u>(3,500)</u>
Net income	<u>\$1,750</u>

#### Required

- Use the contribution margin approach to calculate the magnitude of operating leverage.
- Use the operating leverage measure computed in Requirement *a* to determine the amount of net income that Cohen Company will earn if it experiences a 10 percent increase in revenue. The sales price per unit is not affected.
- Verify your answer to Requirement *b* by constructing an income statement based on a 10 percent increase in sales revenue. The sales price is not affected. Calculate the percentage change in net income for the two income statements.

### Exercise 11-15 *Break-even point*

LO 6

Henegar Corporation sells products for \$14 each that have variable costs of \$11 per unit. Henegar's annual fixed cost is \$153,000.

#### Required

Determine the break-even point in units and dollars.

### Exercise 11-16 *Desired profit*

LO 7

Strother Company incurs annual fixed costs of \$54,320. Variable costs for Strother's product are \$7.80 per unit, and the sales price is \$13.00 per unit. Strother desires to earn an annual profit of \$45,000.

#### Required

Determine the sales volume in dollars and units required to earn the desired profit.

### Exercise 11-17 *Determining fixed and variable cost per unit*

LO 1

Vidal Corporation produced and sold 24,000 units of product during October. It earned a contribution margin of \$96,000 on sales of \$336,000 and determined that cost per unit of product was \$12.50.

#### Required

Based on this information, determine the variable and fixed cost per unit of product.

### Exercise 11-18 *Determining variable cost from incomplete cost data*

LO 1

Eubank Corporation produced 140,000 watches that it sold for \$27 each during 2008. The company determined that fixed manufacturing cost per unit was \$6 per watch. The company reported a \$420,000 gross margin on its 2008 financial statements.

#### Required

Determine the total variable cost, the variable cost per unit, and the total contribution margin.



**LO 6, 7, 8****Exercise 11-19 Margin of safety**

Information concerning a product produced by Hinshaw Company appears here.

Sales price per unit	\$159
Variable cost per unit	\$34
Total annual fixed manufacturing and operating costs	\$912,500

**Required**

Determine the following.

- Contribution margin per unit.
- Number of units that Hinshaw must sell to break even.
- Sales level in units that Hinshaw must reach to earn a profit of \$325,000.
- Determine the margin of safety in units, sales dollars, and as a percentage.

**LO 8****Exercise 11-20 Margin of safety**

Medley Company makes a product that sells for \$19 per unit. The company pays \$8 per unit for the variable costs of the product and incurs annual fixed costs of \$176,000. Medley expects to sell 21,000 units of product.

**Required**

Determine Medley's margin of safety in units, sales dollars, and as a percentage.

**PROBLEMS**

**All applicable Problems are available with McGraw-Hill Connect Accounting.**

**LO 1, 5****Problem 11-21 Identifying cost behavior****Required**

Identify the following costs as fixed or variable.

Costs related to plane trips between San Diego, California, and Orlando, Florida, follow. Pilots are paid on a per trip basis.

- Pilots' salaries relative to the number of trips flown.
- Depreciation relative to the number of planes in service.
- Cost of refreshments relative to the number of passengers.
- Pilots' salaries relative to the number of passengers on a particular trip.
- Cost of a maintenance check relative to the number of passengers on a particular trip.
- Fuel costs relative to the number of trips.

National Union Bank operates several branch offices in grocery stores. Each branch employs a supervisor and two tellers.

- Tellers' salaries relative to the number of tellers in a particular district.
- Supplies cost relative to the number of transactions processed in a particular branch.
- Tellers' salaries relative to the number of customers served at a particular branch.
- Supervisors' salaries relative to the number of branches operated.
- Supervisors' salaries relative to the number of customers served in a particular branch.
- Facility rental costs relative to the size of customer deposits.

Costs related to operating a fast-food restaurant follow.

- Depreciation of equipment relative to the number of restaurants.
- Building rental cost relative to the number of customers served in a particular restaurant.
- Manager's salary of a particular restaurant relative to the number of employees.

- p. Food cost relative to the number of customers.
- q. Utility cost relative to the number of restaurants in operation.
- r. Company president's salary relative to the number of restaurants in operation.
- s. Land costs relative to the number of hamburgers sold at a particular restaurant.
- t. Depreciation of equipment relative to the number of customers served at a particular restaurant.

### Problem 11-22 *Cost behavior and averaging*

Shirley Maze has decided to start Shirley Cleaning, a residential housecleaning service company. She is able to rent cleaning equipment at a cost of \$570 per month. Labor costs are expected to be \$49 per house cleaned and supplies are expected to cost \$4 per house.

#### Required

- a. Determine the total expected cost of equipment rental and the expected cost of equipment rental per house cleaned, assuming that Shirley Cleaning cleans 10, 20, or 30 houses during one month. Is the cost of equipment a fixed or a variable cost?
- b. Determine the total expected cost of labor and the expected cost of labor per house cleaned, assuming that Shirley Cleaning cleans 10, 20, or 30 houses during one month. Is the cost of labor a fixed or a variable cost?
- c. Determine the total expected cost of supplies and the expected cost of supplies per house cleaned, assuming that Shirley Cleaning cleans 10, 20, or 30 houses during one month. Is the cost of supplies a fixed or a variable cost?
- d. Determine the total expected cost of cleaning houses, assuming that Shirley Cleaning cleans 10, 20, or 30 houses during one month.
- e. Determine the expected cost per house, assuming that Shirley Cleaning cleans 10, 20, or 30 houses during one month. Why does the cost per unit decrease as the number of houses increases?
- f. If Ms. Maze tells you that she prices her services at 25% above cost, would you assume that she means average or actual cost? Why?

### Problem 11-23 *Context-sensitive nature of cost behavior classifications*

First Federal Bank's start-up division establishes new branch banks. Each branch opens with three tellers. Total teller cost per branch is \$90,000 per year. The three tellers combined can process up to 70,000 customer transactions per year. If a branch does not attain a volume of at least 40,000 transactions during its first year of operations, it is closed. If the demand for services exceeds 70,000 transactions, an additional teller is hired, and the branch is transferred from the start-up division to regular operations.

#### Required

- a. What is the relevant range of activity for new branch banks?
- b. Determine the amount of teller cost in total and the teller cost per transaction for a branch that processes 40,000, 50,000, 60,000, or 70,000 transactions. In this case (the activity base is the number of transactions for a specific branch), is the teller cost a fixed or a variable cost?
- c. Determine the amount of teller cost in total and the teller cost per branch for First Federal Bank, assuming that the start-up division operates 15, 20, 25, or 30 branches. In this case (the activity base is the number of branches), is the teller cost a fixed or a variable cost?

### Problem 11-24 *Context-sensitive nature of cost behavior classifications*

Amy Trenton operates a sales booth in computer software trade shows, selling an accounting software package, *Accountech*. She purchases the package from a software manufacturer for \$150 each. Booth space at the convention hall costs \$8,000 per show.

#### Required

- a. Sales at past trade shows have ranged between 200 and 400 software packages per show. Determine the average cost of sales per unit if Ms. Trenton sells 200, 250, 300, 350, or 400 units of *Accountech* at a trade show. Use the following chart to organize your answer. Is the cost of booth space fixed or variable?

LO 1



#### CHECK FIGURES

- c. Total supplies cost for cleaning 30 houses: \$120
- d. Total cost for 20 houses: \$1,630

LO 5



#### CHECK FIGURE

- b. Average teller cost for 60,000 transactions: \$1.33

LO 5



#### CHECK FIGURES

- a. Average cost at 400 units: \$170
- b. Average price at 250 units: \$227

	Sales Volume in Units (a)				
	200	250	300	350	400
Total cost of software ( $a \times \$150$ )	\$ 30,000				
Total cost of booth rental	8,000				
Total cost of sales (b)	\$ 38,000				
Average cost per unit ( $b \div a$ )	\$ 190				

- b. If Ms. Trenton wants to earn a \$45 profit on each package of software she sells at a trade show, what price must she charge at sales volumes of 200, 250, 300, 350, or 400 units?
- c. Record the total cost of booth space if Ms. Trenton attends one, two, three, four, or five trade shows. Record your answers in the following chart. Is the cost of booth space fixed or variable relative to the number of shows attended?

	Number of Trade Shows Attended				
	1	2	3	4	5
Total cost of booth rental	\$8,000				

- d. Ms. Trenton provides decorative shopping bags to customers who purchase software packages. Some customers take the bags; others do not. Some customers stuff more than one software package into a single bag. The number of bags varies in relation to the number of units sold, but the relationship is not proportional. Assume that Ms. Trenton uses \$30 of bags for every 50 software packages sold. What is the additional cost per unit sold? Is the cost fixed or variable?

## LO 2



## CHECK FIGURES

Part 1, b: \$3,200

Part 2, h: 20%

Part 3, k: cost per student for  
24 students: \$20**Problem 11-25** *Effects of operating leverage on profitability*

Cooper Training Services (CTS) provides instruction on the use of computer software for the employees of its corporate clients. It offers courses in the clients' offices on the clients' equipment. The only major expense CTS incurs is instructor salaries; it pays instructors \$3,600 per course taught. CTS recently agreed to offer a course of instruction to the employees of Akers Incorporated at a price of \$340 per student. Akers estimated that 20 students would attend the course.

Base your answer on the preceding information.

**Part 1:****Required**

- Relative to the number of students in a single course, is the cost of instruction a fixed or a variable cost?
- Determine the profit, assuming that 20 students attend the course.
- Determine the profit, assuming a 20 percent increase in enrollment (i.e., enrollment increases to 24 students). What is the percentage change in profitability?
- Determine the profit, assuming a 20 percent decrease in enrollment (i.e., enrollment decreases to 16 students). What is the percentage change in profitability?
- Explain why a 20 percent shift in enrollment produces more than a 20 percent shift in profitability. Use the term that identifies this phenomenon.

**Part 2:**

The instructor has offered to teach the course for a percentage of tuition fees. Specifically, she wants \$210 per person attending the class. Assume that the tuition fee remains at \$340 per student.

### Required

- f. Is the cost of instruction a fixed or a variable cost?
- g. Determine the profit, assuming that 20 students take the course.
- h. Determine the profit, assuming a 20 percent increase in enrollment (i.e., enrollment increases to 24 students). What is the percentage change in profitability?
- i. Determine the profit, assuming a 20 percent decrease in enrollment (i.e., enrollment decreases to 16 students). What is the percentage change in profitability?
- j. Explain why a 20 percent shift in enrollment produces a proportional 20 percent shift in profitability.



### Part 3:

CTS sells a workbook with printed material unique to each course to each student who attends the course. Any workbooks that are not sold must be destroyed. Prior to the first class, CTS printed 20 copies of the books based on the client's estimate of the number of people who would attend the course. Each workbook costs \$20 and is sold to course participants for \$31. This cost includes a royalty fee paid to the author and the cost of duplication.

### Required

- k. Calculate the workbook cost in total and per student, assuming that 16, 20, or 24 students attempt to attend the course.
- l. Classify the cost of workbooks as fixed or variable relative to the number of students attending the course.
- m. Discuss the risk of holding inventory as it applies to the workbooks.
- n. Explain how a just-in-time inventory system can reduce the cost and risk of holding inventory.



### Problem 11-26 *Effects of fixed and variable cost behavior on the risk and rewards of business opportunities*

LO 1, 2

Pacific and Atlantic Universities offer executive training courses to corporate clients. Pacific pays its instructors \$5,310 per course taught. Atlantic pays its instructors \$295 per student enrolled in the class. Both universities charge executives a \$340 tuition fee per course attended.



### Required

- a. Prepare income statements for Pacific and Atlantic, assuming that 18 students attend a course.
- b. Pacific University embarks on a strategy to entice students from Atlantic University by lowering its tuition to \$220 per course. Prepare an income statement for Pacific, assuming that the university is successful and enrolls 36 students in its course.
- c. Atlantic University embarks on a strategy to entice students from Pacific University by lowering its tuition to \$220 per course. Prepare an income statement for Atlantic, assuming that the university is successful and enrolls 36 students in its course.
- d. Explain why the strategy described in Requirement *b* produced a profit but the same strategy described in Requirement *c* produced a loss.
- e. Prepare income statements for Pacific and Atlantic Universities, assuming that 15 students attend a course, assuming that both universities charge executives a \$340 tuition fee per course attended.
- f. It is always better to have fixed than variable cost. Explain why this statement is false.
- g. It is always better to have variable than fixed cost. Explain why this statement is false.

### CHECK FIGURES

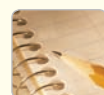
- a. Atlantic NI: \$810
- b. NI: \$2,610

### Problem 11-27 *Analyzing operating leverage*

LO 3, 4

Adam Copeland is a venture capitalist facing two alternative investment opportunities. He intends to invest \$1 million in a start-up firm. He is nervous, however, about future economic volatility. He asks you to analyze the following financial data for the past year's operations of the two firms he is considering and give him some business advice.

**Excel**



**CHECK FIGURES**

- b. % of change for Bells: 45.16  
c. % of change for Wells: (18.06)

	Company Name	
	Wells	Bells
Variable cost per unit (a)	\$21.00	\$10.50
Sales revenue (8,000 units × \$28)	\$224,000	\$224,000
Variable cost (8,000 units × a)	(168,000)	(84,000)
Contribution margin	56,000	140,000
Fixed cost	(25,000)	(109,000)
Net income	\$ 31,000	\$ 31,000

**Required**

- Use the contribution margin approach to compute the operating leverage for each firm.
- If the economy expands in coming years, Wells and Bells will both enjoy a 10 percent per year increase in sales, assuming that the selling price remains unchanged. Compute the change in net income for each firm in dollar amount and in percentage. (*Note:* Since the number of units increases, both revenue and variable cost will increase.)
- If the economy contracts in coming years, Wells and Bells will both suffer a 10 percent decrease in sales volume, assuming that the selling price remains unchanged. Compute the change in net income for each firm in dollar amount and in percentage. (*Note:* Since the number of units decreases, both total revenue and total variable cost will decrease.)
- Write a memo to Adam Copeland with your analyses and advice.

**LO 3, 6****CHECK FIGURE**

- a. 11,000 units

**Problem 11-28** *Determining the break-even point and preparing a contribution margin income statement*

Blackmon Manufacturing Company makes a product that it sells for \$50 per unit. The company incurs variable manufacturing costs of \$14 per unit. Variable selling expenses are \$6 per unit, annual fixed manufacturing costs are \$189,000, and fixed selling and administrative costs are \$141,000 per year.

**Required**

- Determine the break-even point in units and dollars.
- Confirm your results by preparing a contribution margin income statement for the break-even sales volume.

**LO 8****Problem 11-29** *Margin of safety and operating leverage*

Ireland Company is considering the addition of a new product to its cosmetics line. The company has three distinctly different options: a skin cream, a bath oil, or a hair coloring gel. Relevant information and budgeted annual income statements for each of the products follow.

	Relevant Information		
	Skin Cream	Bath Oil	Color Gel
Budgeted sales in units (a)	71,000	111,000	39,000
Expected sales price (b)	\$8	\$4	\$12
Variable costs per unit (c)	\$5	\$2	\$ 7
Income Statements			
Sales revenue (a × b)	\$568,000	\$444,000	\$468,000
Variable costs (a × c)	(355,000)	(222,000)	(273,000)
Contribution margin	213,000	222,000	195,000
Fixed costs	(153,000)	(186,000)	(155,000)
Net income	\$ 60,000	\$ 36,000	\$ 40,000

**Required**

- Determine the margin of safety as a percentage for each product.
- Prepare revised income statements for each product, assuming a 20 percent increase in the budgeted sales volume.

**CHECK FIGURES**

- b. NI:  
Skin Cream \$102,600  
Bath Oil \$80,400  
Color Gel \$79,000

- c. For each product, determine the percentage change in net income that results from the 20 percent increase in sales. Which product has the highest operating leverage?
- d. Assuming that management is pessimistic and risk averse, which product should the company add to its cosmetic line? Explain your answer.
- e. Assuming that management is optimistic and risk aggressive, which product should the company add to its cosmetics line? Explain your answer.

## ANALYZE, THINK, COMMUNICATE

### ATC 11-1 Business Applications Operating leverage

#### Description of Business for Caterpillar, Inc.

**Caterpillar** is the leader in construction and mining equipment and diesel and natural gas engines and industrial gas turbines in our size range. The company is also a leading services provider through Cat Financial, Caterpillar Logistics Services Inc., and Caterpillar Remanufacturing Services Inc. Annual sales and revenues are \$41.517 billion, making Caterpillar the largest manufacturer in our industry. Caterpillar is also a leading U.S. exporter. Through a global network of independent dealers, Caterpillar builds long-term relationships with customers around the world. For over 80 years, the Caterpillar name has been associated with the highest level of quality products and services.



Caterpillar, Inc.	2006	2005
Operating revenue	\$41,517	\$36,339
Operating earnings	4,921	3,784

#### Description of Business for Sonic Corporation

**Sonic Corp.** (the “Company”) operates and franchises the largest chain of drive-in restaurants (“Sonic Drive-Ins”) in the United States. As of August 31, 2006, the Company had 3,188 Sonic Drive-Ins in operation, consisting of 623 Partner Drive-Ins and 2,565 Franchise Drive-Ins, principally in the southern two-thirds of the United States. We own a majority interest, typically at least 60%, and the supervisor and manager of the drive-in own a minority interest in each Partner Drive-In, which are owned and operated as either a limited liability company or general partnership. Franchise Drive-Ins are owned and operated by our franchisees. At a typical Sonic Drive-In, a customer drives into one of 24 to 36 covered drive-in spaces, orders through an intercom speaker system, and has the food delivered by a carhop within an average of four minutes. Most Sonic Drive-Ins also include a drive-through lane and patio seating.

Sonic Corporation	2006	2005
Operating revenue	\$693.3	\$623.1
Operating earnings	131.6	117.4

#### Required

- a. Determine which company appears to have the higher operating leverage.
- b. Write a paragraph or two explaining why the company you identified in Requirement a might be expected to have the higher operating leverage.
- c. If revenues for both companies declined, which company do you think would likely experience the greatest decline in operating earnings? Explain your answer.

### ATC 11-2 Group Assignment Operating leverage

The Parent Teacher Association (PTA) of Meadow High School is planning a fund-raising campaign. The PTA is considering the possibility of hiring Eric Logan, a world-renowned investment counselor, to address the public. Tickets would sell for \$28 each. The school has agreed to let the PTA use Harville Auditorium at no cost. Mr. Logan is willing to accept one





of two compensation arrangements. He will sign an agreement to receive a fixed fee of \$10,000 regardless of the number of tickets sold. Alternatively, he will accept payment of \$20 per ticket sold. In communities similar to that in which Meadow is located, Mr. Logan has drawn an audience of approximately 500 people.

### Required

- In front of the class, present a statement showing the expected net income assuming 500 people buy tickets.
- Divide the class into groups and then organize the groups into four sections. Assign one of the following tasks to each section of groups.

### Group Tasks

- Assume the PTA pays Mr. Logan a fixed fee of \$10,000. Determine the amount of net income that the PTA will earn if ticket sales are 10 percent higher than expected. Calculate the percentage change in net income.
- Assume that the PTA pays Mr. Logan a fixed fee of \$10,000. Determine the amount of net income that the PTA will earn if ticket sales are 10 percent lower than expected. Calculate the percentage change in net income.
- Assume that the PTA pays Mr. Logan \$20 per ticket sold. Determine the amount of net income that the PTA will earn if ticket sales are 10 percent higher than expected. Calculate the percentage change in net income.
- Assume that the PTA pays Mr. Logan \$20 per ticket sold. Determine the amount of net income that the PTA will earn if ticket sales are 10 percent lower than expected. Calculate the percentage change in net income.
- Have each group select a spokesperson. Have one of the spokespersons in each section of groups go to the board and present the results of the analysis conducted in Requirement *b*. Resolve any discrepancies in the computations presented at the board and those developed by the other groups.
- Draw conclusions regarding the risks and rewards associated with operating leverage. At a minimum, answer the following questions.
  - Which type of cost structure (fixed or variable) produces the higher growth potential in profitability for a company?
  - Which type of cost structure (fixed or variable) produces the higher risk of declining profitability for a company?
  - Under what circumstances should a company seek to establish a fixed cost structure?
  - Under what circumstances should a company seek to establish a variable cost structure?

### ATC 11-3 Research Assignment *Fixed versus variable cost*

Use the 2006 Form 10-K for **Black & Decker Corp.** (B&D) to complete the requirements below. To obtain the Form 10-K you can use the EDGAR system following the instructions in Appendix A, or it can be found under “Investor Relations” on the company’s corporate website: [www.bdk.com](http://www.bdk.com). Be sure to read carefully the following portions of the document.

- “General Development of the Business” on page 1.
- “Consolidated Statement of Earnings” on page 32.

### Required

- Calculate the percentage decrease in B&D’s sales and its “operating income” from 2005 to 2006.
- Would fixed costs or variable costs be more likely to explain why B&D’s operating earnings decreased by a bigger percentage than its sales?
- On page 38 B&D reported that it incurred product development costs of \$139.4 million in 2006. If this cost is thought of in the context of the number of units of products sold, should it be considered as primarily fixed or variable in nature?
- If the product development costs are thought of in the context of the number of new products developed, should it be considered as primarily fixed or variable in nature?



#### ATC 11-4 Writing Assignment *Operating leverage, margin of safety, and cost behavior*

The article “Up Front: More Condensing at the Digest?” in the October 19, 1998, issue of *Business-Week* reported that Thomas Ryder, CEO of **Reader’s Digest Association**, was considering a spin-off of Reader’s Digest’s direct-marketing operations into a joint venture with **Time Warner**. The article’s author, Robert McNatt, noted that the direct marketing of books, music, and videos is a far larger part of the Reader’s Digest business than is its namesake magazine. Furthermore, the article stated that 1998 direct-marketing sales of \$1.6 billion were down 11 percent from 1997. The decline in revenue caused the division’s operating profits to decline 58 percent. The article stated that the contemplated alliance with Time Warner could provide some fast help. Gerald Levin, Time Warner chairman, has said that his company’s operations provide customer service and product fulfillment far better than other Web sellers do because of Time Warner’s established 250 websites.

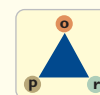


##### Required

- Write a memo explaining how an 11 percent decrease in sales could result in a 58 percent decline in operating profits.
- Explain briefly how the decline in revenue will affect the company’s margin of safety.
- Explain why a joint venture between Reader’s Digest’s direct-marketing division and Time Warner could work to the advantage of both companies. (*Hint: Consider the effects of fixed cost behavior in formulating your response.*)

#### ATC 11-5 Ethical Dilemma *Profitability versus social conscience (effects of cost behavior)*

Advances in biological technology have enabled two research companies, Bio Labs Inc. and Scientific Associates, to develop an insect-resistant corn seed. Neither company is financially strong enough to develop the distribution channels necessary to bring the product to world markets. World Agra Distributors Inc. has negotiated contracts with both companies for the exclusive right to market their seed. Bio Labs signed an agreement to receive an annual royalty of \$1,000,000. In contrast, Scientific Associates chose an agreement that provides for a royalty of \$0.50 per pound of seed sold. Both agreements have a 10-year term. During 2010, World Agra sold approximately 1,600,000 pounds of the Bio Labs Inc. seed and 2,400,000 pounds of the Scientific Associates seed. Both types of seed were sold for \$1.25 per pound. By the end of 2010, it was apparent that the seed developed by Scientific Associates was superior. Although insect infestation was virtually nonexistent for both types of seed, the seed developed by Scientific Associates produced corn that was sweeter and had consistently higher yields.



World Agra Distributors’ chief financial officer, Roger Weatherstone, recently retired. To the astonishment of the annual planning committee, Mr. Weatherstone’s replacement, Ray Borrough, adamantly recommended that the marketing department develop a major advertising campaign to promote the seed developed by Bio Labs Inc. The planning committee reluctantly approved the recommendation. A \$100,000 ad campaign was launched; the ads emphasized the ability of the Bio Labs seed to avoid insect infestation. The campaign was silent with respect to taste or crop yield. It did not mention the seed developed by Scientific Associates. World Agra’s sales staff was instructed to push the Bio Labs seed and to sell the Scientific Associates seed only on customer demand. Although total sales remained relatively constant during 2011, sales of the Scientific Associates seed fell to approximately 1,300,000 pounds while sales of the Bio Labs Inc. seed rose to 2,700,000 pounds.

##### Required

- Determine the amount of increase or decrease in profitability experienced by World Agra in 2011 as a result of promoting Bio Labs seed. Support your answer with appropriate commentary.
- Did World Agra’s customers in particular and society in general benefit or suffer from the decision to promote the Bio Labs seed?
- Review the standards of ethical conduct in Exhibit 10.14 of Chapter 10 and comment on whether Mr. Borrough’s recommendation violated any of the principles in the Statement of Ethical Professional Practice.
- Comment on your belief regarding the adequacy of the Statement of Ethical Professional Practice for Managerial Accountants to direct the conduct of management accountants.

# CHAPTER 12

## Cost Accumulation, Tracing, *and* Allocation

### LEARNING OBJECTIVES

**After you have mastered the material in this chapter you will be able to:**

- 1** Identify cost objects and cost drivers.
- 2** Distinguish direct costs from indirect costs.
- 3** Allocate indirect costs to cost objects.
- 4** Select appropriate cost drivers for allocating indirect costs.
- 5** Allocate costs to solve timing problems.
- 6** Explain the benefits and detriments of allocating pooled costs.
- 7** Recognize the effects of cost allocation on employee motivation.

### CHAPTER OPENING

What does it cost? This is one of the questions most frequently asked by business managers. Managers must have reliable cost estimates to price products, evaluate performance, control operations, and prepare financial statements. As this discussion implies, managers need to know the cost of many different things. The things we are trying to determine the cost of are commonly called **cost objects**. For example, if we are trying to determine the cost of operating a department, that department is the cost object. Cost objects may be products, processes, departments, services, activities, and so on. This chapter explains techniques managerial accountants use to determine the cost of a variety of cost objects.

## The *Curious* Accountant

A former patient of a California hospital complained about being charged \$7 for a single aspirin tablet. After all, an entire bottle of 100 aspirins can be purchased at the local pharmacy store for around \$2.

Can you think of any reasons, other than shameless profiteering, that a hospital would need to charge \$7 for an aspirin? Remember that the hospital is not just selling the aspirin; it is also delivering it to the patient. (Answer on page 438.)



**LO 1**

Identify cost objects and cost drivers.

## DETERMINE THE COST OF COST OBJECTS

Accountants use **cost accumulation** to determine the cost of a particular object. Suppose the Atlanta Braves advertising manager wants to promote a Tuesday night ball game by offering free baseball caps to all children who attend. What would be the promotion cost? The team's accountant must *accumulate* many individual costs and add them together. For simplicity consider only three cost components: (1) the cost of the caps, (2) the cost of advertising the promotion, and (3) the cost of an employee to work on the promotion.

Cost accumulation begins with identifying the **cost objects**. The primary cost object is the cost of the promotion. Three secondary cost objects are (1) the cost of caps, (2) the cost of advertising, and (3) the cost of labor. The costs of the secondary cost objects are combined to determine the cost of the primary cost object.

Determining the costs of the secondary cost objects requires identifying what *drives* those costs. A **cost driver** has a *cause-and-effect* relationship with a cost object. For example, the *number of caps* (cost driver) has an effect on the *cost of caps* (cost object). The *number of advertisements* is a cost driver for the *advertising cost* (cost object); the *number of labor hours* worked is a cost driver for the *labor cost* (cost object). Using the following assumptions about unit costs and cost drivers, the accumulated cost of the primary cost object (cost of the cap promotion) is

Cost Object	Cost Per Unit	×	Cost Driver	=	Total Cost of Object
Cost of caps	\$2.50	×	4,000 Caps	=	\$10,000
Cost of advertising	\$100.00	×	50 Advertisements	=	5,000
Cost of labor	\$8.00	×	100 Hours	=	800
Cost of cap promotion					<u>\$15,800</u>

The Atlanta Braves should run the promotion if management expects it to produce additional revenues exceeding \$15,800.

### Estimated versus Actual Cost

The accumulated cost of the promotion—\$15,800—is an *estimate*. Management cannot know *actual* costs and revenues until after running the promotion. While actual information is more accurate, it is not relevant for deciding whether to run the promotion because the decision must be made before the actual cost is known. Managers must accept a degree of inaccuracy in exchange for the relevance of timely information. Many business decisions are based on estimated rather than actual costs.

Managers use cost estimates to set prices, bid on contracts, evaluate proposals, distribute resources, plan production, and set goals. Certain circumstances, however, require actual cost data. For example, published financial reports and managerial performance evaluations use actual cost data. Managers frequently accumulate both estimated and actual cost data for the same cost object. For example, companies use cost estimates to establish goals and use actual costs to evaluate management performance in meeting those goals. The following discussion provides a number of business examples that use estimated data, actual data, or a combination of both.

## ASSIGNMENT OF COSTS TO OBJECTS IN A RETAIL BUSINESS



Exhibit 12.1 displays the January income statement for In Style, Inc. (ISI), a retail clothing store. ISI subdivides its operations into women's, men's, and children's departments. To encourage the departmental managers to maximize sales, ISI began paying



the manager of each department a bonus based on a percentage of departmental sales revenue.

Although the bonus incentive increased sales revenue, it also provoked negative consequences. The departmental managers began to argue over floor space; each manager wanted more space to display merchandise. The managers reduced prices; they increased sales commissions. In the drive to maximize sales, the managers ignored the need to control costs. To improve the situation, the store manager decided to base future bonuses on each department's contribution to profitability rather than its sales revenue.

## IDENTIFYING DIRECT AND INDIRECT COSTS

The new bonus strategy requires determining the cost of operating each department. Each department is a separate *cost object*. Assigning costs to the departments (cost objects) requires **cost tracing** and **cost allocation**. *Direct costs* can be easily traced to a cost object. *Indirect costs* cannot be easily traced to a cost object. Whether or not a cost is easily traceable requires *cost/benefit analysis*.

Some of ISI's costs can be easily traced to the cost objects (specific departments). The cost of goods sold is an example of an easily traced cost. Price tags on merchandise can be coded so cash register scanners capture the departmental code for each sale. The cost of goods sold is not only easily traceable but also very useful information. Companies need cost of goods sold information for financial reporting (income statement and balance sheet) and for management decisions (determining inventory reorder points, pricing strategies, and cost control). Because the cost of tracing *cost of goods sold* is small relative to the benefits obtained, cost of goods sold is a *direct cost*.

In contrast, the cost of supplies (shopping bags, sales slips, pens, staples, price tags) used by each department is much more difficult to trace. How could the number of staples used to seal shopping bags be traced to any particular department? The sales staff could count the number of staples used, but doing so would be silly for the benefits obtained. Although tracing the cost of supplies to each department may be possible, it is not worth the effort of doing so. The cost of supplies is therefore an *indirect cost*. Indirect costs are also called **overhead costs**.

Direct and indirect costs can be described as follows.

**Direct costs** can be traced to cost objects in a *cost-effective* manner.  
**Indirect costs** cannot be traced to objects in a *cost-effective* manner.

By analyzing the accounting records, ISI's accountant classified the costs from the income statement in Exhibit 12.1 as direct or indirect, as shown in Exhibit 12.2. The next paragraph explains the classifications.

All figures represent January costs. Items 1 through 4 are direct costs, traceable to the cost objects in a cost-effective manner. Cost of goods sold is traced to departments at the point of sale using cash register scanners. Sales commissions are based on a percentage of departmental sales and are therefore easy to trace to the departments. Departmental managers' salaries are also easily traceable to the departments. Equipment, furniture, and fixtures are tagged with department codes that permit tracing depreciation charges directly to specific departments. Items 5 through 8 are incurred on behalf of the company as a whole and are therefore not directly traceable to a specific department. Although Item 9 could be traced to specific departments, the cost of doing so would exceed the benefits. The cost of supplies is therefore also classified as indirect.

### LO 2

Distinguish direct costs from indirect costs.

#### EXHIBIT 12.1

##### Income Statement

#### IN STYLE, INC.

##### Income Statement

For the Month Ended January 31

Sales	\$360,000
Cost of goods sold	(216,000)
Gross margin	144,000
Sales commissions	(18,000)
Dept. managers' salaries	(12,000)
Store manager's salary	(9,360)
Depreciation	(16,000)
Rental fee for store	(18,400)
Utilities	(2,300)
Advertising	(7,200)
Supplies	(900)
Net income	\$ 59,840



**EXHIBIT 12.2****Income Statement Classification of Costs**

Cost Item	Direct Costs			Indirect Costs
	Women's	Men's	Children's	
1. Cost of goods sold—\$216,000	\$120,000	\$58,000	\$38,000	
2. Sales commissions—\$18,000	9,500	5,500	3,000	
3. Dept. managers' salaries—\$12,000	5,000	4,200	2,800	
4. Depreciation—\$16,000	7,000	5,000	4,000	
5. Store manager's salary				\$ 9,360
6. Rental fee for store				18,400
7. Utilities				2,300
8. Advertising				7,200
9. Supplies				900
Totals	<u>\$141,500</u>	<u>\$72,700</u>	<u>\$47,800</u>	<u>\$38,160</u>

**Cost Classifications—Independent and Context Sensitive**

Whether a cost is direct or indirect is independent of whether it is fixed or variable. In the ISI example, both cost of goods sold and the cost of supplies vary relative to sales volume (both are variable costs), but cost of goods sold is direct and the cost of supplies is indirect. Furthermore, the cost of rent and the cost of depreciation are both fixed relative to sales volume, but the cost of rent is indirect and the cost of depreciation is direct. In fact, the very same cost can be classified as direct or indirect, depending on the cost object. The store manager's salary is not directly traceable to a specific department, but it is traceable to a particular store.

Similarly, identifying costs as direct or indirect is independent of whether the costs are relevant to a given decision. ISI could avoid both cost of goods sold and the cost of supplies for a particular department if that department were eliminated. Both costs are relevant to a segment elimination decision, yet one is direct, and the other is indirect. You cannot memorize costs as direct or indirect, fixed or variable, relevant or not relevant. When trying to identify costs as to type or behavior, you must consider the context in which the costs occur.

**ALLOCATING INDIRECT COSTS TO OBJECTS****LO 3**

Allocate indirect costs to cost objects.

**Common costs** support multiple cost objects, but cannot be directly traced to any specific object. In the case of In Style, Inc., the cost of renting the store (common cost) supports the women's, men's, and children's departments (cost objects). The departmental managers may shirk responsibility for the rental cost by claiming that others higher up the chain of command are responsible. Responsibility can be motivated at the departmental level by assigning (*allocating*) a portion of the total rental cost to each department.

To accomplish appropriate motivation, authority must accompany responsibility. In other words, the departmental managers should be held responsible for a portion of rental cost only if they are able to exercise some degree of control over that cost. For example, if managers are assigned a certain amount of the rental cost for each square foot of space they use, they should have the authority to establish the size of the space used by their departments. **Controllable costs** are costs that can be influenced by a manager's decisions and actions. The controllability concept is discussed in more detail in a later chapter.

Cost **allocation** involves dividing a total cost into parts and assigning the parts to designated cost objects. How should ISI allocate the \$38,160 of indirect costs to each of the three departments? First, identify a cost driver for each cost to be allocated.

## Reality BYTES

How does **Southwest Airlines** know the cost of flying a passenger from Houston, Texas, to Los Angeles, California? The fact is that Southwest does not know the actual cost of flying particular passengers anywhere. There are many indirect costs associated with flying passengers. Some of these include the cost of planes, fuel, pilots, office buildings, and ground personnel. Indeed, besides insignificant food and beverage costs, there are few costs that could be traced directly to customers. Southwest and other airlines are forced to use allocation and averaging to determine the estimated cost of providing transportation services to customers. Estimated rather than actual cost is used for decision-making purposes.



Consider that in its 2006 annual report Southwest reported the average operating expenses of flying one passenger one mile (called a *passenger mile*) were 8.8¢. However, this number was based on 92.7 billion “available passenger miles.” In 2006 Southwest operated at 73.1 percent of capacity, not 100 percent, so it was only able to charge passengers for 67.8 billion passenger miles. Thus, its average operating expenses were closer to 12.0¢ for each mile for which they were able to charge. Had they operated at a higher capacity, their average costs would have been lower.

For example, there is a cause-and-effect relationship between store size and rent cost; the larger the building, the higher the rent cost. This relationship suggests that the more floor space a department occupies, the more rent cost that department should bear. To illustrate, assume ISI’s store capacity is 23,000 square feet and the women’s, men’s, and children’s departments occupy 12,000, 7,000, and 4,000 square feet, respectively. ISI can achieve a rational allocation of the rent cost using the following two-step process.<sup>1</sup>

**Step 1.** Compute the *allocation rate* by dividing the *total cost to be allocated* (\$18,400 rental fee) by the *cost driver* (23,000 square feet of store space). *The cost driver is also called the allocation base.* This computation produces the **allocation rate**, as follows:

$$\begin{array}{rclclcl} \text{Total cost to be allocated} & \div & \text{Cost driver (allocation base)} & = & \text{Allocation rate} \\ \$18,400 \text{ rental fee} & \div & 23,000 \text{ square feet} & = & \$0.80 \text{ per square foot} \end{array}$$

**Step 2.** Multiply the *allocation rate* by the *weight of the cost driver* (weight of the base) to determine the *allocation per cost object*, as follows.

Cost Object	Allocation Rate	×	Number of Square Feet	=	Allocation per Cost Object
Women’s department	\$0.80	×	12,000	=	\$ 9,600
Men’s department	0.80	×	7,000	=	5,600
Children’s department	0.80	×	4,000	=	3,200
Total			<u>23,000</u>		<u>\$18,400</u>

It is also plausible to presume utilities cost is related to the amount of floor space a department occupies. Larger departments will consume more heating, lighting, air conditioning, and so on than smaller departments. Floor space is a reasonable cost

<sup>1</sup>Other mathematical approaches achieve the same result. This text consistently uses the two-step method described here. Specifically, the text determines allocations by (1) computing a *rate* and (2) multiplying the *rate* by the *weight of the base* (cost driver).

driver for utility cost. Based on square footage, ISI can allocate utility cost to each department as follows.

**Step 1.** Compute the allocation rate by dividing the total cost to be allocated (\$2,300 utility cost) by the cost driver (23,000 square feet of store space):

$$\begin{array}{rcl} \text{Total cost to be allocated} & \div & \text{Cost driver} = \text{Allocation rate} \\ \$2,300 \text{ utility cost} & \div & 23,000 \text{ square feet} = \$0.10 \text{ per square foot} \end{array}$$

**Step 2.** Multiply the *allocation rate* by the *weight of the cost driver* to determine the *allocation per cost object*.

Cost Object	Allocation Rate	×	Number of Square Feet	=	Allocation per Cost Object
Women's department	\$0.10	×	12,000	=	\$1,200
Men's department	0.10	×	7,000	=	700
Children's department	0.10	×	4,000	=	400
Total			<u>23,000</u>		<u>\$2,300</u>

## CHECK Yourself 12.1

HealthCare, Inc., wants to estimate the cost of operating the three departments (Dermatology, Gynecology, and Pediatrics) that serve patients in its Health Center. Each department performed the following number of patient treatments during the most recent year of operation: Dermatology, 2,600; Gynecology, 3,500; and Pediatrics, 6,200. The annual salary of the Health Center's program administrator is \$172,200. How much of the salary cost should HealthCare allocate to the Pediatrics Department?

**Answer**

**Step 1** Compute the *allocation rate*.

$$\begin{array}{rcl} \text{Total cost to be allocated} & \div & \text{Cost Driver (patient treatments)} = \text{Allocation rate} \\ \$172,200 \text{ salary cost} & \div & (2,600 + 3,500 + 6,200) = \$14 \text{ per patient treatment} \end{array}$$

**Step 2** Multiply the *allocation rate* by the *weight of the cost driver* (weight of the base) to determine the *allocation per cost object*.

Cost Object	Allocation Rate	×	No. of Treatments	=	Allocation per Cost Object
Pediatrics department	\$14	×	6,200	=	\$86,800

## SELECTING A COST DRIVER

### LO 4

Select appropriate cost drivers for allocating indirect costs.

Companies can frequently identify more than one cost driver for a particular indirect cost. For example, ISI's shopping bag cost is related to both the *number of sales transactions* and the *volume of sales dollars*. As either of these potential cost drivers increases, shopping bag usage also increases. The most useful cost driver is the one with the strongest cause-and-effect relationship.

Consider shopping bag usage for T-shirts sold in the children's department versus T-shirts sold in the men's department. Assume ISI studied T-shirt sales during the first week of June and found the following.

Department	Children's	Men's
Number of sales transactions	120	92
Volume of sales dollars	\$1,440	\$1,612

Given that every sales transaction uses a shopping bag, the children's department uses far more shopping bags than the men's department even though it has a lower volume of sales dollars. A reasonable explanation for this circumstance is that children's T-shirts sell for less than men's T-shirts. The number of sales transactions is the better cost driver because it has a stronger cause-and-effect relationship with shopping bag usage than does the volume of sales dollars. Should ISI therefore use the number of sales transactions to allocate supply cost to the departments? Not necessarily.

The *availability of information* also influences cost driver selection. While the number of sales transactions is the more accurate cost driver, ISI could not use this allocation base unless it maintains records of the number of sales transactions per department. If the store tracks the volume of sales dollars but not the number of transactions, it must use dollar volume even if the number of transactions is the better cost driver. For ISI, sales volume in dollars appears to be the best *available* cost driver for allocating supply cost.

Assuming that sales volume for the women's, men's, and children's departments was \$190,000, \$110,000, and \$60,000, respectively, ISI can allocate the supplies cost as follows.

**Step 1.** Compute the allocation rate by dividing the total cost to be allocated (\$900 supplies cost) by the cost driver (\$360,000 total sales volume).

$$\begin{array}{lclcl} \text{Total cost to be allocated} & \div & \text{Cost driver} & = & \text{Allocation rate} \\ \$900 \text{ supplies cost} & \div & \$360,000 \text{ sales volume} & = & \$0.0025 \text{ per sales dollar} \end{array}$$

**Step 2.** Multiply the allocation rate by the weight of the cost driver to determine the allocation per cost object.

Cost Object	Allocation Rate	×	Sales Volume	=	Allocation per Cost Object
Women's department	\$0.0025	×	\$190,000	=	\$475
Men's department	0.0025	×	110,000	=	275
Children's department	0.0025	×	60,000	=	150
Total			<u>\$360,000</u>		<u>\$900</u>

ISI believes sales volume is also the appropriate allocation base for advertising cost. The sales generated in each department were likely influenced by the general advertising campaign. ISI can allocate advertising cost as follows.

**Step 1.** Compute the allocation rate by dividing the total cost to be allocated (\$7,200 advertising cost) by the cost driver (\$360,000 total sales volume).

$$\begin{array}{lclcl} \text{Total cost to be allocated} & \div & \text{Cost driver} & = & \text{Allocation rate} \\ \$7,200 \text{ advertising cost} & \div & \$360,000 \text{ sales volume} & = & \$0.02 \text{ per sales dollar} \end{array}$$

## Answers to The *Curious* Accountant

When we compare the cost that a hospital charges for an aspirin to the price we pay for an aspirin, we are probably not considering the full cost that we incur to purchase aspirin. If someone asks you what you pay for an aspirin, you would probably take the price of a bottle, say \$2, and divide it by the number of pills in the bottle, say 100. This would suggest their cost is \$0.02 each. Now, consider what it cost to buy the aspirins when all costs are considered. First, there is your time to drive to the store; what do you get paid per hour? Then, there is the cost of operating your automobile. You get the idea; in reality, the cost of an aspirin, from a business perspective, is much more than just the cost of the pills themselves.

Exhibit 12.3 shows the income statement of **Hospital Corporation of America** (HCA) for three recent years. HCA claims to be “. . . one of the leading health care services companies in the United States.” In 2006 it operated 173 facilities in 20 states. As you can see, while it generated over \$25 billion in revenue, it also incurred a lot of expenses. Look at its first two expense categories. Although it incurred \$4.3 billion in supplies expenses, it incurred almost two and a half times this amount in compensation expense. In other words, it cost a lot more to have someone deliver the aspirin to your bed than the aspirin itself costs.

In 2006 HCA earned \$1.04 billion from its \$25.5 billion in revenues. This is a return on sales percentage of 4.1 percent ( $\$1.04 \div \$25.5$ ). Therefore, on a \$7 aspirin, HCA would earn 29 cents of profit, which is still not a bad profit for selling one aspirin. As a comparison, in 2006, Walgreens return on sales was 3.7 percent.

### EXHIBIT 12.3

<b>HCA INC.</b> Consolidated Income Statements for the Years Ended December 31, 2006, 2005, and 2004 (Dollars in millions, except per share amounts)			
	2006	2005	2004
Revenues	\$25,477	\$24,455	\$23,502
Salaries and benefits	10,409	9,928	9,419
Supplies	4,322	4,126	3,901
Other operating expenses	4,057	4,039	3,797
Provision for doubtful accounts	2,660	2,358	2,669
Gains on investments	(243)	(53)	(56)
Equity in earnings of affiliates	(197)	(221)	(194)
Depreciation and amortization	1,391	1,374	1,250
Interest expense	955	655	563
Gains on sales of facilities	(205)	(78)	0
Transaction costs	442	0	0
Impairment of long-lived assets	24	0	12
Total expenses	23,615	22,128	21,361
Income before minority interests and income taxes	1,862	2,327	2,141
Minority interests in earnings of consolidated entities	201	178	168
Income before income taxes	1,661	2,149	1,973
Provision for income taxes	625	725	727
Net income	\$ 1,036	\$ 1,424	\$ 1,246

**Step 2.** Multiply the allocation rate by the weight of the cost driver to determine the allocation per cost object.

Cost Object	Allocation Rate	×	Sales Volume	=	Allocation per Cost Object
Women's department	\$0.02	×	\$190,000	=	\$3,800
Men's department	0.02	×	110,000	=	2,200
Children's department	0.02	×	60,000	=	1,200
Total			<u>\$360,000</u>		<u>\$7,200</u>

There is no strong cause-and-effect relationship between the store manager's salary and the departments. ISI pays the store manager the same salary regardless of sales level, square footage of store space, number of labor hours, or any other identifiable variable. Because no plausible cost driver exists, ISI must allocate the store manager's salary arbitrarily. Here the manager's salary is simply divided equally among the departments as follows.

**Step 1.** Compute the allocation rate by dividing the total cost to be allocated (\$9,360 manager's monthly salary) by the allocation base (number of departments).

$$\text{Total cost to be allocated} \div \text{Cost driver} = \text{Allocation rate}$$

$$\$9,360 \text{ store manager's salary} \div 3 \text{ departments} = \$3,120 \text{ per department}$$

**Step 2.** Multiply the allocation rate by the weight of the cost driver to determine the allocation per cost object.

Cost Object	Allocation Rate	×	Number of Departments	=	Allocation per Cost Object
Women's department	\$3,120	×	1	=	\$3,120
Men's department	3,120	×	1	=	3,120
Children's department	3,120	×	1	=	3,120
Total			<u>3</u>		<u>\$9,360</u>

As the allocation of the store manager's salary demonstrates, many allocations are arbitrary or based on a weak relationship between the allocated cost and the allocation base (cost driver). Managers must use care when making decisions using allocated costs.

## Behavioral Implications

Using the indirect cost allocations just discussed, Exhibit 12.4 shows the profit each department generated in January. ISI paid the three departmental managers bonuses based on each department's contribution to profitability. The store manager noticed an immediate change in the behavior of the departmental managers. For example, the manager of the women's department offered to give up 1,000 square feet of floor space because she believed reducing the selection of available products would not reduce sales significantly. Customers would simply buy different brands. Although sales would not decline dramatically, rent and utility cost allocations to the women's department would decline, increasing the profitability of the department.



**EXHIBIT 12.4****Profit Analysis by Department**

	<b>Department</b>			
	<b>Women's</b>	<b>Men's</b>	<b>Children's</b>	<b>Total</b>
Sales	\$190,000	\$110,000	\$60,000	\$360,000
Cost of goods sold	(120,000)	(58,000)	(38,000)	(216,000)
Sales commissions	(9,500)	(5,500)	(3,000)	(18,000)
Dept. managers' salary	(5,000)	(4,200)	(2,800)	(12,000)
Depreciation	(7,000)	(5,000)	(4,000)	(16,000)
Store manager's salary	(3,120)	(3,120)	(3,120)	(9,360)
Rental fee for store	(9,600)	(5,600)	(3,200)	(18,400)
Utilities	(1,200)	(700)	(400)	(2,300)
Advertising	(3,800)	(2,200)	(1,200)	(7,200)
Supplies	(475)	(275)	(150)	(900)
Departmental profit	<u>\$ 30,305</u>	<u>\$ 25,405</u>	<u>\$ 4,130</u>	<u>\$ 59,840</u>

In contrast, the manager of the children's department wanted the extra space. He believed the children's department was losing sales because it did not have enough floor space to display a competitive variety of merchandise. Customers came to the store to shop at the women's department, but they did not come specifically for children's wear. With additional space, the children's department could carry items that would draw customers to the store specifically to buy children's clothing. He believed the extra space would increase sales enough to cover the additional rent and utility cost allocations.

The store manager was pleased with the emphasis on profitability that resulted from tracing and assigning costs to specific departments.

## **EFFECTS OF COST BEHAVIOR ON SELECTING THE MOST APPROPRIATE COST DRIVER**

### **LO 4**

Select appropriate cost drivers for allocating indirect costs.

As previously mentioned, indirect costs may exhibit variable or fixed cost behavior patterns. Failing to consider the effects of cost behavior when allocating indirect costs can lead to significant distortions in product cost measurement. We examine the critical relationships between cost behavior and cost allocation in the next section of the text.

### **Using Volume Measures to Allocate Variable Overhead Costs**

A *causal relationship* exists between variable overhead product costs (indirect materials, indirect labor, inspection costs, utilities, etc.) and the volume of production. For example, the cost of indirect materials such as glue, staples, screws, nails, and varnish will increase or decrease in proportion to the number of desks a furniture manufacturing company makes. *Volume measures are good cost drivers* for allocating variable overhead costs.

Volume can be expressed by such measures as the number of units produced, the number of labor hours worked, or the amount of *direct* materials used in production. Given the variety of possible volume measures, how does management identify the most appropriate cost driver (allocation base) for assigning particular overhead costs? Consider the case of Filmier Furniture Company.

### Using Units as the Cost Driver

During the most recent year, Filmier Furniture Company produced 4,000 chairs and 1,000 desks. It incurred \$60,000 of *indirect materials* cost during the period. How much of this cost should Filmier allocate to chairs versus desks? Using number of units as the cost driver produces the following allocation.

**Step 1.** Compute the allocation rate.

$$\text{Total cost to be allocated} \div \text{Cost driver} = \text{Allocation rate}$$

$$\$60,000 \text{ indirect materials cost} \div 5,000 \text{ units} = \$12 \text{ per unit}$$

**Step 2.** Multiply the allocation rate by the weight of the cost driver to determine the allocation per cost object.

Product	Allocation Rate	×	Number of Units Produced	=	Allocated Cost
Desks	\$12	×	1,000	=	\$12,000
Chairs	12	×	4,000	=	48,000
Total			5,000	=	\$60,000

### Using Direct Labor Hours as the Cost Driver

Using the number of units as the cost driver assigns an *equal amount* (\$12) of indirect materials cost to each piece of furniture. However, if Filmier uses more indirect materials to make a desk than to make a chair, assigning the same amount of indirect materials cost to each is inaccurate. Assume Filmier incurs the following direct costs to make chairs and desks.

	Desks	Chairs	Total
Direct labor hours	3,500 hrs.	2,500 hrs.	6,000 hrs.
Direct materials cost	\$1,000,000	\$500,000	\$1,500,000

Both direct labor hours and direct materials cost are volume measures that indicate Filmier uses more indirect materials to make a desk than a chair. It makes sense that the amount of direct labor used is related to the amount of indirect materials used. Because production workers use materials to make furniture, it is plausible to assume that the more hours they work, the more materials they use. Using this reasoning, Filmier could assign the indirect materials cost to the chairs and desks as follows.

**Step 1.** Compute the allocation rate.

$$\text{Total cost to be allocated} \div \text{Cost driver} = \text{Allocation rate}$$

$$\$60,000 \text{ indirect materials cost} \div 6,000 \text{ hours} = \$10 \text{ per hour}$$

**Step 2.** Multiply the allocation rate by the weight of the cost driver.

Product	Allocation Rate	×	Number of Labor Hours	=	Allocated Cost
Desks	\$10.00	×	3,500	=	\$35,000
Chairs	10.00	×	2,500	=	25,000
Total			6,000	=	\$60,000

Basing the allocation on labor hours rather than number of units assigns a significantly larger portion of the indirect materials cost to desks (\$35,000 versus \$12,000). Is this allocation more accurate? Suppose the desks, but not the chairs, require

elaborate, labor-intensive carvings. A significant portion of the labor is then not related to consuming indirect materials (glue, staples, screws, nails, and varnish). It would therefore be inappropriate to allocate the indirect materials cost based on direct labor hours.

### Using Direct Material Dollars as the Cost Driver

If labor hours is an inappropriate allocation base, Filmier can consider direct material usage, measured in material dollars, as the allocation base. It is likely that the more lumber (direct material) Filmier uses, the more glue, nails, and so forth (indirect materials) it uses. It is reasonable to presume direct materials usage drives indirect materials usage. Using direct materials dollars as the cost driver for indirect materials produces the following allocation.

**Step 1.** Compute the allocation rate.

$$\begin{array}{rcl} \text{Total cost to be allocated} \div & \text{Cost driver} & = \text{Allocation rate} \\ \$60,000 \text{ indirect} & \div & \$1,500,000 \text{ direct} = \$0.04 \text{ per direct} \\ \text{materials cost} & \text{material dollars} & \text{material dollars} \end{array}$$

**Step 2.** Multiply the allocation rate by the weight of the cost driver.

Product	Allocation Rate	×	Number of Direct Material Dollars	=	Allocated Cost
Desks	\$0.04	×	\$1,000,000	=	\$40,000
Chairs	0.04	×	500,000	=	20,000
Total			<u>\$1,500,000</u>	=	<u>\$60,000</u>

### Selecting the Best Cost Driver

Which of the three volume-based cost drivers (units, labor hours, or direct material dollars) results in the most accurate allocation of the overhead cost? Management must use judgment to decide. In this case, direct material dollars appears to have the most convincing relationship to indirect materials usage. If the cost Filmier was allocating were fringe benefits, however, direct labor hours would be a more appropriate cost driver. If the cost Filmier was allocating were machine maintenance cost, a different volume-based cost driver, machine hours, would be an appropriate base. The most accurate allocations of indirect costs may actually require using multiple cost drivers.



## CHECK Yourself 12.2

Boston Boat Company builds custom sailboats for customers. During the current accounting period, the company built five different-sized boats that ranged in cost from \$35,000 to \$185,000. The company's manufacturing overhead cost for the period was \$118,000. Would you recommend using the number of units (boats) or direct labor hours as the base for allocating the overhead cost to the five boats? Why?

**Answer** Using the number of units as the allocation base would assign the same amount of overhead cost to each boat. Since larger boats require more overhead cost (supplies, utilities, equipment, etc.) than smaller boats, there is no logical link between the number of boats and the amount of overhead cost required to build a particular boat. In contrast, there is a logical link between direct labor hours used and overhead cost incurred. The more labor used, the more supplies, utilities, equipment, and so on used. Since larger boats require more direct labor than smaller boats, using direct labor hours as the allocation base would allocate more overhead cost to larger boats and less overhead cost to smaller boats, producing a logical overhead allocation. Therefore, Boston should use direct labor hours as the allocation base.

## Allocating Fixed Overhead Costs

Fixed costs present a different cost allocation problem. By definition, the volume of production does not drive fixed costs. Suppose Lednicky Bottling Company rents its manufacturing facility for \$28,000 per year. The rental cost is fixed regardless of how much product Lednicky bottles. However, Lednicky may still use a volume-based cost driver as the allocation base. The object of allocating fixed costs to products is to distribute a *rational share* of the overhead cost to each product. Selecting an allocation base that spreads total overhead cost equally over total production often produces a rational distribution. For example, assume Lednicky produced 2,000,000 bottles of apple juice during 2009. If it sold 1,800,000 bottles of the juice during 2009, how much of the \$28,000 of rental cost should Lednicky allocate to ending inventory and how much to cost of goods sold? A rational allocation follows.

**Step 1.** Compute the allocation rate.

$$\begin{array}{lclcl} \text{Total cost to be allocated} & \div & \text{Allocation base (cost driver)} & = & \text{Allocation rate} \\ \$28,000 \text{ rental cost} & \div & 2,000,000 \text{ units} & = & \$0.014 \text{ per bottle of juice} \end{array}$$

Because the base (number of units) used to allocate the cost does not drive the cost, it is sometimes called an *allocation base* instead of a *cost driver*. However, many managers use the term cost driver in conjunction with fixed cost even though that usage is technically inaccurate. The terms allocation base and cost driver are frequently used interchangeably.

**Step 2.** Multiply the allocation rate by the weight of the cost driver.

Financial Statement Item	Allocation Rate	×	Number of Bottles	=	Allocated Cost
Inventory	\$0.014	×	200,000	=	\$ 2,800
Cost of goods sold	0.014	×	1,800,000	=	25,200

Using number of units as the allocation base assigns equal amounts of the rental cost to each unit of product. Equal allocation is appropriate so long as the units are homogeneous. If the units are not identical, however, Lednicky may need to choose

a different allocation base to rationally distribute the rental cost. For example, if some of the bottles are significantly larger than others, Lednicky may find using some physical measure, like liters of direct material used, to be a more appropriate allocation base. Whether an indirect cost is fixed or variable, selecting the most appropriate allocation base requires sound reasoning and judgment.

## ALLOCATING COSTS TO SOLVE TIMING PROBLEMS

### LO 5

Allocate costs to solve timing problems.

Under certain circumstances products may be made before or after the costs associated with making them have been incurred. Suppose, for example, premiums for an annual insurance policy are paid in March. The insurance cost benefits the products made in the months before and after March as well as those produced in March. Allocation can be used to spread the insurance cost over products made during the entire accounting period rather than charging the total cost only to products made in March.

Monthly fluctuations in production volume complicate fixed cost allocations. To illustrate, assume Grave Manufacturing pays its production supervisor a monthly salary of \$3,000. Furthermore, assume Grave makes 800 units of product in January and 1,875 in February. How much salary cost should Grave assign to the products made in January and February, respectively? The allocation seems simple. Just divide the \$3,000 monthly salary cost by the number of units of product made each month as follows.

$$\text{January} \quad \$3,000 \div 800 \text{ units} = \$3.75 \text{ cost per unit}$$

$$\text{February} \quad \$3,000 \div 1,875 \text{ units} = \$1.60 \text{ cost per unit}$$

If Grave Manufacturing based a cost-plus pricing decision on these results, it would price products made in January significantly higher than products made in February. It is likely such price fluctuations would puzzle and drive away customers. Grave needs an allocation base that will spread the annual salary cost evenly over annual production. A timing problem exists, however, because Grave must allocate the salary cost before the end of the year. In order to price its products, Grave needs to know the allocated amount before the actual cost information is available. Grave can manage the timing problem by using estimated rather than actual costs.

Grave Manufacturing can *estimate* the annual cost of the supervisor's salary (indirect labor) as \$36,000 ( $\$3,000 \times 12$  months). The *actual* cost of indirect labor may differ because the supervisor might receive a pay raise or be replaced with a person who earns less. Based on current information, however, \$36,000 is a reasonable estimate of the annual indirect labor cost. Grave must also estimate total annual production volume. Suppose Grave produced 18,000 units last year and expects no significant change in the current year. It can allocate indirect labor cost for January and February as follows.

**Step 1.** Compute the allocation rate.

$$\text{Total cost to be allocated} \div \text{Allocation base} = \text{Allocation rate} \\ \text{(cost driver)}$$

$$\$36,000 \div 18,000 \text{ units} = \$2.00 \text{ per unit}$$

**Step 2.** Multiply the rate by the weight of the base (number of units per month) to determine how much of the salary cost to allocate to each month's production.

Month	Allocation Rate	×	Number of Units Produced	=	Allocation per Month
January	\$2.00	×	800	=	\$1,600
February	2.00	×	1,875	=	3,750

Grave Manufacturing will add these indirect cost allocations to other product costs to determine the total estimated product cost to use in cost-plus pricing or other managerial decisions.

Because the overhead allocation rate is determined *before* actual cost and volume data are available, it is called the **predetermined overhead rate**. Companies use predetermined overhead rates for product costing estimates and pricing decisions during a year, but they must use actual costs in published year-end financial statements. If necessary, companies adjust their accounting records at year-end when they have used estimated data on an interim basis. The procedures for making such adjustments are discussed in a later chapter.

## AGGREGATING AND DISAGGREGATING INDIVIDUAL COSTS INTO COST POOLS

Allocating *individually* every single indirect cost a company incurs would be tedious and not particularly useful relative to the benefit obtained. Instead, companies frequently accumulate many individual costs into a single **cost pool**. The total of the pooled cost is then allocated to the cost objects. For example, a company may accumulate costs for gas, water, electricity, and telephone service into a single utilities cost pool. It would then allocate the total cost in the utilities cost pool to the cost objects rather than individually allocating each of the four types of utility costs.

How far should pooling costs go? Why not pool utility costs with indirect labor costs? If the forces driving the utility costs are different from the forces driving the labor costs, pooling the costs will likely reduce the reliability of any associated cost allocations. To promote accuracy, pooling should be limited to costs with common cost drivers.

Costs that have been pooled for one purpose may require disaggregation for a different purpose. Suppose all overhead costs are pooled for the purpose of determining the cost of making a product. Further, suppose that making the product requires two processes that are performed in different departments. A cutting department makes heavy use of machinery to cut raw materials into product parts. An assembly department uses human labor to assemble the parts into a finished product. Now suppose the objective changes from determining the cost of making the product to determining the cost of operating each department. Under these circumstances, it may be necessary to disaggregate the total overhead cost into smaller pools such as a utility cost pool, an indirect labor cost pool, and so on so that different drivers can be used to allocate these costs to the two departments.

### LO 6

Explain the benefits and detriments of allocating pooled costs.

## COST ALLOCATION: THE HUMAN FACTOR

Cost allocations significantly affect individuals. They may influence managers' performance evaluations and compensation. They may dictate the amount of resources various departments, divisions, and other organizational subunits receive. Control over resources usually offers managers prestige and influence over organization operations. The following scenario illustrates the emotional impact and perceptions of fairness of cost allocation decisions.

### LO 7

Recognize the effects of cost allocation on employee motivation.

### Using Cost Allocations in a Budgeting Decision

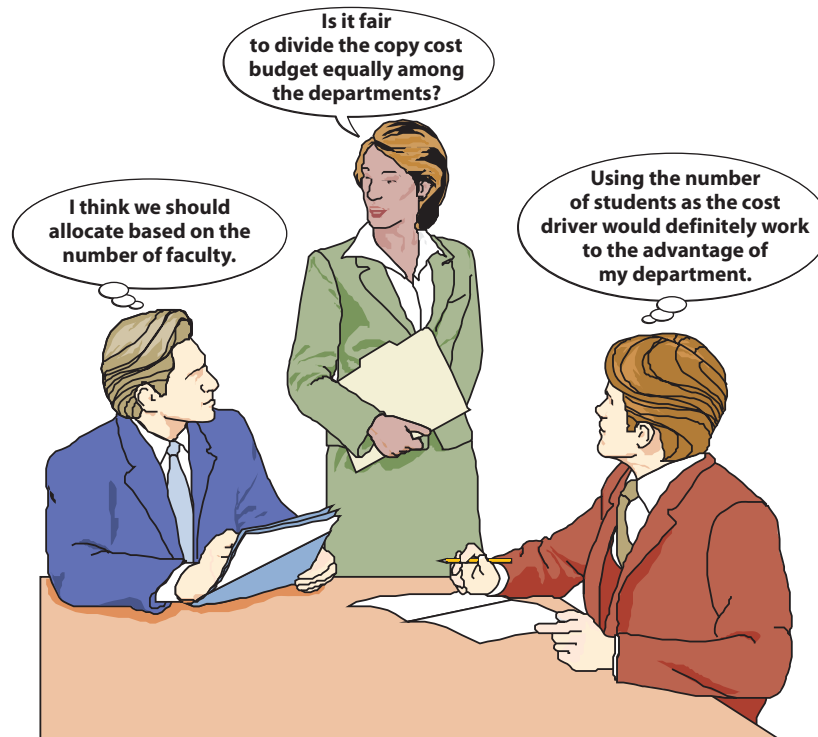
Sharon Southport, dean of the School of Business at a major state university, is in dire need of a budgeting plan. Because of cuts in state funding, the money available to the School of Business for copying costs next year will be reduced substantially. Dean Southport supervises four departments: management, marketing, finance, and accounting. The Dean knows the individual department chairpersons will be unhappy and frustrated with the deep cuts they face.



## Using Cost Drivers to Make Allocations

To address the allocation of copying resources, Dean Southport decided to meet with the department chairs. She explained that the total budgeted for copying costs will be \$36,000. Based on past usage, department allocations would be as follows: \$12,000 for management, \$10,000 for accounting, \$8,000 for finance, and \$6,000 for marketing.

Dr. Bill Thompson, the management department chair, immediately protested that his department could not operate on a \$12,000 budget for copy costs. Management has more faculty members than any other department. Dr. Thompson argued that copy costs are directly related to the number of faculty members, so copy funds should be allocated based on the number of faculty members. Dr. Thompson suggested that number of faculty members rather than past usage should be used as the allocation base.



Since the School of Business has 72 faculty members (29 in management, 16 in accounting, 12 in finance, and 15 in marketing), the allocation should be as follows.

**Step 1.** Compute the allocation rate.

$$\begin{array}{rclcl} \text{Total cost to be allocated} & \div & \text{Cost driver} & = & \text{Allocation rate} \\ \$36,000 & \div & 72 & = & \$500 \text{ per faculty member} \end{array}$$

**Step 2.** Multiply the rate by the weight of the driver (the number of faculty per department) to determine the allocation per object (department).

Department	Allocation Rate	×	Number of Faculty	=	Allocation per Department	Allocation Based on Past Usage
Management	\$500	×	29		\$14,500	\$12,000
Accounting	500	×	16		8,000	10,000
Finance	500	×	12		6,000	8,000
Marketing	500	×	15		7,500	6,000
Total					<u>\$36,000</u>	<u>\$36,000</u>

Seeing these figures, Dr. Bob Smethers, chair of the accounting department, questioned the accuracy of using the number of faculty members as the cost driver. Dr. Smethers suggested the number of *students* rather than the number of *faculty members* drives the cost of copying. He argued that most copying results from duplicating syllabi, exams, and handouts. The accounting department teaches mass sections of introductory accounting that have extremely high student/teacher ratios. Because his department teaches more students, it spends more on copying costs even though it has fewer faculty members. Dr. Smethers recomputed the copy cost allocation as follows.

**Step 1.** Compute the allocation rate based on number of students. University records indicate that the School of Business taught 1,200 students during the most recent academic year. The allocation rate (copy cost per student) follows.

$$\text{Total cost to be allocated} \div \text{Cost driver} = \text{Allocation rate}$$

$$\text{\$36,000} \div 1,200 = \text{\$30 per student}$$

**Step 2.** Multiply the rate by the weight of the driver (number of students taught by each department) to determine the allocation per object (department).

Department	Allocation Rate	×	Number of Students	=	Allocation per Department	Allocation Based on Past Usage
Management	\$30	×	330		\$ 9,900	\$12,000
Accounting	30	×	360		10,800	10,000
Finance	30	×	290		8,700	8,000
Marketing	30	×	220		6,600	6,000
Total					<u>\$36,000</u>	<u>\$36,000</u>

## Choosing the Best Cost Driver

Dr. Thompson objected vigorously to using the number of students as the cost driver. He continued to argue that the size of the faculty is a more appropriate allocation base. The chair of the finance department sided with Dr. Smethers, the chair of the marketing department kept quiet, and the dean had to settle the dispute.

Dean Southport recognized that the views of the chairpersons were influenced by self-interest. The allocation base affects the amount of resources available to each department. Furthermore, the dean recognized that the size of the faculty does drive some of the copying costs. For example, the cost of copying manuscripts that faculty submit for publication relates to faculty size. The more articles faculty submit, the higher the copying cost. Nevertheless, the dean decided the number of students has the most significant impact on copying costs. She also wanted to encourage faculty members to minimize the impact of funding cuts on student services. Dean Southport therefore decided to allocate copying costs based on the number of students taught by each department. Dr. Thompson stormed angrily out of the meeting. The dean developed a budget by assigning the available funds to each department using the number of students as the allocation base.

## Controlling Emotions

Dr. Thompson's behavior may relieve his frustration but it doesn't indicate clear thinking. Dean Southport recognized that Dr. Thompson's contention that copy costs were related to faculty size had some merit. Had Dr. Thompson offered a compromise rather than an emotional outburst, he might have increased his department's share of the funds. Perhaps a portion of the allocation could have been based on the number of faculty members with the balance allocated based on the number of students. Had Dr. Thompson controlled his anger, the others might have agreed to compromise. Technical expertise in computing numbers is of little use without the interpersonal skills to persuade others. Accountants may provide numerical measurements, but they should never forget the impact of their reports on the people in the organization.



## A Look Back

Managers need to know the costs of products, processes, departments, activities, and so on. The target for which accountants attempt to determine cost is a *cost object*. Knowing the cost of specific objects enables management to control costs, evaluate performance, and price products. *Direct costs* can be cost-effectively traced to a cost object. *Indirect costs* cannot be easily traced to designated cost objects.

The same cost can be direct or indirect, depending on the cost object to which it is traced. For example, the salary of a Burger King restaurant manager can be directly traced to a particular store but cannot be traced to particular food items made and sold in the store. Classifying a cost as direct or indirect is independent of whether the cost behaves as fixed or variable; it is also independent of whether the cost is relevant to a given decision. A direct cost could be either fixed or variable or either relevant or irrelevant, depending on the context and the designated cost object.

Indirect costs are assigned to cost objects using *cost allocation*. Allocation divides an indirect cost into parts and distributes the parts among the relevant cost objects. Companies frequently allocate costs to cost objects in proportion to the *cost drivers* that cause the cost to be incurred. The first step in allocating an indirect cost is to determine the allocation rate by dividing the total cost to be allocated by the chosen cost driver. The next step is to multiply the allocation rate by the amount of the cost driver for a particular object. The result is the amount of indirect cost to assign to the cost object.

A particular indirect cost may be related to more than one driver. The best cost driver is the one that most accurately reflects the amount of the resource used by the cost object. Objects that consume the most resources should be allocated a proportionately greater share of the costs. If no suitable cost driver exists, companies may use arbitrary allocations such as dividing a total cost equally among cost objects.

Cost allocations have behavioral implications. Using inappropriate cost drivers can distort allocations and lead managers to make choices that are detrimental to the company's profitability.



## A Look Forward

The next chapter introduces the concept of *cost relevance*. Applying the concepts you have learned to real-world business problems can be challenging. Frequently, so much data is available that it is difficult to distinguish important from useless information. The next chapter will help you learn to identify information that is relevant in a variety of short-term decision-making scenarios including special offers, outsourcing, segment elimination, and asset replacement.



### SELF-STUDY REVIEW PROBLEM

New budget constraints have pressured Body Perfect Gym to control costs. The owner of the gym, Mr. Ripple, has notified division managers that their job performance evaluations will be highly influenced by their ability to minimize costs. The gym has three divisions: weight lifting, aerobics, and spinning. The owner has formulated a report showing how much it cost to operate each of the three divisions last year. In preparing the report, Mr. Ripple identified several indirect costs that must be allocated among the divisions. These indirect costs are \$4,200 of laundry expense, \$48,000 of supplies, \$350,000 of office rent, \$50,000 of janitorial services, and \$120,000 for administrative salaries. To provide a reasonably accurate cost

allocation, Mr. Ripple has identified several potential cost drivers. These drivers and their association with each division follow.

Cost Driver	Weight Lifting	Aerobics	Spinning	Total
Number of participants	26	16	14	56
Number of instructors	10	8	6	24
Square feet of gym space	12,000	6,000	7,000	25,000
Number of staff	2	2	1	5

### Required

- Identify the appropriate cost objects.
- Identify the most appropriate cost driver for each indirect cost, and compute the allocation rate for assigning each indirect cost to the cost objects.
- Determine the amount of supplies expense that should be allocated to each of the three divisions.
- The spinning manager wants to use the number of staff rather than the number of instructors as the allocation base for the supplies expense. Explain why the spinning manager would take this position.
- Identify two cost drivers other than your choice for Requirement *b* that could be used to allocate the cost of the administrative salaries to the three divisions.

### Solution to Requirement a

The objective is to determine the cost of operating each division. Therefore, the cost objects are the three divisions (weight lifting, aerobics, and spinning).

### Solution to Requirement b

The costs, appropriate cost drivers, and allocation rates for assigning the costs to the departments follow.

Cost	Base	Computation	Allocation Rate
Laundry expense	Number of participants	\$ 4,200 ÷ 56	\$75 per participant
Supplies	Number of instructors	48,000 ÷ 24	\$2,000 per instructor
Office rent	Square feet	350,000 ÷ 25,000	\$14 per square foot
Janitorial service	Square feet	50,000 ÷ 25,000	\$2 per square foot
Administrative salaries	Number of divisions	120,000 ÷ 3	\$40,000 per division

There are other logical cost drivers. For example, the cost of supplies could be allocated based on the number of staff. It is also logical to use a combination of cost drivers. For example, the allocation for the cost of supplies could be based on the combined number of instructors and staff. For this problem, we assumed that Mr. Ripple chose the number of instructors as the base for allocating supplies expense.

### Solution to Requirement c

Department	Cost to Be Allocated	Allocation Rate	×	Weight of Base	=	Amount Allocated
Weight lifting	Supplies	\$2,000	×	10	=	\$20,000
Aerobics	Supplies	2,000	×	8	=	16,000
Spinning	Supplies	2,000	×	6	=	12,000
Total						<u>\$48,000</u>

**Solution to Requirement d**

If the number of staff were used as the allocation base, the allocation rate for supplies would be as follows.

$$\$48,000 \div 5 \text{ staff} = \$9,600 \text{ per staff member}$$

Using this rate, the total cost of supplies would be allocated among the three divisions as follows.

Department	Cost to Be Allocated	Allocation Rate	×	Weight of Base	=	Amount Allocated
Weight lifting	Supplies	\$9,600	×	2	=	\$19,200
Aerobics	Supplies	9,600	×	2	=	19,200
Spinning	Supplies	9,600	×	1	=	9,600
Total						<u>\$48,000</u>

By using the number of staff as the allocation base instead of the number of instructors, the amount of overhead cost allocated to the spinning division falls from \$12,000 to \$9,600. Since managers are evaluated based on minimizing costs, it is clearly in the spinning manager's self-interest to use the number of staff as the allocation base.

**Solution to Requirement e**

Among other possibilities, bases for allocating the administrative salaries include the number of participants, the number of lessons, or the number of instructors.

**KEY TERMS**

Allocation 434  
Allocation base 435  
Allocation rate 435  
Common costs 434

Controllable costs 434  
Cost accumulation 432  
Cost allocation 433  
Cost driver 432

Cost objects 430, 432  
Cost pool 445  
Cost tracing 433  
Direct cost 433

Indirect cost 433  
Overhead costs 433  
Predetermined overhead rate 445

**QUESTIONS**

1. What is a cost object? Identify four different cost objects in which an accountant would be interested.
2. Why is cost accumulation imprecise?
3. If the cost object is a manufactured product, what are the three major cost categories to accumulate?
4. What is a direct cost? What criteria are used to determine whether a cost is a direct cost?
5. Why are the terms *direct cost* and *indirect cost* independent of the terms *fixed cost* and *variable cost*? Give an example to illustrate.
6. Give an example of why the statement, "All direct costs are avoidable," is incorrect.
7. What are the important factors in determining the appropriate cost driver to use in allocating a cost?
8. How is an allocation rate determined? How is an allocation made?
9. In a manufacturing environment, which costs are direct and which are indirect in product costing?
10. Why are some manufacturing costs not directly traceable to products?
11. What is the objective of allocating indirect manufacturing overhead costs to the product?
12. On January 31, the managers of Integra Inc. seek to determine the cost of producing their product during January for

product pricing and control purposes. The company can easily determine the costs of direct materials and direct labor used in January production, but many fixed indirect costs are not affected by the level of production activity and have not yet been incurred. The managers can reasonably estimate the overhead costs for the year based on the fixed indirect costs incurred in past periods. Assume the managers decide to allocate an equal amount of these estimated costs to the products produced each month. Explain why this practice may not provide a reasonable estimate of product costs in January.

13. Respond to the following statement: "The allocation base chosen is unimportant. What is important in product costing is that overhead costs be assigned to production in a specific period by an allocation process."
14. Larry Kwang insists that the costs of his school's fundraising project should be determined after the project is complete. He argues that only after the project is complete can its costs be determined accurately and that it is a waste of time to try to estimate future costs. Georgia Sundum counters that waiting until the project is complete will not provide timely information for planning expenditures. How would you arbitrate this discussion? Explain the trade-offs between accuracy and timeliness.
15. Define the term *cost pool*. How are cost pools important in allocating costs?

## EXERCISES

All applicable Exercises are available with McGraw-Hill Connect Accounting.

connect  
ACCOUNTING

### Exercise 12-1 *Allocating costs between divisions*

LO 1, 3

Jeffcoat Services Company (JSC) has 50 employees, 38 of whom are assigned to Division A and 12 to Division B. JSC incurred \$370,000 of fringe benefits cost during 2008.

#### Required

Determine the amount of the fringe benefits cost to be allocated to Division A and to Division B.

### Exercise 12-2 *Direct versus indirect costs*

LO 2

Estep Construction Company is composed of two divisions: (1) Home Construction and (2) Commercial Construction. The Home Construction Division is in the process of building 12 houses and the Commercial Construction Division is working on 3 projects. Cost items of the company follow.

Cost of building permits

Materials used in commercial construction projects

Depreciation on home building equipment (small tools such as hammers or saws)

Company president's salary

Depreciation on crane used in commercial construction

Depreciation on home office building

Salary of corporate office manager

Wages of workers assigned to a specific construction project

Supplies used by the Commercial Construction Division

Labor on a particular house

Salary of the supervisor of commercial construction projects

Supplies, such as glue and nails, used by the Home Construction Division

#### Required

- Identify each cost as being a direct or indirect cost assuming the cost objects are the individual products (houses or projects).
- Identify each cost as being a direct or indirect cost, assuming the cost objects are the two divisions.
- Identify each cost as being a direct or indirect cost assuming the cost object is Estep Construction Company as a whole.

### Exercise 12-3 *Allocating overhead cost among products*

LO 3, 4

O'Brien Hats Inc. manufactures three different styles of hats: Vogue, Beauty, and Deluxe. O'Brien expects to incur \$576,000 of overhead cost during the next fiscal year. Other budget information follows:

	Vogue	Beauty	Deluxe	Total
Direct labor hours	2,400	4,200	5,400	12,000
Machine hours	1,200	1,400	1,400	4,000

#### Required

- Use direct labor hours as the cost driver to compute the allocation rate and the budgeted overhead cost for each product.
- Use machine hours as the cost driver to compute the allocation rate and the budgeted overhead cost for each product.



- c. Describe a set of circumstances where it would be more appropriate to use direct labor hours as the allocation base.
- d. Describe a set of circumstances where it would be more appropriate to use machine hours as the allocation base.

**LO 3, 4****Exercise 12-4** *Allocating overhead costs among products*

Walker Company makes three products in its factory: plastic cups, plastic tablecloths, and plastic bottles. The expected overhead costs for the next fiscal year include the following.

Factory manager's salary	\$130,000
Factory utility cost	60,500
Factory supplies	<u>28,000</u>
Total overhead costs	<u>\$218,500</u>

Walker uses machine hours as the cost driver to allocate overhead costs. Budgeted machine hours for the products are as follows.

Cups	420 hours
Tablecloths	740
Bottles	<u>1,140</u>
Total machine hours	<u>2,300</u>

**Required**

- a. Allocate the budgeted overhead costs to the products.
- b. Provide a possible explanation as to why Walker chose machine hours, instead of labor hours, as the allocation base.

**LO 3, 4****Exercise 12-5** *Allocating costs among products*

Bryson Construction Company expects to build three new homes during a specific accounting period. The estimated direct materials and labor costs are as follows.

Expected Costs	Home 1	Home 2	Home 3
Direct labor	\$ 60,000	\$ 89,000	\$196,000
Direct materials	182,000	247,000	380,000

Assume Bryson needs to allocate two major overhead costs (\$41,400 of employee fringe benefits and \$40,450 of indirect materials costs) among the three jobs.

**Required**

Choose an appropriate cost driver for each of the overhead costs and determine the total cost of each home.

**LO 3, 5****Exercise 12-6** *Allocating to smooth cost over varying levels of production*

Production workers for Kirby Manufacturing Company provided 280 hours of labor in January and 500 hours in February. Kirby expects to use 4,000 hours of labor during the year. The rental fee for the manufacturing facility is \$7,000 per month.

**Required**

Explain why allocation is needed. Based on this information, how much of the rental cost should be allocated to the products made in January and to those made in February?

### Exercise 12-7 *Allocating to solve a timing problem*

LO 3, 5

Production workers for Weik Manufacturing Company provided 3,600 hours of labor in January and 1,900 hours in February. The company, whose operation is labor intensive, expects to use 32,000 hours of labor during the year. Weik paid a \$40,000 annual premium on July 1 of the prior year for an insurance policy that covers the manufacturing facility for the following 12 months.



#### Required

Explain why allocation is needed. Based on this information, how much of the insurance cost should be allocated to the products made in January and to those made in February?

### Exercise 12-8 *Allocating a fixed cost*

LO 3, 5

Atlantic Air is a large airline company that pays a customer relations representative \$5,000 per month. The representative, who processed 1,000 customer complaints in January and 1,300 complaints in February, is expected to process 24,000 customer complaints during 2009.



#### Required

- Determine the total cost of processing customer complaints in January and in February.
- Explain why allocating the cost of the customer relations representative would or would not be relevant to decision making.

### Exercise 12-9 *Allocating overhead cost to accomplish smoothing*

LO 3, 5

Anchorage Corporation expects to incur indirect overhead costs of \$75,000 per month and direct manufacturing costs of \$11 per unit. The expected production activity for the first four months of 2009 is as follows.

	January	February	March	April
Estimated production in units	4,000	7,000	3,000	6,000

#### Required

- Calculate a predetermined overhead rate based on the number of units of product expected to be made during the first four months of the year.
- Allocate overhead costs to each month using the overhead rate computed in Requirement *a*.
- Calculate the total cost per unit for each month using the overhead allocated in Requirement *b*.

### Exercise 12-10 *Pooling overhead costs*

LO 3, 5

Lemiley Manufacturing Company produced 1,200 units of inventory in January 2009. It expects to produce an additional 8,400 units during the remaining 11 months of the year. In other words, total production for 2009 is estimated to be 9,600 units. Direct materials and direct labor costs are \$64 and \$52 per unit, respectively. Lemiley Company expects to incur the following manufacturing overhead costs during 2009.

Production supplies	\$ 4,800
Supervisor salary	192,000
Depreciation on equipment	144,000
Utilities	36,000
Rental fee on manufacturing facilities	96,000

#### Required

- Combine the individual overhead costs into a cost pool and calculate a predetermined overhead rate assuming the cost driver is number of units.
- Determine the cost of the 1,200 units of product made in January.
- Is the cost computed in Requirement *b* actual or estimated? Could Lemiley improve accuracy by waiting until December to determine the cost of products?

**LO 3, 5****Exercise 12-11** *How fixed cost allocation affects a pricing decision*

Foote Manufacturing Co. expects to make 30,000 chairs during 2008. The company made 4,000 chairs in January. Materials and labor costs for January were \$16,000 and \$24,000, respectively. Foote produced 2,000 chairs in February. Materials and labor costs for February were \$8,000 and \$12,000, respectively. The company paid the \$240,000 annual rental fee on its manufacturing facility on January 1, 2008. Ignore other manufacturing overhead costs.

**Required**

Assuming that Foote desires to sell its chairs for cost plus 45 percent of cost, what price should be charged for the chairs produced in January and February?

**LO 6****Exercise 12-12** *Cost pools*

Bunn Department Stores Inc. has three departments: women's, men's, and children's. The following are the indirect costs related to its operations.

Payroll taxes  
Paper rolls for cash registers  
Medical insurance  
Salaries of secretaries  
Water bill  
Vacation pay  
Sewer bill  
Staples  
Natural gas bill  
Pens  
Ink cartridges

**Required**

- Organize the costs in the following three pools: indirect materials, indirect labor, and indirect utilities, assuming that each department is a cost object.
- Identify an appropriate cost driver for each pool.
- Explain why accountants use cost pools.

**LO 7****Exercise 12-13** *Human factor*

McAlpin Clinics provides medical care in three departments: internal medicine (IM), pediatrics (PD), and obstetrics gynecology (OB). The estimated costs to run each department follow.

	IM	PD	OB
Physicians	\$400,000	\$300,000	\$200,000
Nurses	80,000	120,000	160,000

McAlpin expects to incur \$450,000 of indirect (overhead) costs in the next fiscal year.

**Required**

- Based on the information provided, name four allocation bases that could be used to assign the overhead cost to each department.
- Assume the manager of each department is permitted to recommend how the overhead cost should be allocated to the departments. Which of the allocation bases named in Requirement *a* is the manager of OB most likely to recommend? Explain why. What argument may the manager of OB use to justify his choice of the allocation base?
- Which of the allocation bases would result in the fairest allocation of the overhead cost from the perspective of the company president?
- Explain how classifying overhead costs into separate pools could improve the fairness of the allocation of the overhead costs.

## PROBLEMS

All applicable Problems are available with McGraw-Hill  
*Connect Accounting*.

connect  
ACCOUNTING

### Problem 12-14 Cost accumulation and allocation

LO 1, 2, 3, 4, 5

eXcel

Maller Manufacturing Company makes two different products, M and N. The company's two departments are named after the products; for example, Product M is made in Department M. Maller's accountant has identified the following annual costs associated with these two products.

#### CHECK FIGURE

c. Price for N: \$493.68

#### Financial data

Salary of vice president of production division	\$180,000
Salary of supervisor Department M	76,000
Salary of supervisor Department N	56,000
Direct materials cost Department M	300,000
Direct materials cost Department N	420,000
Direct labor cost Department M	240,000
Direct labor cost Department N	680,000
Direct utilities cost Department M	120,000
Direct utilities cost Department N	24,000
General factorywide utilities	36,000
Production supplies	36,000
Fringe benefits	138,000
Depreciation	720,000

#### Nonfinancial data

Machine hours Department M	5,000
Machine hours Department N	1,000

#### Required

- Identify the costs that are (1) direct costs of Department M, (2) direct costs of Department N, and (3) indirect costs.
- Select the appropriate cost drivers for the indirect costs and allocate these costs to Departments M and N.
- Determine the total estimated cost of the products made in Departments M and N. Assume that Maller produced 2,000 units of Product M and 4,000 units of Product N during the year. If Maller prices its products at cost plus 30 percent of cost, what price per unit must it charge for Product M and for Product N?

### Problem 12-15 Selecting an appropriate cost driver (What is the base?)

LO 1, 3, 4

The Brower School of Vocational Technology has organized the school training programs into three departments. Each department provides training in a different area as follows: nursing assistant, dental hygiene, and office technology. The school's owner, Candice Brower, wants to know how much it costs to operate each of the three departments. To accumulate the total cost for each department, the accountant has identified several indirect costs that must be allocated to each. These costs are \$10,080 of telephone expense, \$2,016 of supplies expense, \$720,000 of office rent, \$144,000 of janitorial services, and \$150,000 of salary paid to the dean of students. To provide a reasonably accurate allocation of costs, the accountant has identified several possible cost drivers. These drivers and their association with each department follow.

Cost Driver	Department 1	Department 2	Department 3
Number of telephones	28	16	19
Number of faculty members	20	16	12
Square footage of office space	28,000	16,800	12,000
Number of secretaries	2	2	2

**Required**

- Identify the appropriate cost objects.
- Identify the appropriate cost driver for each indirect cost and compute the allocation rate for assigning each indirect cost to the cost objects.
- Determine the amount of telephone expense that should be allocated to each of the three departments.
- Determine the amount of office expense that should be allocated to Department 3.
- Determine the amount of office rent that should be allocated to Department 2.
- Determine the amount of janitorial services cost that should be allocated to Department 1.
- Identify two cost drivers not listed here that could be used to allocate the cost of the dean's salary to the three departments.

**LO 1, 2****CHECK FIGURE**

b. To NY: \$834

**Problem 12-16 Cost allocation in a service industry**

Jarmon Airlines is a small airline that occasionally carries overload shipments for the overnight delivery company Never-Fail Inc. Never-Fail is a multimillion-dollar company started by Peter Never immediately after he failed to finish his first accounting course. The company's motto is "We Never-Fail to Deliver Your Package on Time." When Never-Fail has more freight than it can deliver, it pays Jarmon to carry the excess. Jarmon contracts with independent pilots to fly its planes on a per trip basis. Jarmon recently purchased an airplane that cost the company \$24,000,000. The plane has an estimated useful life of 100,000,000 miles and a zero salvage value. During the first week in January, Jarmon flew two trips. The first trip was a round trip flight from Chicago to San Francisco, for which Jarmon paid \$500 for the pilot and \$350 for fuel. The second flight was a round trip from Chicago to New York. For this trip, it paid \$300 for the pilot and \$150 for fuel. The round trip between Chicago and San Francisco is approximately 4,400 miles and the round trip between Chicago and New York is 1,600 miles.

**Required**

- Identify the direct and indirect costs that Jarmon incurs for each trip.
- Determine the total cost of each trip.
- In addition to depreciation, identify three other indirect costs that may need to be allocated to determine the cost of each trip.

**LO 1, 3, 4****CHECK FIGURE**

d. Feb.: \$8,640

**Problem 12-17 Cost allocation in a manufacturing company**

Spring Manufacturing Company makes tents that it sells directly to camping enthusiasts through a mail-order marketing program. The company pays a quality control expert \$108,000 per year to inspect completed tents before they are shipped to customers. Assume that the company completed 1,600 tents in January and 1,200 tents in February. For the entire year, the company expects to produce 15,000 tents.

**Required**

- Explain how changes in the cost driver (number of tents inspected) affect the total amount of fixed inspection cost.
- Explain how changes in the cost driver (number of tents inspected) affect the amount of fixed inspection cost per unit.
- If the cost objective is to determine the cost per tent, is the expert's salary a direct or an indirect cost?
- How much of the expert's salary should be allocated to tents produced in January and February?

**LO 1, 4, 7****Problem 12-18 Fairness and cost pool allocation**

Virciglio Manufacturing Company uses two departments to make its products. Department I is a cutting department that is machine intensive and uses very few employees. Machines cut and form parts and then place the finished parts on a conveyor belt that carries them to Department II where they are assembled into finished goods. The assembly department is labor intensive and requires many workers to assemble parts into finished goods. The company's

manufacturing facility incurs two significant overhead costs, employee fringe benefits and utility costs. The annual costs of fringe benefits are \$252,000 and utility costs are \$180,000. The typical consumption patterns for the two departments are as follows.

	Department I	Department II	Total
Machine hours used	16,000	4,000	20,000
Direct labor hours used	5,000	13,000	18,000

The supervisor of each department receives a bonus based on how well the department controls costs. The company's current policy requires using a single activity base (machine hours or labor hours) to allocate the total overhead cost of \$432,000.

### Required

- Assume that you are the supervisor of Department I. Choose the allocation base that would minimize your department's share of the total overhead cost. Calculate the amount of overhead that would be allocated to both departments using the base that you selected.
- Assume that you are the supervisor of Department II. Choose the allocation base that would minimize your department's share of the total overhead cost. Calculate the amount of overhead that would be allocated to both departments using the base that you selected.
- Assume that you are the plant manager and have the authority to change the company's overhead allocation policy. Formulate an overhead allocation policy that would be fair to the supervisors of both Department I and Department II. Compute the overhead allocations for each department using your policy.
- Explain why it is necessary to disaggregate the overhead cost pool in order to accomplish fairness.

### Problem 12-19 Allocation to accomplish smoothing

Teng Corporation estimated its overhead costs would be \$30,000 per month except for January when it pays the \$90,000 annual insurance premium on the manufacturing facility. Accordingly, the January overhead costs were expected to be \$120,000 (\$90,000 + \$30,000). The company expected to use 7,000 direct labor hours per month except during July, August, and September when the company expected 9,000 hours of direct labor each month to build inventories for high demand that normally occurs during the holiday season. The company's actual direct labor hours were the same as the estimated hours. The company made 3,500 units of product in each month except July, August, and September in which it produced 4,500 units each month. Direct labor costs were \$25 per unit, and direct materials costs were \$20 per unit.

### Required

- Calculate a predetermined overhead rate based on direct labor hours.
- Determine the total allocated overhead cost for January, March, and August.
- Determine the cost per unit of product for January, March, and August.
- Determine the selling price for the product, assuming that the company desires to earn a gross margin of \$20 per unit.

### Problem 12-20 Allocating indirect costs between products

Laura Keeton is considering expanding her business. She plans to hire a salesperson to cover trade shows. Because of compensation, travel expenses, and booth rental, fixed costs for a trade show are expected to be \$9,000. The booth will be open 30 hours during the trade show. Ms. Keeton also plans to add a new product line, ProOffice, which will cost \$180 per package. She will continue to sell the existing product, EZRecords, which costs \$100 per package. Ms. Keeton believes that the salesperson will spend approximately 20 hours selling EZRecords and 10 hours marketing ProOffice.

LO 1, 3, 5

### CHECK FIGURES

- \$5
- March: \$75

LO 1, 3, 5



### CHECK FIGURES

- Cost/unit for EZRecords: \$175
- Cost/unit for ProOffice: \$210



**Required**

- Determine the estimated total cost and cost per unit of each product, assuming that the salesperson is able to sell 80 units of EZRecords and 50 units of ProOffice.
- Determine the estimated total cost and cost per unit of each product, assuming that the salesperson is able to sell 200 units of EZRecords and 100 units of ProOffice.
- Explain why the cost per unit figures calculated in Requirement *a* are different from the amounts calculated in Requirement *b*. Also explain how the differences in estimated cost per unit will affect pricing decisions.

**ANALYZE, THINK, COMMUNICATE****ATC 12-1 Business Applications Case** *Allocating fixed costs at Porsche*

During its fiscal year ending on July 31, 2006, the Dr. Ing. h.c. F. **Porsche AG**, commonly known as “Porsche,” manufactured 102,602 vehicles. During that same year Porsche recorded depreciation on property, plant, and equipment of €323,958,000. (Porsche’s financial information is reported in euros, and € is the symbol for the euro.) For the purposes of this problem assume that all of the depreciation related to manufacturing activities.

**Required**

- Indicate whether the depreciation charge is a
  - (1) Product cost, or a general, selling, and administrative cost.
  - (2) Relevant cost with respect to a special order decision.
  - (3) Fixed or variable cost relative to the volume of production.
  - (4) Direct or indirect if the cost object is the cost of vehicles made in the 2006 fiscal year.
- Assume that Porsche incurred depreciation of €27,000,000 during each month of the 2006 fiscal year, but that it produced 7,000 vehicles during February and 10,000 during March. Based on monthly costs and production levels, what was the average amount of depreciation cost per vehicle produced during each of these two months, assuming each vehicle was charged the same amount of depreciation?
- If Porsche had expected to produce 98,000 vehicles during 2006, and had estimated its annual depreciation costs to be €324,000,000, what would have been its predetermined overhead charge per vehicle for depreciation? Explain the advantage of using this amount to determine the cost of manufacturing a car in February and March versus the amounts you computed in Requirement *b*.
- If Porsche’s management had estimated the profit per vehicle based on its budgeted production of 98,000 units, would you expect its actual profit per vehicle to be higher or lower than expected? Explain.

**ATC 12-2 Group Assignment** *Selection of the cost driver*

Vulcan College School of Business is divided into three departments, accounting, marketing, and management. Relevant information for each of the departments follows.

Cost Driver	Accounting	Marketing	Management
Number of students	1,400	800	400
Number of classes per semester	64	36	28
Number of professors	20	24	10

Vulcan is a private school that expects each department to generate a profit. It rewards departments for profitability by assigning 20 percent of each department’s profits back to that department. Departments have free rein as to how to use these funds. Some departments have used them to supply professors with computer technology. Others have expanded their travel budgets.

The practice has been highly successful in motivating the faculty to control costs. The revenues and direct costs for the year 2004 follow.

	Accounting	Marketing	Management
Revenue	\$29,600,000	\$16,600,000	\$8,300,000
Direct costs	24,600,000	13,800,000	6,600,000

Vulcan allocates to the School of Business \$4,492,800 of indirect overhead costs such as administrative salaries and costs of operating the registrar's office and the bookstore.

### Required

- Divide the class into groups and organize the groups into three sections. Assign each section a department. Assume that the dean of the school is planning to assign an equal amount of the college overhead to each department. Have the students in each group prepare a response to the dean's plan. Each group should select a spokesperson who is prepared to answer the following questions.
  - Is your group in favor of or opposed to the allocation plan suggested by the dean?
  - Does the plan suggested by the dean provide a fair allocation? Why?

The instructor should lead a discussion designed to assess the appropriateness of the dean's proposed allocation plan.
- Have each group select the cost driver (allocation base) that best serves the self-interest of the department it represents.
- Consensus on Requirement *c* should be achieved before completing Requirement *d*. Each group should determine the amount of the indirect cost to be allocated to each department using the cost driver that best serves the self-interest of the department it represents. Have a spokesperson from each section go to the board and show the income statement that would result for each department.
- Discuss the development of a cost driver(s) that would promote fairness rather than self-interest in allocating the indirect costs.

### ATC 12-3 Research Assignment *Using real-world data from Pepsi Bottling Group*

Use the 2006 Form 10-K for **Pepsi Bottling Group** to complete the requirements below. Pepsi Bottling Group (PBG) is a separate company from **PepsiCo**, so do not confuse them. To obtain the Form 10-K you can use the EDGAR system following the instructions in Appendix A, or it can be found under "Investor Relations" link on the company's corporate website: [www.pbg.com](http://www.pbg.com). The company includes its Form 10-K as a part of its 2006 Annual Report, or it can be found separately under "SEC Filings." Be sure to read carefully the following sections of the document.



Under "Item 1. Business" read subsections titled "Introduction," "Principal Products," "Raw Materials and Other Supplies," and "Seasonality."

In the footnotes section of the report, under "Note 2—Summary of Significant Accounting Policies," read the subsections titled "Advertising and Marketing Costs" and "Shipping and Handling Costs."

"Note 8—Property, Plant and Equipment, net," in the footnotes section of the report.

### Required

- Does PBG consider *shipping and handling costs* and *advertising and marketing costs* to be direct or indirect costs in relation to the manufacturing of its products? Explain.
- Assume that when PBG ships orders of bottled drinks each shipment includes several different products such as Pepsi, Lipton tea, and Starbucks Frappuccino. If PBG wanted to allocate the shipping costs among the various products, what would be an appropriate cost driver? Explain the rationale for your choice.

- c. Assume that PBG incurs some advertising cost that cannot be directly traced to a single product such as Pepsi or Diet Pepsi. If PBG wanted to allocate the advertising costs among the various products being advertised jointly, what would be an appropriate way of making this allocation? Explain the rationale for your choice.
- d. As *Note 8* indicates, PBG computes depreciation expense on three separate classes of assets. For which of these classes of assets could its depreciation expense be directly traced to the production of soft drinks? Which class would least likely be traceable to the production of soft drinks? Explain.
- e. Based on PBG's discussion of the seasonality of its business, should the depreciation of production equipment recorded in a given month be based on the volume of drinks produced that month, or should the depreciation be one-twelfth of the estimated annual depreciation PBG expects to incur? Explain your answer.

#### ATC 12-4 Writing Assignment *Selection of the appropriate cost driver*



Bullions Enterprises, Inc. (BEI), makes gold, silver, and bronze medals used to recognize outstanding athletic performance in regional and national sporting events. The per unit direct costs of producing the medals follow.

	Gold	Silver	Bronze
Direct materials	\$300	\$130	\$ 35
Labor	120	120	120

During 2008, BEI made 1,200 units of each type of medal for a total of 3,600 ( $1,200 \times 3$ ) medals. All medals are created through the same production process, and they are packaged and shipped in identical containers. Indirect overhead costs amounted to \$324,000. BEI currently uses the number of units as the cost driver for the allocation of overhead cost. As a result, BEI allocated \$90 ( $\$324,000 \div 3,600$  units) of overhead cost to each medal produced.

#### Required

The president of the company has questioned the wisdom of assigning the same amount of overhead to each type of medal. He believes that overhead should be assigned on the basis of the cost to produce the medals. In other words, more overhead should be charged to expensive gold medals, less to silver, and even less to bronze. Assume that you are BEI's chief financial officer. Write a memo responding to the president's suggestion.

#### ATC 12-5 Ethical Dilemma *Allocation to achieve fairness*



The American Acupuncture Association offers continuing professional education courses for its members at its annual meeting. Instructors are paid a fee for each student attending their courses but are charged a fee for overhead costs that is deducted from their compensation. Overhead costs include fees paid to rent instructional equipment such as overhead projectors, provide supplies to participants, and offer refreshments during coffee breaks. The number of courses offered is used as the allocation base for determining the overhead charge. For example, if overhead costs amount to \$5,000 and 25 courses are offered, each course is allocated an overhead charge of \$200 ( $\$5,000 \div 25$  courses). Heidi McCarl, who taught one of the courses, received the following statement with her check in payment for her instructional services.

Instructional fees (20 students $\times$ \$50 per student)	\$1,000
Less: Overhead charge	(200)
Less: Charge for sign language assistant	(240)
Amount due instructor	<u>\$ 560</u>

Although Ms. McCarl was well aware that one of her students was deaf and required a sign language assistant, she was surprised to find that she was required to absorb the cost of this service.

**Required**

- a. Given that the Americans with Disabilities Act stipulates that the deaf student cannot be charged for the cost of providing sign language, who should be required to pay the cost of sign language services?
- b. Explain how allocation can be used to promote fairness in distributing service costs to the disabled. Describe two ways to treat the \$240 cost of providing sign language services that improve fairness.

# CHAPTER 13

## Relevant Information *for* Special Decisions

### LEARNING OBJECTIVES

**After you have mastered the material in this chapter you will be able to:**

- 1 Identify the characteristics of relevant information.
- 2 Distinguish between unit-level, batch-level, product-level, and facility-level costs and understand how these costs affect decision making.
- 3 Make appropriate special order decisions.
- 4 Make appropriate outsourcing decisions.
- 5 Make appropriate segment elimination decisions.
- 6 Make appropriate asset replacement decisions.

### CHAPTER OPENING

Mary Daniels paid \$25,000 cash to purchase a car that she rents to a relative. The car has a five-year useful life and a \$5,000 salvage value. After renting the car for one year, the relative offered to buy the car from Ms. Daniels at a price of \$18,000. While talking to her neighbor about the offer, the neighbor said the price was too low. Indeed, the neighbor showed her research data that proved the market value of the car was \$19,000 and offered to pay her that amount for the car. Ms. Daniels really wanted to get rid of the car but ultimately decided not to sell it because she did not want to take a loss on the car.<sup>1</sup> Did Ms. Daniels make the right decision?

<sup>1</sup>Depreciation is \$4,000  $[(\$25,000 - \$5,000) \div 5]$  per year. The book value of the car after one year is \$21,000 (\$25,000 cost – \$4,000 accumulated depreciation). If Ms. Daniels accepts the neighbor's \$19,000 offer, she will have to recognize a \$2,000 loss (\$21,000 book value – \$19,000 selling price).



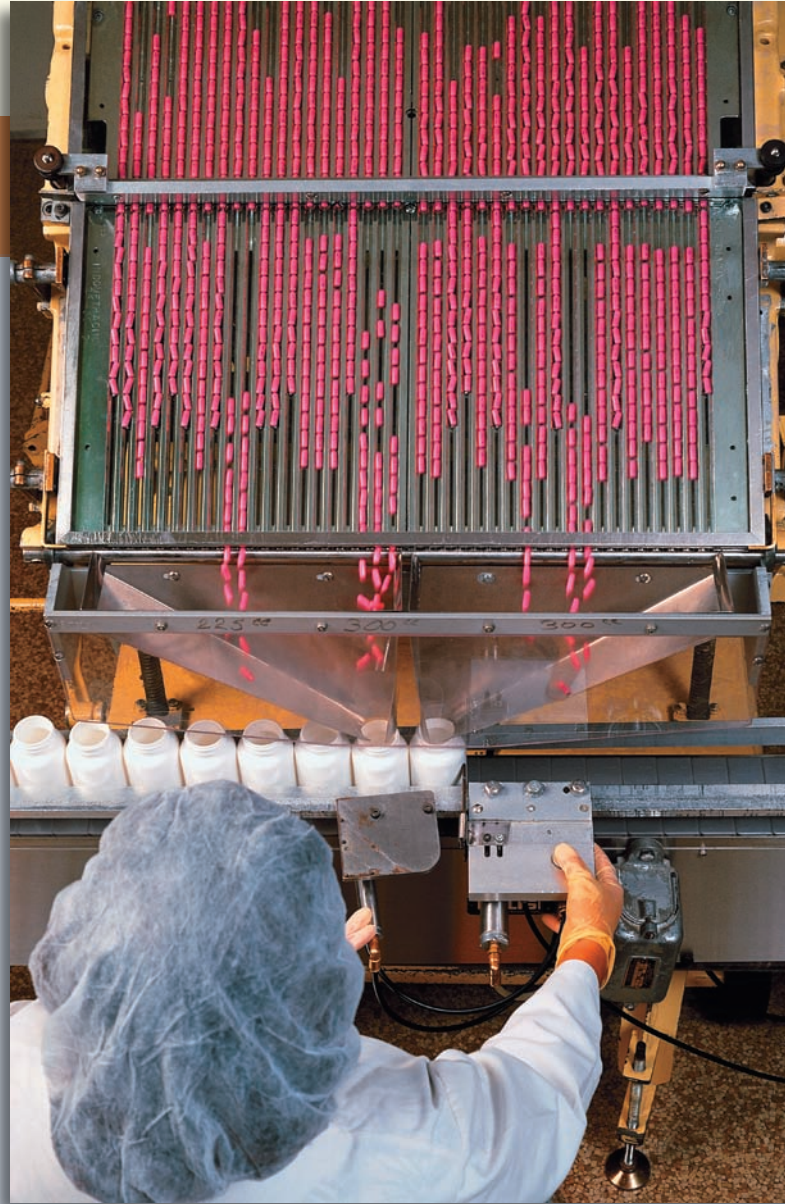
Whether Ms. Daniels will be better off selling the car or keeping it is unknown. However, it is certain that she based her decision on irrelevant data. Ms. Daniels incurred a loss when the value of the car dropped. She cannot avoid a loss that already exists. Past mistakes should not affect current decisions. The current value of the car is \$19,000. Ms. Daniels's decision is whether to take the money or keep the car. The book value of the car is not relevant.

## The *Curious* Accountant

In July 2007, the authors compared the prices of 10 of the top selling prescription drugs at two large online pharmacies, one in the United States and one in Canada. The analysis showed the Canadian prices for these 10 popular prescription drugs, such as **Lipitor** and **Zocor**, were only 68 percent of prices charged in the United States.

Major pharmaceutical companies have earnings before tax that average around 25 percent of sales, indicating that their costs average around 75 percent of the prices they charge. In other words, it costs approximately 75 cents to generate one dollar of revenue. Given that drugs are sold in Canada for 68 percent of the U.S. sales price, a drug that is sold in the U.S. for a dollar would be sold in Canada for only 68 cents.

How can drugs be sold in Canada for less (68 cents) than cost (75 cents)? (Answer on page 470.)





**LO 1**

Identify the characteristics of relevant information.

## RELEVANT INFORMATION

How can you avoid irrelevant information when making decisions? Two primary characteristics distinguish relevant from useless information. Specifically, **relevant information** (1) differs among the alternatives and (2) is future oriented.

The first characteristic recognizes that relevant information differs for one or more of the alternatives being considered. For example, in the Daniels case the offers to buy the car are relevant because the amounts of the offers are different. Ms. Daniels will receive \$18,000 if she accepts the relative's offer or, alternatively, \$19,000 if she accepts the neighbor's offer. In other words, the offering price makes a difference to the decision. In contrast, the \$25,000 original cost is not relevant because it is the same regardless of whether the car is sold to the relative or the neighbor.

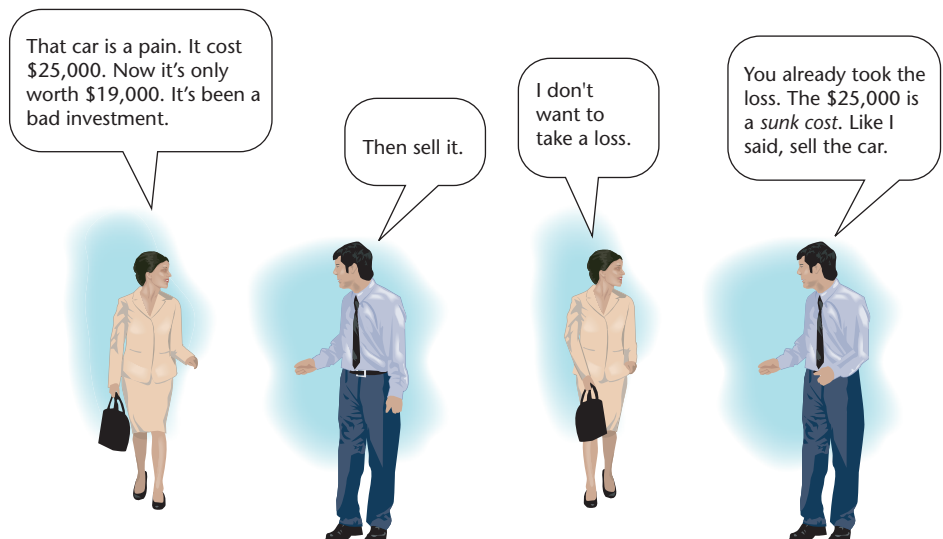
The second characteristic of relevant information is that it impacts the future. "Don't cry over spilt milk." "It's water over the dam." These aphorisms remind people they cannot change the past. With regard to business decisions, the principle means you cannot avoid a cost that has already been incurred. In the Daniels example, the historical cost (\$25,000) of the car is not relevant to a decision regarding whether to sell the car today. The current market value of \$19,000 is relevant to the decision regarding whether to sell the car today.

It is interesting to note that the two characteristics are merely different views of the same concept because historical information does not differ between the alternatives. In other words, we could say that historical costs are not relevant because they do not differ between alternatives associated with current decisions.

### Sunk Cost

Historical costs are frequently called *sunk costs*. Since **sunk costs** have been incurred in past transactions, they cannot be changed and are not relevant for making current decisions. The \$25,000 original cost of the car in the Daniels example is a sunk cost.

Why even bother to collect historical information if it is not relevant? Historical information may be useful in predicting the future. A company that earned \$5 million last year is more likely to earn \$5 million this year than a company that earned \$5,000 last year. The predictive capacity is relevant because it provides insight into the future.



### Opportunity Costs

An **opportunity cost** is the sacrifice that is incurred in order to obtain an alternative opportunity. For example, in the above case, Ms. Daniels must give up the opportunity

to obtain \$19,000 in order to keep the car. So, the opportunity cost of owning the car is \$19,000. Since this cost differs between the alternatives of owning the car versus selling it and since it affects the present or future, it is relevant to the decision regarding whether to keep or sell the car.

Notice that Ms. Daniels has two offers to sell the car, the relative's \$18,000 offer and the neighbor's \$19,000. Does this mean that the opportunity cost of keeping the car is \$37,000 (\$18,000 + \$19,000)? No. Opportunity costs are not cumulative. Ms. Daniels really has only one opportunity. If she accepts the neighbor's offer, she must reject the relative's offer or vice versa. Accountants normally measure opportunity cost as the highest value of the available alternatives. In this case, the opportunity cost of keeping the car is \$19,000.

### CHECK Yourself 13.1

Aqua, Inc., makes statues for use in fountains. On January 1, 2008, the company paid \$13,500 for a mold to make a particular type of statue. The mold had an expected useful life of four years and a salvage value of \$1,500. On January 1, 2010, the mold had a market value of \$3,000 and a salvage value of \$1,200. The expected useful life did not change. What is the relevant cost of using the mold during 2010?

**Answer** The relevant cost of using the mold in 2010 is the opportunity cost [(market value – salvage value) ÷ remaining useful life], in this case, (\$3,000 – \$1,200) ÷ 2 = \$900. The book value of the asset and associated depreciation is based on a sunk cost that cannot be avoided because it has already been incurred and therefore is not relevant to current decisions. In contrast, Aqua could avoid the opportunity cost (market value) by selling the mold.

### Relevance Is an Independent Concept

The concept of relevance is independent from the concept of cost behavior. In a given circumstance, **relevant costs** could be either fixed or variable. Consider the following illustration. Executives of Better Bakery Products are debating whether to add a new product, either cakes or pies, to the company's line. Projected costs for the two options follow.

Cost of Cakes		Cost of Pies	
Materials (per unit)	\$ 1.50	Materials (per unit)	\$ 2.00
Direct labor (per unit)	1.00	Direct labor (per unit)	1.00
Supervisor's salary*	25,000.00	Supervisor's salary*	25,000.00
Franchise fee†	50,000.00	Advertising‡	40,000.00

\*It will be necessary to hire a new production supervisor at a cost of \$25,000 per year.

†Cakes will be distributed under a nationally advertised label. Better Bakery pays an annual franchise fee for the right to use the product label. Because of the established brand name, Better Bakery will not be required to advertise the product.

‡Better Bakery will market the pies under its own name and will advertise the product in the local market in which the product sells.

Which costs are relevant? Fifty cents per unit of the materials can be avoided by choosing cakes instead of pies. A portion of the materials cost is therefore relevant. Labor costs will be one dollar per unit whether Better Bakery makes cakes or pies. Labor cost is therefore not relevant. Although both materials and direct labor are variable costs, one is relevant but the other is not.

## Reality **BYTES**

Determining what price to charge for their company's goods or services is one of the most difficult decisions that business managers make. Charge too much and customers will go elsewhere. Charge less than customers are willing to pay and lose the opportunity to earn profits. This problem is especially difficult when managers are deciding if they should reduce (mark down) the price of aging inventory—for example, flowers that are beginning to wilt, fruit that is beginning to overripen, or clothing that is going out of season.



At first managers may be reluctant to mark down the inventory below its cost because this would cause the company to take a loss on the aging inventory. However, the concept of sunk cost applies here. Since the existing inventory has already been paid for, its cost is sunk. Since the cost is sunk it is not relevant to the decision. Does this mean the merchandise should be sold for any price? Not necessarily. The concept of opportunity cost must also be considered.

If the goods are marked down too far, too quickly, they may be sold for less than is possible. The lost potential revenue is an opportunity cost. To minimize the opportunity cost, the amount of a markdown must be the smallest amount necessary to sell the merchandise. The decision is further complicated by qualitative considerations. If a business develops a reputation for repeated markdowns, customers may hesitate to buy goods, thinking that the price will fall further if they only wait a while. The result is a dilemma as to when and how much to mark down aging inventories.

How do managers address this dilemma? Part of the answer has been the use of technology. For years airlines have used computerized mathematical models to help them decide how many seats on a particular flight should be sold at a discount. More recently, retailers began using this same type of modeling software. Such software allows retailers to take fewer markdowns at more appropriate times, thereby resulting in higher overall gross profit margins.

Since Better Bakery must hire a supervisor under either alternative, the supervisor's salary is not relevant. The franchise fee can be avoided if Better Bakery makes pies and advertising costs can be avoided if it makes cakes. All three of these costs are fixed, but only two are relevant. Finally, all the costs (whether fixed or variable) could be avoided if Better Bakery rejects both products. Whether a cost is fixed or variable has no bearing on its relevance.

### Relevance Is Context Sensitive

A particular cost that is relevant in one context may be irrelevant in another. Consider a store that carries men's, women's, and children's clothing. The store manager's salary could not be avoided by eliminating the children's department, but it could be avoided if the entire store were closed. The salary is not relevant to deciding whether to eliminate the children's department but is relevant with respect to deciding to close the store. In one context, the salary is not relevant. In the other context, it is relevant.

### Relationship Between Relevance and Accuracy

Information need not be exact to be relevant. You may decide to delay purchasing a laptop computer you want if you know its price is going to drop even if you don't know exactly how much the price decrease will be. You know part of the cost can be avoided by waiting; you are just not sure of the amount.

The most useful information is both relevant and precise. Totally inaccurate information is useless. Likewise, irrelevant information is useless regardless of its accuracy.

### Quantitative versus Qualitative Characteristics of Decision Making

Relevant information can have both **quantitative** and **qualitative characteristics**. The previous examples focused on quantitative data. Now consider qualitative issues. Suppose you are deciding which of two laptop computers to purchase. Computer A costs

\$300 more than Computer B. Both computers satisfy your technical requirements; however, Computer A has a more attractive appearance. From a quantitative standpoint, you would select Computer B because you could avoid \$300 of cost. However, if the laptop will be used in circumstances where clients need to be impressed, appearance—a qualitative characteristic—may be more important than minimizing cost. You might purchase Computer A even though quantitative factors favor Computer B. Both qualitative and quantitative data are relevant to decision making.

As with quantitative data, qualitative features must *differ* between the alternatives to be relevant. If the two computers were identical in appearance, attractiveness would not be relevant to making the decision.

## Differential Revenue and Avoidable Cost

Since relevant revenue *differs* among the alternatives, it is sometimes called **differential revenue**. To illustrate, assume Pecks Department Stores sells men's, women's, and children's clothing and is considering eliminating the children's line. The revenue generated by the children's department is differential (relevant) revenue because Pecks' total revenue would be different if the children's department were eliminated.

Why would Pecks consider eliminating the children's department and thereby lose the differential (relevant) revenue? Pecks may be able to save more by eliminating the cost of operating the department than it loses in differential revenue. Some but not all of the costs associated with operating the children's department can be saved. For example, if Pecks Department Stores eliminates the children's department, the company can eliminate the cost of the department manager's salary but cannot get rid of the salary of the company president. The costs that stay the same are not relevant. The costs that can be *avoided* by closing the department are relevant. Indeed, relevant costs are frequently called *avoidable costs*.

**Avoidable costs** are the costs managers can eliminate by making specific choices. In the Pecks example, the cost of the department manager's salary is an avoidable (relevant) cost. The cost of the president's salary is not avoidable and is not relevant to the elimination decision.

## RELATIONSHIP OF COST AVOIDANCE TO A COST HIERARCHY

Classifying costs into one of four hierarchical levels helps identify avoidable costs.<sup>2</sup>

1. **Unit-level costs.** Costs incurred each time a company generates one unit of product are **unit-level costs**.<sup>3</sup> Examples include the cost of direct materials, direct labor, inspections, packaging, shipping, and handling. Incremental (additional) unit-level costs increase *with each additional unit of product generated*. *Unit-level costs can be avoided by eliminating the production of a single unit of product.*
2. **Batch-level costs.** Many products are generated in batches rather than individual units. For example, a heating and air conditioning technician may service a batch of air conditioners in an apartment complex. Some of the job costs apply only to individual units, and other costs relate to the entire batch. For instance, the labor to service each air conditioner is a unit-level cost, but the cost of driving to the site is a **batch-level cost**.

Classifying costs as unit- versus batch-level frequently depends on the context rather than the type of cost. For example, shipping and handling costs to send

### LO 2

Distinguish between unit-level, batch-level, product-level, and facility-level costs and understand how these costs affect decision making.

<sup>2</sup>R. Cooper and R. S. Kaplan, *The Design of Cost Management Systems* (Englewood Cliffs, NJ: Prentice-Hall, 1991). Our classifications are broader than those typically presented. They encompass service and merchandising companies as well as manufacturing businesses. The original cost hierarchy was developed as a platform for activity-based costing, a topic introduced later. These classifications are equally useful as a tool for identifying avoidable costs.

<sup>3</sup>Recall that we use the term *product* in a generic sense to represent producing goods or services.

200 computers to a university are batch-level costs. In contrast, the shipping and handling cost to deliver a single computer to each of a number of individual customers is a unit-level cost. Eliminating a batch of work avoids both batch-level and unit-level costs. Similarly, adding a batch of work increases batch-level and unit-level costs. Increasing the number of units in a particular batch increases unit-level but not batch-level costs. Decreasing the number of units in a batch reduces unit-level costs but not batch-level costs.

3. *Product-level costs.* Costs incurred to support specific products or services are called **product-level costs**. Product-level costs include quality inspection costs, engineering design costs, the costs of obtaining and defending patents, the costs of regulatory compliance, and inventory holding costs such as interest, insurance, maintenance, and storage. *Product-level costs can be avoided by discontinuing a product line.* For example, suppose the Snapper Company makes the engines used in its lawn mowers. Buying engines from an outside supplier instead of making them would allow Snapper to avoid the product-level costs such as legal fees for patents, manufacturing supervisory costs of producing the engines, and the maintenance and inventory costs of holding engine parts.
4. *Facility-level costs.* **Facility-level costs** are incurred to support the entire company. They are not related to any specific product, batch, or unit of product. Because these costs maintain the facility as a whole, they are frequently called *facility-sustaining costs*. Facility-level costs include building rent or depreciation, personnel administration and training, property and real estate taxes, insurance, maintenance, administrative salaries, general selling costs, landscaping, utilities, and security. Total facility-level costs cannot be avoided unless the entire company is dissolved. However, eliminating a business segment (such as a division, department, or office) may enable a company to avoid some facility-level costs. For example, if a bank eliminates one of its branches, it can avoid the costs of renting, maintaining, and insuring that particular branch building. In general, *segment-level* facility costs can be avoided when a segment is eliminated. In contrast, *corporate-level* facility costs cannot be avoided unless the corporation is eliminated.

Precise distinctions between the various categories are often difficult to draw. One company may incur sales staff salaries as a facility-level cost while another company may pay sales commissions traceable to product lines or even specific units of a product line. Cost classifications cannot be memorized. Classifying specific cost items into the appropriate categories requires thoughtful judgment.

## RELEVANT INFORMATION AND SPECIAL DECISIONS

### LO 3

Make appropriate special order decisions.

Four types of special decisions are frequently encountered in business practice: (1) special order, (2) outsourcing, (3) segment elimination, and (4) asset replacement. These four types of decisions are discussed in the following sections of this chapter.

### Special Order Decisions

Occasionally, a company receives an offer to sell its goods at a price significantly below its normal selling price. The company must make a **special order decision** to accept or reject the offer.

#### Quantitative Analysis

Assume Premier Office Products manufactures printers. Premier expects to make and sell 2,000 printers in 10 batches of 200 units per batch during the coming year. Expected production costs are summarized in Exhibit 13.1.



Adding its normal markup to the total cost per unit, Premier set the selling price at \$360 per printer.

Suppose Premier receives a *special order* from a new customer for 200 printers. If Premier accepts the order, its expected sales would increase from 2,000 units to 2,200 units. But the special order customer is willing to pay only \$250 per printer. This price is well below not only Premier's normal selling price of \$360 but also the company's expected per unit cost of \$329.25. Should Premier accept or reject the special order? At first glance, it seems Premier should reject the special order because the customer's offer is below the expected cost per unit. Analyzing relevant costs and revenue leads, however, to a different conclusion.

The quantitative analysis follows in three steps.

**Step 1. Determine the amount of the relevant (differential) revenue Premier will earn by accepting the special order.** Premier's alternatives are (1) to accept or (2) to reject the special order. If Premier accepts the special order, additional revenue will be \$50,000 ( $\$250 \times 200$  units).

If Premier rejects the special order, additional revenue will be zero. Since the amount of revenue differs between the alternatives, the \$50,000 is relevant.

**Step 2. Determine the amount of the relevant (differential) cost Premier will incur by accepting the special order.** Examine the costs in Exhibit 13.1. If Premier accepts the special order, it will incur additional unit-level costs (materials, labor, and overhead). It will also incur the cost of one additional 200-unit batch. The unit- and batch-level costs are relevant because Premier could avoid them by rejecting the special order. The other costs in Exhibit 13.1 are not relevant because Premier will incur them whether it accepts or rejects the special order.

**Step 3. Accept the special order if the relevant revenue exceeds the relevant (avoidable) cost. Reject the order if relevant cost exceeds relevant revenue.** Exhibit 13.2 summarizes the relevant figures. Since the relevant revenue exceeds the relevant cost, Premier should accept the special order because profitability will increase by \$11,800.

### EXHIBIT 13.1

#### Budgeted Cost for Expected Production of 2,000 Printers

Unit-level costs		
Materials costs (2,000 units $\times$ \$90)	\$180,000	
Labor costs (2,000 units $\times$ \$82.50)	165,000	
Overhead (2,000 units $\times$ \$7.50)	<u>15,000</u>	
Total unit-level costs (2,000 $\times$ \$180)		\$360,000
Batch-level costs		
Assembly setup (10 batches $\times$ \$1,700)	17,000	
Materials handling (10 batches $\times$ \$500)	<u>5,000</u>	
Total batch-level costs (10 batches $\times$ \$2,200)		22,000
Product-level costs		
Engineering design	14,000	
Production manager salary	<u>63,300</u>	
Total product-level costs		77,300
Facility level costs		
Segment-level costs:		
Division manager's salary	85,000	
Administrative costs	<u>12,700</u>	
Allocated—corporate-level costs:		
Company president's salary	43,200	
Building rental	<u>27,300</u>	
General expenses	<u>31,000</u>	
Total facility-level costs		199,200
Total expected cost		<u>\$658,500</u>
Cost per unit: $\$658,500 \div 2,000 = \$329.25$		



### EXHIBIT 13.2

#### Relevant Information for Special Order of 200 Printers

Differential revenue ( $\$250 \times 200$ units)	\$50,000
Avoidable unit-level costs ( $\$180 \times 200$ units)	(36,000)
Avoidable batch-level costs ( $\$2,200 \times 1$ batch)	<u>(2,200)</u>
Contribution to income	<u>\$11,800</u>



## Answers to The *Curious* Accountant

There are several factors that enable drug companies to reduce their prices to certain customers. One significant factor is the issue of relevant cost.

Pharmaceutical manufacturers have a substantial amount of fixed cost, such as research and development. For example, in 2006 **Pfizer Inc.** had research and development expenses that were 15.7 percent of sales, while its cost of goods sold expense was almost the same at 15.8 percent of sales. With respect to a special order decision, the research and development costs would not change and therefore would not be relevant. In contrast, the unit-level cost of goods sold would increase and therefore would be relevant. Clearly, relevant costs are significantly less than the total cost. If Canadian prices are based on relevant costs, that is, if drug companies view Canadian sales as a special order opportunity, the lower prices may provide a contribution to profitability even though they are significantly less than the prices charged in the United States.

### Opportunity Costs

Premier can consider the special order because it has enough excess productive capacity to make the additional units. Suppose Premier has the opportunity to lease its excess capacity (currently unused building and equipment) for \$15,000. If Premier uses the excess capacity to make the additional printers, it must forgo the opportunity to lease the excess capacity to a third party. Sacrificing the potential leasing income represents an opportunity cost of accepting the special order. Adding this opportunity cost to the other relevant costs increases the cost of accepting the special order to \$53,200 (\$38,200 unit-level and batch-level costs + \$15,000 opportunity cost). The avoidable costs would then exceed the differential revenue, resulting in a projected loss of \$3,200 (\$50,000 differential revenue – \$53,200 avoidable costs). Under these circumstances Premier would be better off rejecting the special order and leasing the excess capacity.

### Relevance and the Decision Context

Assume Premier does not have the opportunity to lease its excess capacity. Recall the original analysis indicated the company could earn an \$11,800 contribution to profit by accepting a special order to sell 200 printers at \$250 per unit (see Exhibit 13.2). Because Premier can earn a contribution to profit by selling printers for \$250 each, can the company reduce its normal selling price (price charged to existing customers) to \$250? The answer is no, as illustrated in Exhibit 13.3.

#### EXHIBIT 13.3

##### Projections Based on 2,200 Printers at a Sales Price of \$250 per Unit

Revenue ( $\$250 \times 2,200$ units)		\$ 550,000
Unit-level supplies and inspection ( $\$180 \times 2,200$ units)	\$396,000	
Batch-level costs ( $\$2,200 \times 11$ batches)	24,200	
Product-level costs	77,300	
Facility-level costs	<u>199,200</u>	
Total cost		<u>(696,700)</u>
Projected loss		<u><u>\$ (146,700)</u></u>

If a company is to be profitable, it must ultimately generate revenue in excess of total costs. Although the facility-level and product-level costs are not relevant to the special order decision, they are relevant to the operation of the business as a whole.

### Qualitative Characteristics

Should a company ever reject a special order if the relevant revenues exceed the relevant costs? Qualitative characteristics may be even more important than quantitative ones. If Premier's regular customers learn the company sold printers to another buyer at \$250 per unit, they may demand reduced prices on future purchases. Exhibit 13.3 shows Premier cannot reduce the price for all customers. Special order customers should therefore come from outside Premier's normal sales territory. In addition, special order customers should be advised that the special price does not apply to repeat business. Cutting off a special order customer who has been permitted to establish a continuing relationship is likely to lead to ill-feelings and harsh words. A business's reputation can depend on how management handles such relationships. Finally, at full capacity, Premier should reject any special orders at reduced prices because filling those orders reduces its ability to satisfy customers who pay full price.

## Outsourcing Decisions

Companies can sometimes purchase products they need for less than it would cost to make them. This circumstance explains why automobile manufacturers purchase rather than make many of the parts in their cars or why a caterer might buy gourmet desserts from a specialty company. Buying goods and services from other companies rather than producing them internally is commonly called **outsourcing**.

### Quantitative Analysis

Assume Premier Office Products is considering whether to outsource production of the printers it currently makes. A supplier has offered to sell an unlimited supply of printers to Premier for \$240 each. The estimated cost of making the printers is \$329.25 per unit (see Exhibit 13.1). The data suggest that Premier could save money by outsourcing. Analyzing relevant costs proves this presumption wrong.

A two-step quantitative analysis for the outsourcing decision follows:

**Step 1. Determine the production costs Premier can avoid if it outsources printer production.** A review of Exhibit 13.1 discloses the costs Premier could avoid by outsourcing. If Premier purchases the printers, it can avoid the unit-level costs (materials, labor, overhead), and the batch-level costs (assembly setup, and materials handling). It can also avoid the product-level costs (engineering design costs and production manager salary). Deciding to outsource will not, however, affect the facility-level costs. Because Premier will incur them whether or not it outsources printer production, the facility-level costs are not relevant to the outsourcing decision. Exhibit 13.4 shows the avoidable (relevant) costs of outsourcing.

**Step 2. Compare the avoidable (relevant) production costs with the cost of buying the product and select the lower-cost option.** Because the relevant production cost is less than the purchase price of the printers (\$229.65 per unit versus \$240.00), the quantitative analysis suggests that Premier should continue to make the printers. Profitability would decline by \$20,700 [ $\$459,300 - (\$240 \times 2,000)$ ] if printer production were outsourced.

### LO 4

Make appropriate outsourcing decisions.

That test was so easy. Why is your score so bad?

I outsourced my homework.



### EXHIBIT 13.4

#### Relevant Cost for Expected Production for Outsourcing 2,000 Printers

Unit-level costs ( $\$180 \times 2,000$ units)	\$360,000
Batch-level costs ( $\$2,200 \times 10$ batches)	22,000
Product-level costs	77,300
<b>Total relevant cost</b>	<b>\$459,300</b>
Cost per unit: $\$459,300 \div 2,000 =$	<b>\$229.65</b>

**EXHIBIT 13.5****Relevant Cost for Expected Production for Outsourcing  
3,000 Printers**

Unit-level costs ( $\$180 \times 3,000$ units)	\$540,000
Batch-level costs ( $\$2,200 \times 15$ batches)	33,000
Product-level costs	77,300
Opportunity cost	40,000
Total relevant cost	<u>\$690,300</u>
Cost per unit: $\$690,300 \div 3,000$ units =	\$230.10

**Opportunity Costs**

Suppose Premier's accountant determines that the space Premier currently uses to manufacture printers could be leased to a third party for \$40,000 per year. By using the space to manufacture printers, Premier is *forgoing the opportunity* to earn \$40,000. Because this *opportunity cost* can be avoided by purchasing the printers, it is relevant to the outsourcing decision. After adding the opportunity cost to the other relevant costs, the total relevant cost increases to \$499,300 ( $\$459,300 + \$40,000$ ) and the relevant cost per unit becomes \$249.65

( $\$499,300 \div 2,000$ ). Since Premier can purchase printers for \$240, it should outsource printer production. It would be better off buying the printers and leasing the manufacturing space.

**Evaluating the Effect of Growth on the Level of Production**

The decision to outsource would change if expected production increased from 2,000 to 3,000 units. Because some of the avoidable costs are fixed relative to the level of production, cost per unit decreases as volume increases. For example, the product-level costs (engineering design, production manager's salary, and opportunity cost) are fixed relative to the level of production. Exhibit 13.5 shows the relevant cost per unit if Premier expects to produce 3,000 printers.

At 3,000 units of production, the relevant cost of making printers is less than the cost of outsourcing (\$230.10 versus \$240.00). If management believes the company is likely to experience growth in the near future, it should reject the outsourcing option. Managers must consider potential growth when making outsourcing decisions.

**Qualitative Features**

A company that uses **vertical integration** controls the full range of activities from acquiring raw materials to distributing goods and services. Outsourcing reduces the level of vertical integration, passing some of a company's control over its products to outside suppliers. The reliability of the supplier is critical to an outsourcing decision. An unscrupulous supplier may lure an unsuspecting manufacturer into an outsourcing decision using **low-ball pricing**. Once the manufacturer is dependent on the supplier, the supplier raises prices. If a price sounds too good to be true, it probably is too good to be true. Other potential problems include product quality and delivery commitments. If the printers do not work properly or are not delivered on time, Premier's customers will be dissatisfied with Premier, not the supplier. Outsourcing requires that Premier depend on the supplier to deliver quality products at designated prices according to a specified schedule. Any supplier failures will become Premier's failures.

To protect themselves from unscrupulous or incompetent suppliers, many companies establish a select list of reliable **certified suppliers**. These companies seek to become the preferred customers of the suppliers by offering incentives such as guaranteed volume purchases with prompt payments. These incentives motivate the suppliers to ship high-quality products on a timely basis. The purchasing companies recognize that prices ultimately depend on the suppliers' ability to control costs, so the buyers and suppliers work together to minimize costs. For example, buyers may share confidential information about their production plans with suppliers if such information would enable the suppliers to more effectively control costs.

Companies must approach outsourcing decisions cautiously even when relationships with reliable suppliers are ensured. Outsourcing has both internal and external effects. It usually displaces employees. If the supplier experiences difficulties, reestablishing internal production capacity is expensive once a trained workforce has been released. Loyalty and trust are difficult to build but easy to destroy. In fact, companies must consider not only the employees who will be discharged but also the morale of

## Focus On INTERNATIONAL ISSUES

### ARE YOU SURE YOUR GERMAN CAR WAS MADE IN GERMANY?

In recent years there has been much discussion about American companies outsourcing work to other workers in other countries. However, some activities that are seldom outsourced by American companies are routinely outsourced by companies in other countries. In fact, sometimes the “foreign country” that provides the outsourcing is the United States.

Consider an example from the automotive industry. While American automobile companies may use parts that were manufactured in another country, the final assembly of cars they sell in the United States is usually performed in their own plants in the United States or Canada. Japanese auto companies also tend to perform the final assembly of their cars in their own plants, which may be located in another country. In contrast, European car makers are more willing to outsource the final assembly, as well as engineering and parts production, to independent companies. For example, most, if not all, BMW X3s are not assembled at a **BMW** plant, but by the employees of **Magna Steyr** in Graz, Austria. This company, by the way, is a subsidiary of **Magna International**, which is a Canadian company. And that Porsche Boxster or Cayman you are hoping to receive as a graduation gift—it almost certainly will be built by **Valmet Automotive** in Finland. In fact, Valmet assembled 32,393 of the 102,602 vehicles that Porsche produced in 2006.

Source: Companies' annual reports.



those who remain. Cost reductions achieved through outsourcing are of little benefit if they are acquired at the expense of low morale and reduced productivity.

In spite of the potential pitfalls outsourcing entails, the vast majority of U.S. businesses engage in some form of it. Such widespread acceptance suggests that most companies believe the benefits achieved through outsourcing exceed the potential shortcomings.

### CHECK Yourself 13.2

Addison Manufacturing Company pays a production supervisor a salary of \$48,000 per year. The supervisor manages the production of sprinkler heads that are used in water irrigation systems. Should the production supervisor's salary be considered a relevant cost to a special order decision? Should the production supervisor's salary be considered a relevant cost to an outsourcing decision?

**Answer** The production supervisor's salary is not a relevant cost to a special order decision because Addison would pay the salary regardless of whether it accepts or rejects a special order. Since the cost does not differ for the alternatives, it is not relevant. In contrast, the supervisor's salary would be relevant to an outsourcing decision. Addison could dismiss the supervisor if it purchased the sprinkler heads instead of making them. Since the salary could be avoided by purchasing heads instead of making them, the salary is relevant to an outsourcing decision.

### Segment Elimination Decisions

Businesses frequently organize their operations into subcomponents called **segments**. Segment data are used to make comparisons among different products, departments, or divisions. For example, in addition to the companywide income statement provided for external users, **JCPenney** may prepare separate income statements for each retail

LO 5

Make appropriate segment elimination decisions.

**EXHIBIT 13.6****Projected Revenues and Costs by Segment**

	<b>Copiers</b>	<b>Computers</b>	<b>Printers</b>	<b>Total</b>
Projected revenue	\$550,000	\$850,000	\$720,000	\$2,120,000
Projected costs				
Unit-level costs				
Materials costs	(120,000)	(178,000)	(180,000)	(478,000)
Labor costs	(160,000)	(202,000)	(165,000)	(527,000)
Overhead	(30,800)	(20,000)	(15,000)	(65,800)
Batch-level costs				
Assembly setup	(15,000)	(26,000)	(17,000)	(58,000)
Materials handling	(6,000)	(8,000)	(5,000)	(19,000)
Product-level costs				
Engineering design	(10,000)	(12,000)	(14,000)	(36,000)
Production manager salary	(52,000)	(55,800)	(63,300)	(171,100)
Facility-level costs				
Segment level				
Division manager salary	(82,000)	(92,000)	(85,000)	(259,000)
Administrative costs	(12,200)	(13,200)	(12,700)	(38,100)
Allocated—corporate-level				
Company president salary	(34,000)	(46,000)	(43,200)	(123,200)
Building rental	(19,250)	(29,750)	(27,300)	(76,300)
General facility expenses	(31,000)	(31,000)	(31,000)	(93,000)
Projected income (loss)	<u>\$ (22,250)</u>	<u>\$ 136,250</u>	<u>\$ 61,500</u>	<u>\$ 175,500</u>

store for internal users. Executives can then evaluate managerial performance by comparing profitability measures among stores. *Segment reports* can be prepared for products, services, departments, branches, centers, offices, or divisions. These reports normally show segment revenues and costs. The primary objective of segment analysis is to determine whether relevant revenues exceed relevant costs.

**Quantitative Analysis**

Assume Premier Office Products makes copy equipment and computers as well as printers. Each product line is made in a separate division of the company. Division (segment) operating results for the most recent year are shown in Exhibit 13.6. Initial review of the results suggests the copier division should be eliminated because it is operating at a loss. However, analyzing the relevant revenues and expenses leads to a different conclusion.

A three-step quantitative analysis for the segment elimination decision follows.

**Step 1. Determine the amount of relevant (differential) revenue that pertains to eliminating the copier division.** The alternatives are (1) to eliminate or (2) to continue to operate the copier division. If Premier eliminates the copier line it will lose the \$550,000 of revenue the copier division currently produces. If the division continues to operate, Premier will earn the revenue. Since the revenue differs between the alternatives, it is relevant.

**Step 2. Determine the amount of cost Premier can avoid if it eliminates the copier division.** If it eliminates copiers, Premier can avoid the unit-level, batch-level, product-level, and segment-level facility-sustaining costs. The relevant revenue and the avoidable costs are shown in Exhibit 13.7.

Premier will incur the corporate-level facility-sustaining costs whether it eliminates the copier segment or continues to operate it. Since these costs do not differ between the alternatives, they are not relevant to the elimination decision.



**Step 3. If the relevant revenue is less than the avoidable cost, eliminate the segment (division). If not, continue to operate it.** Because operating the segment is contributing \$62,000 per year to company profitability (see Exhibit 13.7), Premier should not eliminate the copier division. Exhibit 13.8 shows Premier's estimated revenues and costs if the computers and printers divisions were operated without the copier division. Projected company profit declines by \$62,000 (\$175,500 – \$113,500) without the copier segment, confirming that eliminating it would be detrimental to Premier's profitability.

### Qualitative Considerations in Decisions to Eliminate Segments

As with other special decisions, management should consider qualitative factors when determining whether to eliminate segments. Employee lives will be disrupted; some employees may be reassigned elsewhere in the company, but others will be discharged. As with outsourcing decisions, reestablishing internal production capacity is difficult once a trained workforce has been released. Furthermore, employees in other segments, suppliers, customers, and investors may believe that the elimination of a segment implies the company as a whole is experiencing financial difficulty. These individuals may lose confidence in the company and seek business contacts with other companies they perceive to be more stable.

Management must also consider the fact that sales of different product lines are frequently interdependent. Some customers prefer one-stop shopping; they want to

### EXHIBIT 13.7

#### Relevant Revenue and Cost Data for Copier Segment

Projected revenue	\$550,000
Projected costs	
Unit-level costs	
Materials costs	(120,000)
Labor costs	(160,000)
Overhead	(30,800)
Batch-level costs	
Assembly setup	(15,000)
Materials handling	(6,000)
Product-level costs	
Engineering design	(10,000)
Production manager salary	(52,000)
Facility-level costs	
Segment level	
Division manager salary	(82,000)
Administrative costs	(12,200)
Projected income (loss)	<u>\$ 62,000</u>

### EXHIBIT 13.8

#### Projected Revenues and Costs Without Copier Division

	Computers	Printers	Total
Projected revenue	\$850,000	\$720,000	\$1,570,000
Projected costs			
Unit-level costs			
Materials costs	(178,000)	(180,000)	(358,000)
Labor costs	(202,000)	(165,000)	(367,000)
Overhead	(20,000)	(15,000)	(35,000)
Batch-level costs			
Assembly setup	(26,000)	(17,000)	(43,000)
Materials handling	(8,000)	(5,000)	(13,000)
Product-level costs			
Engineering design	(12,000)	(14,000)	(26,000)
Production manager salary	(55,800)	(63,300)	(119,100)
Facility-level costs			
Segment level			
Division manager salary	(92,000)	(85,000)	(177,000)
Administrative costs	(13,200)	(12,700)	(25,900)
Allocated—corporate-level*			
Company president salary	(63,000)	(60,200)	(123,200)
Building rental	(39,375)	(36,925)	(76,300)
General facility expenses	(46,500)	(46,500)	(93,000)
Projected income (loss)	<u>\$ 94,125</u>	<u>\$ 19,375</u>	<u>\$ 113,500</u>

\*The corporate-level facility costs that were previously *allocated* to the copier division have been reassigned on the basis of one-half to the computer division and one-half to the printer division.



buy all their office equipment from one supplier. If Premier no longer sells copiers, customers may stop buying its computers and printers. Eliminating one segment may reduce sales of other segments.

What will happen to the space Premier used to make the copiers? Suppose Premier decides to make telephone systems in the space it previously used for copiers. The contribution to profit of the telephone business would be an *opportunity cost* of operating the copier segment. As demonstrated in previous examples, adding the opportunity cost to the avoidable costs of operating the copier segment could change the decision.

As with outsourcing, volume changes can affect elimination decisions. Because many costs of operating a segment are fixed, the cost per unit decreases as production increases. Growth can transform a segment that is currently producing real losses into a segment that produces real profits. Managers must consider growth potential when making elimination decisions.

### CHECK Yourself 13.3

Capital Corporation is considering eliminating one of its operating segments. Capital employed a real estate broker to determine the marketability of the building that houses the segment. The broker obtained three bids for the building: \$250,000, \$262,000, and \$264,000. The book value of the building is \$275,000. Based on this information alone, what is the relevant cost of the building?

**Answer** The book value of the building is a sunk cost that is not relevant. There are three bids for the building, but only one is relevant because Capital could sell the building only once. The relevant cost of the building is the highest opportunity cost, which in this case is \$264,000.

## Summary of Relationships Between Avoidable Costs and the Hierarchy of Business Activity

### LO 2

Distinguish between unit-level, batch-level, product-level, and facility-level costs and understand how these costs affect decision making.

A relationship exists between the cost hierarchy and the different types of special decisions just discussed. A special order involves making additional units of an existing product. Deciding to accept a special order affects unit-level and possibly batch-level costs. In contrast, outsourcing a product stops the production of that product. Outsourcing can avoid many product-level as well as unit- and batch-level costs. Finally, if a company eliminates an entire business segment, it can avoid some of the facility-level costs. The more complex the decision level, the more opportunities there are to avoid costs. Moving to a higher category does not mean, however, that all costs at the higher level of activity are avoidable. For example, all product-level costs may not be avoidable if a company chooses to outsource a product. The company may still incur inventory holding costs or advertising costs whether it makes or buys the product. Understanding the relationship between decision type and level of cost hierarchy helps when identifying avoidable costs. The relationships are summarized in Exhibit 13.9. For each type of decision, look for avoidable costs in the categories marked with an X. Remember also that sunk costs cannot be avoided.

### EXHIBIT 13.9

#### Relationship Between Decision Type and Level of Cost Hierarchy

Decision Type	Unit level	Batch level	Product level	Facility level
Special order	X	X		
Outsourcing	X	X	X	
Elimination	X	X	X	X

## Equipment Replacement Decisions

Equipment may become technologically obsolete long before it fails physically. Managers should base **equipment replacement decisions** on profitability analysis rather than physical deterioration. Assume Premier Office Products is considering replacing an existing machine with a new one. The following table summarizes pertinent information about the two machines.

LO 6

Make appropriate asset replacement decisions.

Old Machine		New Machine	
Original cost	\$ 90,000	Cost of the new machine	\$29,000
Accumulated depreciation	(33,000)	Salvage value (in 5 years)	4,000
Book value	<u>\$ 57,000</u>	Operating expenses ( $\$4,500 \times 5$ years)	22,500
Market value (now)	\$ 14,000		
Salvage value (in 5 years)	2,000		
Annual depreciation expense	11,000		
Operating expenses ( $\$9,000 \times 5$ years)	45,000		

### Quantitative Analysis

First determine what relevant costs Premier will incur if it keeps the *old machine*.

1. The *original cost* (\$90,000), *current book value* (\$57,000), *accumulated depreciation* (\$33,000), and *annual depreciation expense* (\$11,000) are different measures of a cost that was incurred in a prior period. They represent irrelevant sunk costs.
2. The \$14,000 market value represents the current sacrifice Premier must make if it keeps using the existing machine. In other words, if Premier does not keep the machine, it can sell it for \$14,000. In economic terms, *forgoing the opportunity* to sell the machine costs as much as buying it. The *opportunity cost* is therefore relevant to the replacement decision.
3. The salvage value of the old machine reduces the opportunity cost. Premier can sell the old machine now for \$14,000 or use it for five more years and then sell it for \$2,000. The opportunity cost of using the old machine for five more years is therefore \$12,000 ( $\$14,000 - \$2,000$ ).
4. Because the \$45,000 ( $\$9,000 \times 5$ ) of operating expenses will be incurred if the old machine is used but can be avoided if it is replaced, the operating expenses are relevant costs.

Next, determine what relevant costs will be incurred if Premier purchases and uses the *new machine*.

1. The cost of the new machine represents a future economic sacrifice Premier must incur if it buys the new machine. It is a relevant cost.
2. The salvage value reduces the cost of purchasing the new machine. Part (\$4,000) of the \$29,000 cost of the new machine will be recovered at the end of five years. The relevant cost of purchasing the new machine is \$25,000 ( $\$29,000 - \$4,000$ ).
3. The \$22,500 ( $\$4,500 \times 5$ ) of operating expenses will be incurred if the new machine is purchased; it can be avoided if the new machine is not purchased. The operating expenses are relevant costs.

The relevant costs for the two machines are summarized here.

Old Machine		New Machine	
Opportunity cost	\$14,000	Cost of the new machine	\$29,000
Salvage value	(2,000)	Salvage value	(4,000)
Operating expenses	<u>45,000</u>	Operating expenses	<u>22,500</u>
Total	<u>\$57,000</u>	Total	<u>\$47,500</u>

The analysis suggests that Premier should acquire the new machine because buying it produces the lower relevant cost. The \$57,000 cost of using the old machine can be *avoided* by incurring the \$47,500 cost of acquiring and using the new machine. Over the five-year period, Premier would save \$9,500 ( $\$57,000 - \$47,500$ ) by purchasing the new machine. One caution: this analysis ignores income tax effects and the time value of money, which are explained later. The discussion in this chapter focuses on identifying and using relevant costs in decision making.



## A Look Back

Decision making requires managers to choose from alternative courses of action. Successful decision making depends on a manager's ability to identify *relevant information*. Information that is relevant for decision making differs among the alternatives and is future oriented. Relevant revenues are sometimes called *differential revenues* because they differ among the alternatives. Relevant costs are sometimes called *avoidable costs* because they can be eliminated or avoided by choosing a specific course of action.

Costs that do not differ among the alternatives are not avoidable and therefore not relevant. *Sunk costs* are not relevant in decision making because they have been incurred in past transactions and therefore cannot be avoided. *Opportunity costs* are relevant because they represent potential benefits that may or may not be realized, depending on the decision maker's choice. In other words, future benefits that differ among the alternatives are relevant. Opportunity costs are not recorded in the financial accounting records.

Cost behavior (fixed or variable) is independent from the concept of relevance. Furthermore, a cost that is relevant in one decision context may be irrelevant in another context. Decision making depends on qualitative as well as quantitative information. *Quantitative information refers to information that can be measured using numbers.* *Qualitative information* is nonquantitative information such as personal preferences or opportunities.

Classifying costs into one of four hierarchical levels facilitates identifying relevant costs. *Unit-level costs* such as materials and labor are incurred each time a single unit of product is made. These costs can be avoided by eliminating the production of a single unit of product. *Batch-level costs* are associated with producing a group of products. Examples include setup costs and inspection costs related to a batch (group) of work rather than a single unit. Eliminating a batch would avoid both batch-level costs and unit-level costs. *Product-level costs* are incurred to support specific products or services (design and regulatory compliance costs). Product-level costs can be avoided by discontinuing a product line. *Facility-level costs*, like the president's salary, are incurred on behalf of the whole company or a segment of the company. In segment elimination decisions, the facility-level costs related to a particular segment being considered for elimination are relevant and avoidable. Those applying to the company as a whole are not avoidable.

Four types of special decisions that are frequently encountered in business are (1) *special orders*, (2) *outsourcing*, (3) *elimination decisions*, and (4) *asset replacement*. The relevant costs in a special order decision are the unit-level and batch-level costs that will be incurred if the special order is accepted. If the differential revenues from the special order exceed the relevant costs, the order should be accepted. Outsourcing decisions determine whether goods and services should be purchased from other companies. The relevant costs are the unit-level, batch-level, and product-level costs that could be avoided if the company outsources the product or service. If these costs are more than the cost to buy and the qualitative characteristics are satisfactory, the company should outsource. Segment-related unit-level, batch-level, product-level, and facility-level costs that can be avoided when a segment is eliminated are relevant. If the segment's avoidable costs exceed its differential revenues, it should be eliminated, assuming favorable qualitative factors. Asset replacement decisions compare the relevant costs of existing equipment with the relevant costs of new equipment to determine whether replacing the old equipment would be profitable.

## A Look Forward



The failure to accurately allocate indirect costs to cost objects can result in misinformation that impairs decision making. The next chapter explains how increased use of automation in production has caused allocations determined using traditional approaches to be distorted. The chapter introduces allocating indirect costs using more recently developed *activity-based costing* and explains how *activity-based management* can improve efficiency and productivity. Finally, the chapter introduces *total quality management*, a strategy that seeks to minimize the costs of conforming to a designated standard of quality.



### SELF-STUDY REVIEW PROBLEM

Flying High Inc. (FHI) is a division of The Master Toy Company. FHI makes remote-controlled airplanes. During 2009, FHI incurred the following costs in the process of making 5,000 planes.

Unit-level materials costs (5,000 units @ \$80)	\$ 400,000
Unit-level labor costs (5,000 units @ \$90)	450,000
Unit-level overhead costs (5,000 @ \$70)	350,000
Depreciation cost on manufacturing equipment*	50,000
Other manufacturing overhead†	140,000
Inventory holding costs	240,000
Allocated portion of The Master Toy Company's facility-level costs	600,000
Total costs	<u>\$2,230,000</u>

\*The manufacturing equipment, which originally cost \$250,000, has a book value of \$200,000, a remaining useful life of four years, and a zero salvage value. If the equipment is not used in the production process, it can be leased for \$30,000 per year.

†Includes supervisors' salaries and rent for the manufacturing building.

#### Required

- FHI uses a cost-plus pricing strategy. FHI sets its price at product cost plus \$100. Determine the price that FHI should charge for its remote-controlled airplanes.
- Assume that a potential customer that operates a chain of high-end toy stores has approached FHI. A buyer for this chain has offered to purchase 1,000 planes from FHI at a price of \$275 each. Ignoring qualitative considerations, should FHI accept or reject the order?
- FHI has the opportunity to purchase the planes from Arland Manufacturing Company for \$325 each. Arland maintains adequate inventories so that it can supply its customers with planes on demand. Should FHI accept the opportunity to outsource the making of its planes?
- Use the contribution margin format to prepare an income statement based on historical cost data. Prepare a second income statement that reflects the relevant cost data that Master Toy should consider in a segment elimination decision. Based on a comparison of these two statements, indicate whether Master Toy should eliminate the FHI division.
- FHI is considering replacing the equipment it currently uses to manufacture its planes. It could purchase replacement equipment for \$480,000 that has an expected useful life of four years and a salvage value of \$40,000. The new equipment would increase productivity substantially, reducing unit-level labor costs by 20 percent. Assume that FHI would maintain its production and sales at 5,000 planes per year. Prepare a schedule that shows the relevant costs of operating the old equipment versus the costs of operating the new equipment. Should FHI replace the equipment?

**Solution to Requirement a****Product Cost for Remote-Controlled Airplanes**

Unit-level materials costs (5,000 units × \$80)	\$ 400,000
Unit-level labor costs (5,000 units × \$90)	450,000
Unit-level overhead costs (5,000 units × \$70)	350,000
Depreciation cost on manufacturing equipment	50,000
Other manufacturing overhead	<u>140,000</u>
Total product cost	<u>\$1,390,000</u>

The cost per unit is \$278 ( $\$1,390,000 \div 5,000$  units). The sales price per unit is \$378 (\$278 + \$100). Depreciation expense is included because cost-plus pricing is usually based on historical cost rather than relevant cost. To be profitable in the long run, a company must ultimately recover the amount it paid for the equipment (the historical cost of the equipment).

**Solution to Requirement b**

The incremental (relevant) cost of making 1,000 additional airplanes follows. The depreciation expense is not relevant because it represents a sunk cost. The other manufacturing overhead costs are not relevant because they will be incurred regardless of whether FHI makes the additional planes.

**Per Unit Relevant Product Cost for Airplanes**

Unit-level materials costs	\$ 80
Unit-level labor costs	90
Unit-level overhead costs	<u>70</u>
Total relevant product cost	<u>\$240</u>

Since the relevant (incremental) cost of making the planes is less than the incremental revenue, FHI should accept the special order. Accepting the order will increase profits by \$35,000 [ $(\$275 \text{ incremental revenue} - \$240 \text{ incremental cost}) \times 1,000 \text{ units}$ ].

**Solution to Requirement c**

Distinguish this decision from the special order opportunity discussed in Requirement *b*. That special order (Requirement *b*) decision hinged on the cost of making additional units with the existing production process. In contrast, a make-or-buy decision compares current production with the possibility of making zero units (closing down the entire manufacturing process). If the manufacturing process were shut down, FHI could avoid the unit-level costs, the cost of the lost opportunity to lease the equipment, the other manufacturing overhead costs, and the inventory holding costs. Since the planes can be purchased on demand, there is no need to maintain any inventory. The allocated portion of the facility-level costs is not relevant because it would be incurred regardless of whether FHI manufactured the planes. The relevant cost of making the planes follows.

**Relevant Manufacturing Cost for Airplanes**

Unit-level materials costs (5,000 units × \$80)	\$ 400,000
Unit-level labor costs (5,000 units × \$90)	450,000
Unit-level overhead costs (5,000 units × \$70)	350,000
Opportunity cost of leasing the equipment	30,000
Other manufacturing overhead costs	140,000
Inventory holding cost	<u>240,000</u>
Total product cost	<u>\$1,610,000</u>

The relevant cost per unit is \$322 ( $\$1,610,000 \div 5,000$  units). Since the relevant cost of making the planes (\$322) is less than the cost of purchasing them (\$325), FHI should continue to make the planes.

## Solution to Requirement d

Income Statements		
	Historical Cost Data	Relevant Cost Data
Revenue (5,000 units $\times$ \$378)	\$1,890,000	\$1,890,000
Less variable costs:		
Unit-level materials costs (5,000 units $\times$ \$80)	(400,000)	(400,000)
Unit-level labor costs (5,000 units $\times$ \$90)	(450,000)	(450,000)
Unit-level overhead costs (5,000 units $\times$ \$70)	(350,000)	(350,000)
Contribution margin	690,000	690,000
Depreciation cost on manufacturing equipment	(50,000)	
Opportunity cost of leasing manufacturing equipment		(30,000)
Other manufacturing overhead costs	(140,000)	(140,000)
Inventory holding costs	(240,000)	(240,000)
Allocated facility-level administrative costs	(600,000)	
Net Loss	<u>\$ (340,000)</u>	
Contribution to Master Toy's Profitability		<u>\$ 280,000</u>

Master Toy should not eliminate the segment (FHI). Although it appears to be incurring a loss, the allocated facility-level administrative costs are not relevant because Master Toy would incur these costs regardless of whether it eliminated FHI. Also, the depreciation cost on the manufacturing equipment is not relevant because it is a sunk cost. However, since the company could lease the equipment if the segment were eliminated, the \$30,000 potential rental fee represents a relevant opportunity cost. The relevant revenue and cost data show that FHI is contributing \$280,000 to the profitability of The Master Toy Company.

## Solution to Requirement e

The relevant costs of using the old equipment versus the new equipment are the costs that differ for the two alternatives. In this case relevant costs include the purchase price of the new equipment, the opportunity cost of the old equipment, and the labor costs. These items are summarized in the following table. The data show the total cost over the four-year useful life of the replacement equipment.

Relevant Cost Comparison		
	Old Equipment	New Equipment
Opportunity to lease the old equipment (\$30,000 $\times$ 4 years)	\$ 120,000	
Cost of new equipment (\$480,000 – \$40,000)		\$ 440,000
Unit-level labor costs (5,000 units $\times$ \$90 $\times$ 4 years)	1,800,000	
Unit-level labor costs (5,000 units $\times$ \$90 $\times$ 4 years $\times$ .80)		1,440,000
Total relevant costs	<u>\$1,920,000</u>	<u>\$1,880,000</u>

Since the relevant cost of operating the new equipment is less than the cost of operating the old equipment, FHI should replace the equipment.

## KEY TERMS

Avoidable costs 467  
Batch-level costs 467  
Certified suppliers 472  
Differential revenue 467  
Equipment replacement decisions 477

Facility-level costs 468  
Low-ball pricing 472  
Opportunity costs 464  
Outsourcing 471  
Product-level costs 468  
Qualitative characteristics 466

Quantitative characteristics 466  
Relevant costs 465  
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Segment 473

Special order decision 468  
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## QUESTIONS

- Identify the primary qualities of revenues and costs that are relevant for decision making.
- Are variable costs always relevant? Explain.
- Identify the four hierarchical levels used to classify costs. When can each of these levels of costs be avoided?
- Describe the relationship between relevance and accuracy.
- "It all comes down to the bottom line. The numbers never lie." Do you agree with this conclusion? Explain your position.
- Carmon Company invested \$300,000 in the equity securities of Mann Corporation. The current market value of Carmon's investment in Mann is \$250,000. Carmon currently needs funds for operating purposes. Although interest rates are high, Carmon's president has decided to borrow the needed funds instead of selling the investment in Mann. He explains that his company cannot afford to take a \$50,000 loss on the Mann stock. Evaluate the president's decision based on this information.
- What is an opportunity cost? How does it differ from a sunk cost?
- A local bank advertises that it offers a free noninterest-bearing checking account if the depositor maintains a \$500 minimum balance in the account. Is the checking account truly free?
- A manager is faced with deciding whether to replace machine A or machine B. The original cost of machine A was \$20,000 and that of machine B was \$30,000. Because the two cost figures differ, they are relevant to the manager's decision. Do you agree? Explain your position.
- Are all fixed costs unavoidable?
- Identify two qualitative considerations that could be associated with special order decisions.
- Which of the following would not be relevant to a make-or-buy decision?
  - Allocated portion of depreciation expense on existing facilities.
  - Variable cost of labor used to produce products currently purchased from suppliers.
  - Warehousing costs for inventory of completed products (inventory levels will be constant regardless of whether products are purchased or produced).
  - Cost of materials used to produce the items currently purchased from suppliers.
  - Property taxes on the factory building.
- What two factors should be considered in deciding how to allocate shelf space in a retail establishment?
- What level(s) of costs is (are) relevant in special order decisions?
- Why would a company consider outsourcing products or services?
- Chris Sutter, the production manager of Satellite Computers, insists that the DVD drives used in the company's upper-end computers be outsourced since they can be purchased from a supplier at a lower cost per unit than the company is presently incurring to produce the drives. Jane Meyers, his assistant, insists that if sales growth continues at the current levels, the company will be able to produce the drives in the near future at a lower cost because of the company's predominately fixed cost structure. Does Ms. Meyers have a legitimate argument? Explain.
- Identify some qualitative factors that should be considered in addition to quantitative costs in deciding whether to outsource.
- The managers of Wilcox Inc. are suggesting that the company president eliminate one of the company's segments that is operating at a loss. Why may this be a hasty decision?
- Why would a supervisor choose to continue using a more costly old machine instead of replacing it with a less costly new machine?

## EXERCISES



### LO 1

**All applicable Exercises are available with McGraw-Hill Connect Accounting.**

### Exercise 13-1 *Distinction between relevance and cost behavior*

Joyce Hardman is trying to decide which of two different kinds of candy to sell in her retail candy store. One type is a name-brand candy that will practically sell itself. The other candy is cheaper to purchase but does not carry an identifiable brand name. Ms. Hardman believes that she will have to incur significant advertising costs to sell this candy. Several cost items for the two types of candy are as follows.

Brandless Candy		Name-Brand Candy	
Cost per box	\$ 4.00	Cost per box	\$ 6.00
Sales commissions per box	0.50	Sales commissions per box	1.00
Rent of display space	1,500.00	Rent of display space	1,500.00
Advertising	3,000.00	Advertising	2,000.00

### Required

Identify each cost as being relevant or irrelevant to Ms. Hardman's decision and indicate whether it is fixed or variable relative to the number of boxes sold.

### Exercise 13-2 *Distinction between relevance and cost behavior*

LO 1, 2

Lopez Company makes and sells a single product. Lopez incurred the following costs in its most recent fiscal year.

Cost Items Appearing on the Income Statement	
Materials cost (\$7 per unit)	Sales commissions (2% of sales)
Company president's salary	Salaries of administrative personnel
Depreciation on manufacturing equipment	Shipping and handling (\$0.25 per unit)
Customer billing costs (1% of sales)	Depreciation on office furniture
Rental cost of manufacturing facility	Manufacturing supplies (\$0.25 per unit)
Advertising costs (\$250,000 per year)	Production supervisor's salary
Labor cost (\$5 per unit)	

Lopez could purchase the products that it currently makes. If it purchased the items, the company would continue to sell them using its own logo, advertising program, and sales staff.

### Required

Identify each cost as relevant or irrelevant to the outsourcing decision and indicate whether the cost is fixed or variable relative to the number of products manufactured and sold.

### Exercise 13-3 *Distinction between avoidable costs and cost behavior*

LO 1

Irby Company makes fine jewelry that it sells to department stores throughout the United States. Irby is trying to decide which of two bracelets to manufacture. Irby has a labor contract that prohibits the company from laying off workers freely. Cost data pertaining to the two choices follow.

	Bracelet A	Bracelet B
Cost of materials per unit	\$ 18	\$ 37
Cost of labor per unit	32	32
Advertising cost per year	8,000	6,000
Annual depreciation on existing equip.	5,000	4,000

### Required

- Identify the fixed costs and determine the amount of fixed cost for each product.
- Identify the variable costs and determine the amount of variable cost per unit for each product.
- Identify the avoidable costs and determine the amount of avoidable cost for each product.

### Exercise 13-4 *Special order decision*

LO 1, 2, 3

Huey Concrete Company pours concrete slabs for single-family dwellings. Tudor Construction Company, which operates outside Huey's normal sales territory, asks Huey to pour 40 slabs for Tudor's new development of homes. Huey has the capacity to build 300 slabs and is presently working on 250 of them. Tudor is willing to pay only \$2,250 per slab. Huey estimates the cost of a typical job to include unit-level materials, \$1,000; unit-level labor, \$500; and an allocated portion of facility-level overhead, \$700.

### Required

Should Huey accept or reject the special order to pour 40 slabs for \$2,250 each? Support your answer with appropriate computations.

**LO 1, 2, 3****Exercise 13-5** *Special order decision*

Roddam Company manufactures a personal computer designed for use in schools and markets it under its own label. Roddam has the capacity to produce 20,000 units a year but is currently producing and selling only 15,000 units a year. The computer's normal selling price is \$1,400 per unit with no volume discounts. The unit-level costs of the computer's production are \$550 for direct materials, \$150 for direct labor, and \$200 for indirect unit-level manufacturing costs. The total product- and facility-level costs incurred by Roddam during the year are expected to be \$2,100,000 and \$700,000, respectively. Assume that Roddam receives a special order to produce and sell 3,000 computers at \$1,000 each.

**Required**

Should Roddam accept or reject the special order? Support your answer with appropriate computations.

**LO 3****Exercise 13-6** *Identifying qualitative factors for a special order decision***Required**

Describe the qualitative factors that Roddam should consider before accepting the special order described in Exercise 13-5.

**LO 3****Exercise 13-7** *Using the contribution margin approach for a special order decision*

Payne Company, which produces and sells a small digital clock, bases its pricing strategy on a 35 percent markup on total cost. Based on annual production costs for 10,000 units of product, computations for the sales price per clock follow.

Unit-level costs	\$100,000
Fixed costs	50,000
Total cost (a)	150,000
Markup (a $\times$ 0.35)	52,500
Total sales (b)	\$202,500
Sales price per unit (b $\div$ 10,000)	\$20.25

**Required**

- Payne has excess capacity and receives a special order for 4,000 clocks for \$13 each. Calculate the contribution margin per unit; based on it, should Payne accept the special order?
- Support your answer by preparing a contribution margin income statement for the special order.

**LO 4****Exercise 13-8** *Outsourcing decision*

Hill Bicycle Manufacturing Company currently produces the handlebars used in manufacturing its bicycles, which are high-quality racing bikes with limited sales. Hill produces and sells only 6,000 bikes each year. Due to the low volume of activity, Hill is unable to obtain the economies of scale that larger producers achieve. For example, Hill could buy the handlebars for \$28 each; they cost \$32 each to make. The following is a detailed breakdown of current production costs.

Item	Unit Cost	Total
Unit-level costs		
Materials	\$14	\$ 84,000
Labor	10	60,000
Overhead	3	18,000
Allocated facility-level costs	5	30,000
Total	<u>\$32</u>	<u>\$192,000</u>

After seeing these figures, Hill's president remarked that it would be foolish for the company to continue to produce the handlebars at \$32 each when it can buy them for \$28 each.

### Required

Do you agree with the president's conclusion? Support your answer with appropriate computations.

### Exercise 13-9 *Establishing price for an outsourcing decision*

LO 4

Green Lawn Inc. makes and sells lawn mowers for which it currently makes the engines. It has an opportunity to purchase the engines from a reliable manufacturer. The annual costs of making the engines are shown here.

Cost of materials (15,000 units × \$21)	\$315,000
Labor (15,000 units × \$26)	390,000
Depreciation on manufacturing equipment*	42,000
Salary of supervisor of engine production	85,000
Rental cost of equipment used to make engines	23,000
Allocated portion of corporate-level facility-sustaining costs	<u>41,500</u>
Total cost to make 15,000 engines	<u>\$896,500</u>

\*The equipment has a book value of \$72,000 but its market value is zero.

### Required

- Determine the maximum price per unit that Green Lawn would be willing to pay for the engines.
- Would the price computed in Requirement *a* change if production increased to 18,750 units? Support your answer with appropriate computations.

### Exercise 13-10 *Outsourcing decision with qualitative factors*

LO 4

Reece Corporation, which makes and sells 79,400 radios annually, currently purchases the radio speakers it uses for \$10 each. Each radio uses one speaker. The company has idle capacity and is considering the possibility of making the speakers that it needs. Reece estimates that the cost of materials and labor needed to make speakers would be a total of \$8 for each speaker. In addition, the costs of supervisory salaries, rent, and other manufacturing costs would be \$166,740. Allocated facility-level costs would be \$99,600.

### Required

- Determine the change in net income Reece would experience if it decides to make the speakers.
- Discuss the qualitative factors that Reece should consider.

### Exercise 13-11 *Outsourcing decision affected by opportunity costs*

LO 4

Mulga Electronics currently produces the shipping containers it uses to deliver the electronics products it sells. The monthly cost of producing 9,000 containers follows.



Unit-level materials	\$ 5,000
Unit-level labor	5,500
Unit-level overhead	3,500
Product-level costs*	9,000
Allocated facility-level costs	<u>22,000</u>

\*One-third of these costs can be avoided by purchasing the containers.

Omar Container Company has offered to sell comparable containers to Mulga for \$2.25 each.

**Required**

- Should Mulga continue to make the containers? Support your answer with appropriate computations.
- Mulga could lease the space it currently uses in the manufacturing process. If leasing would produce \$9,000 per month, would your answer to Requirement *a* be different? Explain.

**LO 6****Exercise 13-12 Opportunity cost**

Rembert Freight owns a truck that cost \$90,000. Currently, the truck's book value is \$54,000, and its expected remaining useful life is four years. Rembert has the opportunity to purchase for \$64,000 a replacement truck that is extremely fuel efficient. Fuel cost for the old truck is expected to be \$8,000 per year more than fuel cost for the new truck. The old truck is paid for but, in spite of being in good condition, can be sold for only \$36,000.

**Required**

Should Rembert replace the old truck with the new fuel-efficient model, or should it continue to use the old truck until it wears out? Explain.

**LO 1****Exercise 13-13 Opportunity costs**

John Cassaway owns his own taxi, which he bought an \$18,000 permit to operate two years ago. Mr. Cassaway earns \$36,000 a year operating as an independent but has the opportunity to sell the taxi and permit for \$73,000 and take a position as dispatcher for Sartino Taxi Co. The dispatcher position pays \$31,000 a year for a 40-hour week. Driving his own taxi, Mr. Cassaway works approximately 55 hours per week. If he sells his business, he will invest the \$73,000 and can earn a 10 percent return.

**Required**

- Determine the opportunity cost of owning and operating the independent business.
- Based solely on financial considerations, should Mr. Cassaway sell the taxi and accept the position as dispatcher?
- Discuss the qualitative as well as quantitative factors that Mr. Cassaway should consider.

**LO 5****Exercise 13-14 Segment elimination decision**

Lockett Company operates three segments. Income statements for the segments imply that profitability could be improved if Segment A were eliminated.

<b>LOCKETT COMPANY</b> Income Statements for the Year 2009			
Segment	A	B	C
Sales	\$191,000	\$251,000	\$347,000
Cost of goods sold	(147,000)	(99,000)	(200,000)
Sales commissions	(19,000)	(36,000)	(24,000)
Contribution margin	25,000	116,000	123,000
General fixed oper. exp. (allocation of president's salary)	(45,000)	(51,000)	(46,000)
Advertising expense (specific to individual divisions)	(4,000)	(8,000)	0
Net income	<u>\$ (24,000)</u>	<u>\$ 57,000</u>	<u>\$ 77,000</u>

**Required**

- Explain the effect on profitability if Segment A is eliminated.
- Prepare comparative income statements for the company as a whole under two alternatives: (1) the retention of Segment A and (2) the elimination of Segment A.

### Exercise 13-15 Segment elimination decision

LO 5

Haygood Transport Company divides its operations into four divisions. A recent income statement for Stancil Division follows.

HAYGOOD TRANSPORT COMPANY	
Stancil Division	
Income Statement for the Year 2009	
Revenue	\$ 650,000
Salaries for drivers	(430,000)
Fuel expenses	(81,000)
Insurance	(113,000)
Division-level facility-sustaining costs	(60,000)
Companywide facility-sustaining costs	(120,000)
Net loss	<u>\$(154,000)</u>

#### Required

- Should Stancil Division be eliminated? Support your answer by explaining how the division's elimination would affect the net income of the company as a whole. By how much would companywide income increase or decrease?
- Assume that Stancil Division is able to increase its revenue to \$700,000 by raising its prices. Would this change the decision you made in Requirement *a*? Determine the amount of the increase or decrease that would occur in companywide net income if the segment were eliminated if revenue were \$700,000.
- What is the minimum amount of revenue required to justify continuing the operation of Stancil Division?

### Exercise 13-16 Identifying avoidable cost of a segment

LO 5

Hanley Corporation is considering the elimination of one of its segments. The segment incurs the following fixed costs. If the segment is eliminated, the building it uses will be sold.

Advertising expense	\$ 92,000
Supervisory salaries	151,000
Allocation of companywide facility-level costs	49,000
Original cost of building	110,000
Book value of building	50,000
Market value of building	80,000
Maintenance costs on equipment	70,000
Real estate taxes on building	6,000

#### Required

Based on this information, determine the amount of avoidable cost associated with the segment.

### Exercise 13-17 Asset replacement decision

LO 1, 6

A machine purchased three years ago for \$210,000 has a current book value using straight-line depreciation of \$126,000; its operating expenses are \$30,000 per year. A replacement machine would cost \$240,000, have a useful life of nine years, and would require \$13,000 per year in operating expenses. It has an expected salvage value of \$57,000 after nine years. The current disposal value of the old machine is \$70,000; if it is kept nine more years, its residual value would be \$10,000.

#### Required

Based on this information, should the old machine be replaced? Support your answer.



**LO 5****Exercise 13-18** *Asset replacement decision*

Elrod Company is considering replacement of some of its manufacturing equipment. Information regarding the existing equipment and the potential replacement equipment follows.

Existing Equipment		Replacement Equipment	
Cost	\$ 90,000	Cost	\$95,000
Operating expenses*	115,000	Operating expenses*	95,000
Salvage value	10,000	Salvage value	12,000
Market value	60,000	Useful life	8 years
Book value	33,000		
Remaining useful life	8 years		

\*The amounts shown for operating expenses are the cumulative total of all such expected expenses to be incurred over the useful life of the equipment.

**Required**

Based on this information, recommend whether to replace the equipment. Support your recommendation with appropriate computations.

**LO 5****Exercise 13-19** *Asset replacement decision*

Philpot Company paid \$73,000 to purchase a machine on January 1, 2007. During 2009, a technological breakthrough resulted in the development of a new machine that costs \$120,000. The old machine costs \$41,000 per year to operate, but the new machine could be operated for only \$12,000 per year. The new machine, which will be available for delivery on January 1, 2010, has an expected useful life of four years. The old machine is more durable and is expected to have a remaining useful life of four years. The current market value of the old machine is \$30,000. The expected salvage value of both machines is zero.

**Required**

Based on this information, recommend whether to replace the machine. Support your recommendation with appropriate computations.

**LO 1, 5****Exercise 13-20** *Annual versus cumulative data for replacement decision*

Because of rapidly advancing technology, Newell Publications Inc. is considering replacing its existing typesetting machine with leased equipment. The old machine, purchased two years ago, has an expected useful life of six years and is in good condition. Apparently, it will continue to perform as expected for the remaining four years of its expected useful life. A four-year lease for equipment with comparable productivity can be obtained for \$14,000 per year. The following data apply to the old machine.

Original cost	\$160,000
Accumulated depreciation	55,000
Current market value	74,000
Estimated salvage value	10,000

**Required**

- Determine the annual opportunity cost of using the old machine. Based on your computations, recommend whether to replace it.
- Determine the total cost of the lease over the four-year contract. Based on your computations, recommend whether to replace the old machine.

## PROBLEMS

All applicable Problems are available with McGraw-Hill  
*Connect Accounting*.

connect  
ACCOUNTING

### Problem 13-21 *Context-sensitive relevance*

LO 1

#### Required

Respond to each requirement independently.

- Describe two decision-making contexts, one in which unit-level materials costs are avoidable, and the other in which they are unavoidable.
- Describe two decision-making contexts, one in which batch-level setup costs are avoidable, and the other in which they are unavoidable.
- Describe two decision-making contexts, one in which advertising costs are avoidable, and the other in which they are unavoidable.
- Describe two decision-making contexts, one in which rent paid for a building is avoidable, and the other in which it is unavoidable.
- Describe two decision-making contexts, one in which depreciation on manufacturing equipment is avoidable, and the other in which it is unavoidable.

### Problem 13-22 *Context-sensitive relevance*

LO 1

Overby Construction Company is a building contractor specializing in small commercial buildings. The company has the opportunity to accept one of two jobs; it cannot accept both because they must be performed at the same time and Overby does not have the necessary labor force for both jobs. Indeed, it will be necessary to hire a new supervisor if either job is accepted. Furthermore, additional insurance will be required if either job is accepted. The revenue and costs associated with each job follow.

#### CHECK FIGURES

- Contribution to profit for  
Job A: \$194,250
- Contribution to profit: \$(1,970)

Cost Category	Job A	Job B
Contract price	\$730,000	\$650,000
Unit-level materials	243,700	223,450
Unit-level labor	249,150	253,750
Unit-level overhead	18,000	12,600
Supervisor's salary	116,670	116,670
Rental equipment costs	24,900	27,300
Depreciation on tools (zero market value)	19,900	19,900
Allocated portion of companywide facility-sustaining costs	10,400	8,600
Insurance cost for job	18,200	18,200

#### Required

- Assume that Overby has decided to accept one of the two jobs. Identify the information relevant to selecting one job versus the other. Recommend which job to accept and support your answer with appropriate computations.
- Assume that Job A is no longer available. Overby's choice is to accept or reject Job B alone. Identify the information relevant to this decision. Recommend whether to accept or reject Job B. Support your answer with appropriate computations.

### Problem 13-23 *Effect of order quantity on special order decision*

LO 3

Awtrey Quilting Company makes blankets that it markets through a variety of department stores. It makes the blankets in batches of 1,000 units. Awtrey made 20,000 blankets during the prior accounting period. The cost of producing the blankets is summarized here.

#### CHECK FIGURE

- Relevant cost per unit: \$53

Materials cost (\$21 per unit × 20,000)	\$ 420,000
Labor cost (\$22 per unit × 20,000)	440,000
Manufacturing supplies (\$2 × 20,000)	40,000
Batch-level costs (20 batches at \$4,000 per batch)	80,000
Product-level costs	160,000
Facility-level costs	<u>290,000</u>
Total costs	<u>\$1,430,000</u>
Cost per unit = \$1,430,000 ÷ 20,000 = \$71.50	

**Required**

- Sunny Motels has offered to buy a batch of 500 blankets for \$51 each. Awtrey's normal selling price is \$90 per unit. Based on the preceding quantitative data, should Awtrey accept the special order? Support your answer with appropriate computations.
- Would your answer to Requirement *a* change if Sunny offered to buy a batch of 1,000 blankets for \$51 per unit? Support your answer with appropriate computations.
- Describe the qualitative factors that Awtrey Quilting Company should consider before accepting a special order to sell blankets to Sunny Motels.

**LO 4****CHECK FIGURE**

- a. Total relevant cost: \$74,000

**Problem 13-24 Effects of the level of production on an outsourcing decision**

Faucette Chemical Company makes a variety of cosmetic products, one of which is a skin cream designed to reduce the signs of aging. Faucette produces a relatively small amount (15,000 units) of the cream and is considering the purchase of the product from an outside supplier for \$4.50 each. If Faucette purchases from the outside supplier, it would continue to sell and distribute the cream under its own brand name. Faucette's accountant constructed the following profitability analysis.

Revenue (15,000 units × \$9)	\$135,000
Unit-level materials costs (15,000 units × \$1.40)	(21,000)
Unit-level labor costs (15,000 units × \$0.50)	(7,500)
Unit-level overhead costs (15,000 × \$0.10)	(1,500)
Unit-level selling expenses (15,000 × \$0.20)	<u>(3,000)</u>
Contribution margin	102,000
Skin cream production supervisor's salary	(44,000)
Allocated portion of facility-level costs	(11,300)
Product-level advertising cost	<u>(34,000)</u>
Contribution to companywide income	<u>\$ 12,700</u>

**Required**

- Identify the cost items relevant to the make-or-outsource decision.
- Should Faucette continue to make the product or buy it from the supplier? Support your answer by determining the change in net income if Faucette buys the cream instead of making it.
- Suppose that Faucette is able to increase sales by 10,000 units (sales will increase to 25,000 units). At this level of production, should Faucette make or buy the cream? Support your answer by explaining how the increase in production affects the cost per unit.
- Discuss the qualitative factors that Faucette should consider before deciding to outsource the skin cream. How can Faucette minimize the risk of establishing a relationship with an unreliable supplier?

**LO 4, 6****Problem 13-25 Outsourcing decision affected by equipment replacement**

Holcombe Bike Company (HBC) makes the frames used to build its bicycles. During 2009, HBC made 20,000 frames; the costs incurred follow.

Unit-level materials costs (20,000 units × \$40)	\$ 800,000
Unit-level labor costs (20,000 units × \$51)	1,020,000
Unit-level overhead costs (20,000 × \$9)	180,000
Depreciation on manufacturing equipment	90,000
Bike frame production supervisor's salary	70,000
Inventory holding costs	290,000
Allocated portion of facility-level costs	500,000
<b>Total costs</b>	<b><u>\$2,950,000</u></b>

### CHECK FIGURES

- Avoidable cost per unit: \$118.6
- Avoidable cost per unit with new equipment: \$30.90

HBC has an opportunity to purchase frames for \$100 each.

### Additional Information

- The manufacturing equipment, which originally cost \$550,000, has a book value of \$450,000, a remaining useful life of four years, and a zero salvage value. If the equipment is not used to produce bicycle frames, it can be leased for \$70,000 per year.
- HBC has the opportunity to purchase for \$910,000 new manufacturing equipment that will have an expected useful life of four years and a salvage value of \$70,000. This equipment will increase productivity substantially, reducing unit-level labor costs by 60 percent. Assume that HBC will continue to produce and sell 20,000 frames per year in the future.
- If HBC outsources the frames, the company can eliminate 80 percent of the inventory holding costs.

### Required

- Determine the avoidable cost per unit of making the bike frames, assuming that HBC is considering the alternatives between making the product using the existing equipment and outsourcing the product to the independent contractor. Based on the quantitative data, should HBC outsource the bike frames? Support your answer with appropriate computations.
- Assuming that HBC is considering whether to replace the old equipment with the new equipment, determine the avoidable cost per unit to produce the bike frames using the new equipment and the avoidable cost per unit to produce the bike frames using the old equipment. Calculate the impact on profitability if the bike frames were made using the old equipment versus the new equipment.
- Assuming that HBC is considering to either purchase the new equipment or outsource the bike frame, calculate the impact on profitability between the two alternatives.
- Discuss the qualitative factors that HBC should consider before making a decision to outsource the bike frame. How can HBC minimize the risk of establishing a relationship with an unreliable supplier?

### Problem 13-26 Eliminating a segment

Levene Boot Co. sells men's, women's, and children's boots. For each type of boot sold, it operates a separate department that has its own manager. The manager of the men's department has a sales staff of nine employees, the manager of the women's department has six employees, and the manager of the children's department has three employees. All departments are housed in a single store. In recent years, the children's department has operated at a net loss and is expected to continue doing so. Last year's income statements follow.

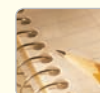
	Men's Department	Women's Department	Children's Department
Sales	\$590,000	\$420,000	\$155,000
Cost of goods sold	(265,500)	(176,400)	(96,875)
Gross margin	324,500	243,600	58,125
Department manager's salary	(52,000)	(41,000)	(21,000)
Sales commissions	(106,200)	(75,600)	(27,900)
Rent on store lease	(21,000)	(21,000)	(21,000)
Store utilities	(4,000)	(4,000)	(4,000)
Net income (loss)	<u>\$141,300</u>	<u>\$102,000</u>	<u>\$ (15,775)</u>

LO 5

**eXcel**

### CHECK FIGURE

- Contribution to profit: \$9,225



**Required**

- Determine whether to eliminate the children's department.
- Confirm the conclusion you reached in Requirement *a* by preparing income statements for the company as a whole with and without the children's department.
- Eliminating the children's department would increase space available to display men's and women's boots. Suppose management estimates that a wider selection of adult boots would increase the store's net earnings by \$32,000. Would this information affect the decision that you made in Requirement *a*? Explain your answer.

**LO 5****CHECK FIGURE**

- a. Contribution to profit:  
\$(12,500)

**Problem 13-27** *Effect of activity level and opportunity cost on segment elimination decision*

Walter Manufacturing Co. produces and sells specialized equipment used in the petroleum industry. The company is organized into three separate operating branches: Division A, which manufactures and sells heavy equipment; Division B, which manufactures and sells hand tools; and Division C, which makes and sells electric motors. Each division is housed in a separate manufacturing facility. Company headquarters is located in a separate building. In recent years, Division B has been operating at a loss and is expected to continue doing so. Income statements for the three divisions for 2009 follow.

	Division A	Division B	Division C
Sales	\$3,000,000	\$ 850,000	\$3,800,000
Less: Cost of goods sold			
Unit-level manufacturing costs	(1,800,000)	(510,000)	(2,280,000)
Rent on manufacturing facility	(410,000)	(225,000)	(300,000)
Gross margin	790,000	115,000	1,220,000
Less: Operating expenses			
Unit-level selling and admin. expenses	(187,500)	(42,500)	(237,500)
Division-level fixed selling and admin. expenses	(250,000)	(85,000)	(310,000)
Headquarters facility-level costs	(150,000)	(150,000)	(150,000)
Net income (loss)	\$ 202,500	\$(162,500)	\$ 522,500

**Required**

- Based on the preceding information, recommend whether to eliminate Division B. Support your answer by preparing companywide income statements before and after eliminating Division B.
- During 2009, Division B produced and sold 20,000 units of hand tools. Would your recommendation in response to Requirement *a* change if sales and production increase to 30,000 units in 2010? Support your answer by comparing differential revenue and avoidable costs for Division B, assuming that it sells 30,000 units.
- Suppose that Walter could sublease Division B's manufacturing facility for \$375,000. Would you operate the division at a production and sales volume of 30,000 units, or would you close it? Support your answer with appropriate computations.

**LO 3, 4, 5****CHECK FIGURE**

- a. CM: \$7,500

**Problem 13-28** *Comprehensive problem including special order, outsourcing, and segment elimination decisions*

McKay Inc. makes and sells state-of-the-art electronics products. One of its segments produces The Math Machine, an inexpensive calculator. The company's chief accountant recently prepared the following income statement showing annual revenues and expenses associated with the segment's operating activities. The relevant range for the production and sale of the calculators is between 30,000 and 60,000 units per year.

Revenue (40,000 units $\times$ \$16)	\$ 640,000
Unit-level variable costs	
Materials cost (40,000 $\times$ \$4)	(160,000)
Labor cost (40,000 $\times$ \$2)	(80,000)
Manufacturing overhead (40,000 $\times$ \$1)	(40,000)
Shipping and handling (40,000 $\times$ \$0.50)	(20,000)
Sales commissions (40,000 $\times$ \$2)	(80,000)
Contribution margin	260,000
Fixed expenses	
Advertising costs	(40,000)
Salary of production supervisor	(120,000)
Allocated companywide facility-level expenses	(160,000)
Net loss	\$ (60,000)

**Required (Consider each of the requirements independently.)**

- A large discount store has approached the owner of McKay about buying 5,000 calculators. It would replace The Math Machine's label with its own logo to avoid affecting McKay's existing customers. Because the offer was made directly to the owner, no sales commissions on the transaction would be involved, but the discount store is willing to pay only \$9.00 per calculator. Based on quantitative factors alone, should McKay accept the special order? Support your answer with appropriate computations. Specifically, by what amount would the special order increase or decrease profitability?
- McKay has an opportunity to buy the 40,000 calculators it currently makes from a reliable competing manufacturer for \$9.80 each. The product meets McKay's quality standards. McKay could continue to use its own logo, advertising program, and sales force to distribute the products. Should McKay buy the calculators or continue to make them? Support your answer with appropriate computations. Specifically, how much more or less would it cost to buy the calculators than to make them? Would your answer change if the volume of sales were increased to 60,000 units?
- Because the calculator division is currently operating at a loss, should it be eliminated from the company's operations? Support your answer with appropriate computations. Specifically, by what amount would the segment's elimination increase or decrease profitability?

## ANALYZE, THINK, COMMUNICATE

### ATC 13-1 Business Application Case Analyzing costs reductions at Dell

On May 31, 2007, **Dell, Inc.** announced it was making several changes to the way it did business in order "... to restore competitiveness to the core business, re-ignite growth, and build solutions critical to customer needs." As one of the changes the company

*initiated a comprehensive review of costs across all processes and organizations from product development and procurement through service and support delivery with the goal to simplify structure, eliminate redundancies and better align operating expenses with the current business environment and strategic growth opportunities. As a part of this overall effort, Dell will reduce headcount by approximately 10 percent over the next 12 months. The reductions will vary across geographic regions, customer segments, and functions, and will reflect business considerations as well as local legal requirements.*



**Required**

- Other than the obvious reduction in salary and wages expenses, identify some costs savings Dell might realize by reducing its workforce by 10 percent.
- Assume some of the workers being terminated are assembly employees and that they are being replaced by new robotic assembly machines. Explain how this might affect Dell's unit-level, batch-level, and/or facility-level costs.



- c. Consider the additional information presented below, which is hypothetical. All dollar amounts are in thousands, unit amounts are not. Assume that Dell decides to eliminate one product line, Delta, for one of its segments that currently produces three products. As a result the following are expected to occur.
- (1) The number of units sold for the segment is expected to drop by only 40,000 because of the elimination of Delta, since most customers are expected to purchase an Alpha or Beta product instead. The shift of sales from Delta to Alpha and Beta is expected to be evenly split. In other words, the sales of Alpha and Beta will each increase by 80,000 units.
  - (2) Rent is paid for the entire production facility, and the space used by Delta cannot be sublet.
  - (3) Utilities costs are expected to be reduced by \$18,000.
  - (4) The supervisors for Delta will all be terminated. No new supervisors will be hired for Alpha or Beta.
  - (5) The equipment being used to produce Delta is also used to produce the other two products. The company believes that as a result of eliminating Delta it can eliminate some equipment that has a remaining useful life of five years and a projected salvage value of \$20,000. Its current market value is \$30,000.
  - (6) Facility-level costs will continue to be allocated between the product lines based on the number of units produced.

Product-line Earnings Statements				
Annual Costs of Operating Each Product Line	Alpha	Beta	Delta	Total
Sales in units	400,000	400,000	200,000	1,000,000
Sales in dollars	\$400,000	\$400,000	\$200,000	\$1,000,000
Unit-level costs:				
Cost of production	40,000	40,000	22,000	102,000
Sales commissions	5,000	5,000	2,000	12,000
Shipping and handling	9,000	8,000	4,000	21,000
Miscellaneous	3,000	2,000	2,000	7,000
Total unit-level costs	57,000	55,000	30,000	142,000
Product-level costs:				
Supervisors' salaries	4,000	3,000	1,000	8,000
Facility-level costs:				
Rent	40,000	40,000	20,000	100,000
Utilities	50,000	50,000	25,000	125,000
Depreciation on equipment	160,000	160,000	80,000	400,000
Allocated companywide expenses	10,000	10,000	5,000	25,000
Total facility-level costs	260,000	260,000	130,000	650,000
Total product cost	321,000	318,000	161,000	800,000
Profit on products	\$ 79,000	\$ 82,000	\$ 39,000	\$ 200,000
(Dollar amounts are in thousands)				

Prepare revised product-line earnings statements based on the elimination of Delta. It will be necessary to calculate some per-unit data to accomplish this.

### ATC 13-2 Group Assignment *Relevance and cost behavior*



Maccoa Soft, a division of Zayer Software Company, produces and distributes an automated payroll software system. A contribution margin format income statement for Maccoa Soft for the past year follows.

Revenue (12,000 units $\times$ \$1,200)	\$14,400,000
Unit-level variable costs	
Product materials cost (12,000 $\times$ \$60)	(720,000)
Installation labor cost (12,000 $\times$ \$200)	(2,400,000)
Manufacturing overhead (12,000 $\times$ \$2)	(24,000)
Shipping and handling (12,000 $\times$ \$25)	(300,000)
Sales commissions (12,000 $\times$ \$300)	(3,600,000)
Nonmanufacturing miscellaneous costs (12,000 $\times$ \$5)	(60,000)
Contribution margin (12,000 $\times$ \$608)	7,296,000
Fixed costs	
Research and development	(2,700,000)
Legal fees to ensure product protection	(780,000)
Advertising costs	(1,200,000)
Rental cost of manufacturing facility	(600,000)
Depreciation on production equipment (zero market value)	(300,000)
Other manufacturing costs (salaries, utilities, etc.)	(744,000)
Division-level facility sustaining costs	(1,730,000)
Allocated companywide facility-level costs	(1,650,000)
Net loss	<u>\$ (2,408,000)</u>

### Required

- a. Divide the class into groups and then organize the groups into three sections. Assign Task 1 to the first section, Task 2 to the second section, and Task 3 to the third section. Each task should be considered independently of the others.

### Group Tasks

- (1) Assume that Maccoa has excess capacity. The sales staff has identified a large franchise company with 200 outlets that is interested in Maccoa's software system but is willing to pay only \$800 for each system. Ignoring qualitative considerations, should Maccoa accept the special order?
- (2) Maccoa has the opportunity to purchase a comparable payroll system from a competing vendor for \$600 per system. Ignoring qualitative considerations, should Maccoa outsource producing the software? Maccoa would continue to sell and install the software if the manufacturing activities were outsourced.
- (3) Given that Maccoa is generating a loss, should Zayer eliminate it? Would your answer change if Maccoa could increase sales by 1,000 units?
- b. Have a representative from each section explain its respective conclusions. Discuss the following.
  - (1) Representatives from Section 1 should respond to the following: The analysis related to the special order (Task 1) suggests that all variable costs are always relevant. Is this conclusion valid? Explain your answer.
  - (2) Representatives from Section 2 should respond to the following: With respect to the outsourcing decision, identify a relevant fixed cost and a nonrelevant fixed cost. Discuss the criteria for determining whether a cost is or is not relevant.
  - (3) Representatives from Section 3 should respond to the following: Why did the segment elimination decision change when the volume of production and sales increased?

### ATC 13-3 Research Assignment Using real-world data from Colgate-Palmolive

Obtain Colgate-Palmolive's (C-P) Form 8-K dated December 6, 2004. Companies file an 8-K with the SEC when they want to announce a special event has occurred at their business. As is often the case with Form 8-Ks, C-P's includes as an attachment a press release related to its planned restructuring that was issued the same day the 8-K was filed.

You also need to obtain C-P's income statements for 2003, 2004, 2005, and 2006. The easiest way to obtain these income statements is to retrieve either the company's 2006 and 2005 Form 10-Ks, or its 2006 and 2005 annual reports. From the 2006 annual report or 10-K, you



should also read carefully Note 4, “Restructuring Activities.” To obtain the Form 10-Ks you can use the EDGAR system following the instructions in Appendix A, or they can be found under the “For Investors” link on the company’s corporate website: [www.colegate.com](http://www.colegate.com). The company’s annual reports are also available on its website.

### Required

- In the Form 8-K, the second paragraph of “Item 2.05 Costs Associated with Exit or Disposal Activities,” C-P discloses that a charge of \$102 million will be incurred as a result of the 17 restructuring projects it is undertaking. Some of the costs described in this paragraph can be considered sunk costs. Identify these and specify a dollar amount that appears to be related to sunk costs.
- In the third paragraph of “Item 2.05 . . .” the company estimates that the total costs eventually incurred for the restructuring will total from \$550 to \$650 million, after taxes, and that approximately \$200 million of these will be incurred in 2005. Based on Note 4 in the company’s 2006 10-K or annual report, what were the actual, after-tax restructuring costs incurred in 2005? Based on Note 4, did the company’s 2006 estimate of the total, after-tax costs of restructuring differ from the estimate it made in 2004?
- In the press release section of its 8-K, C-P stated that one objective of the restructuring was to increase its gross profit margin. Using the income statements for 2003–2006, calculate C-P’s gross profit percentage for each year. Does it appear the company has achieved the goal of increasing its gross profit margin? Show your computations.

### ATC 13-4 Writing Assignment *Relevant versus full cost*



State law permits the State Department of Revenue to collect taxes for municipal governments that operate within the state’s jurisdiction and allows private companies to collect taxes for municipalities. To promote fairness and to ensure the financial well-being of the state, the law dictates that the Department of Revenue must charge municipalities a fee for collection services that is above the cost of providing such services but does not define the term *cost*. Until recently, Department of Revenue officials have included a proportionate share of all departmental costs such as depreciation on buildings and equipment, supervisory salaries, and other facility-level overhead costs when determining the cost of providing collection services, a measurement approach known as full costing. The full costing approach has led to a pricing structure that places the Department of Revenue at a competitive disadvantage relative to private collection companies. Indeed, highly efficient private companies have been able to consistently underbid the Revenue Department for municipal customers. As a result, it has lost 30 percent of its municipal collection business over the last two years. The inability to be price competitive led the revenue commissioner to hire a consulting firm to evaluate the current practice of determining the cost to provide collection services.

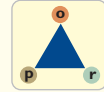
The consulting firm concluded that the cost to provide collection services should be limited to the relevant costs associated with providing those services, defined as the difference between the costs that would be incurred if the services were provided and the costs that would be incurred if the services were not provided. According to this definition, the costs of depreciation, supervisory salaries, and other facility-level overhead costs are not included because they are the same regardless of whether the Department of Revenue provides collection services to municipalities. The Revenue Department adopted the relevant cost approach and immediately reduced the price it charges municipalities to collect their taxes and rapidly recovered the collection business it had lost. Indeed, several of the private collection companies were forced into bankruptcy. The private companies joined together and filed suit against the Revenue Department, charging that the new definition of cost violates the intent of the law.

### Required

- Assume that you are an accountant hired as a consultant for the private companies. Write a brief memo explaining why it is inappropriate to limit the definition of the costs of providing collection services to relevant costs.
- Assume that you are an accountant hired as a consultant for the Department of Revenue. Write a brief memo explaining why it is appropriate to limit the definition of the costs of providing collection services to relevant costs.
- Speculate on how the matter will be resolved.

**ATC 13-5 Ethical Dilemma** *Asset replacement clouded by self-interest*

John Dillworth is in charge of buying property used as building sites for branch offices of the National Bank of Commerce. Mr. Dillworth recently paid \$110,000 for a site located in a growing section of the city. Shortly after purchasing this lot, Mr. Dillworth had the opportunity to purchase a more desirable lot at a significantly lower price. The traffic count at the new site is virtually twice that of the old site, but the price of the lot is only \$80,000. It was immediately apparent that he had overpaid for the previous purchase. The current market value of the purchased property is only \$75,000. Mr. Dillworth believes that it would be in the bank's best interest to buy the new lot, but he does not want to report a loss to his boss, Kelly Fullerton. He knows that Ms. Fullerton will severely reprimand him, even though she has made her share of mistakes. In fact, he is aware of a significant bad loan that Ms. Fullerton recently approved. When confronted with the bad debt by the senior vice president in charge of commercial lending, Ms. Fullerton blamed the decision on one of her former subordinates, Ira Sacks. Ms. Fullerton implied that Mr. Sacks had been dismissed for reckless lending decisions when, in fact, he had been an excellent loan officer with an uncanny ability to assess the creditworthiness of his customers. Indeed, Mr. Sacks had voluntarily resigned to accept a better position.



**Required**

- a. Determine the amount of the loss that would be recognized on the sale of the existing branch site.
- b. Identify the type of cost represented by the \$110,000 original purchase price of the land. Also identify the type of cost represented by its current market value of \$75,000. Indicate which cost is relevant to a decision as to whether the original site should be replaced with the new site.
- c. Is Mr. Dillworth's conclusion that the old site should be replaced supported by quantitative analysis? If not, what facts do justify his conclusion?
- d. Assuming that Mr. Dillworth is a certified management accountant (CMA), do you believe the failure to replace the land violates any of the standards of ethical conduct in Exhibit 10.14 in Chapter 10? If so, which standards would be violated?
- e. Discuss the ethical dilemma that Mr. Dillworth faces within the context of Donald Cressey's common features of ethical misconduct that were outlined in Chapter 1.

# CHAPTER 14

## Planning *for* Profit *and* Cost Control

### LEARNING OBJECTIVES

**After you have mastered the material in this chapter you will be able to:**

- 1** Describe the budgeting process and the benefits it provides.
- 2** Explain the relationship between budgeting and human behavior.
- 3** Prepare a sales budget and related schedule of cash receipts.
- 4** Prepare an inventory purchases budget and related schedule of cash payments.
- 5** Prepare a selling and administrative expense budget and related schedule of cash payments.
- 6** Prepare a cash budget.
- 7** Prepare a pro forma income statement, balance sheet, and statement of cash flows.

### CHAPTER OPENING

Planning is crucial to operating a profitable business. Expressing business plans in financial terms is commonly called **budgeting**. The budgeting process involves coordinating the financial plans of all areas of the business. For example, the production department cannot prepare a manufacturing plan until it knows how many units of product to produce. The number of units to produce depends on the marketing department's sales projection. The marketing department cannot project sales volume until it knows what products the company will sell. Product information comes from the research and development department. The point should be clear: a company's master budget results from combining numerous specific plans prepared by different departments.

Master budget preparation is normally supervised by a committee. The budget committee is responsible for settling disputes among various departments over budget matters. The committee also monitors reports on how various segments are progressing toward achieving their budget goals. The budget committee is not an accounting committee. It is a high-level committee that normally includes the company president, vice presidents of marketing, purchasing, production, and finance, and the controller.

## The *Curious* Accountant

People in television commercials often say they shop at a particular store because, “my family is on a budget.” The truth is, most families do not have a formal budget. What these people mean is that they need to be sure their spending does not exceed their available cash.

When a family expects to spend more money in a given year than it will earn, it must plan on borrowing funds needed to make up the difference. However, even if a family’s income for a year will exceed its spending, it may still need to borrow money because the timing of its cash inflows may not match the timing of its cash outflows. Whether a budget is being prepared for a family or a business, those preparing the budget must understand the specific issues facing that entity if potential financial problems are to be anticipated. There is no such thing as a “one size fits all” budget.

The **United States Olympic Committee (USOC)**, like all large organizations, devotes considerable effort to budget planning.

Think about the Olympic Games, and how the USOC generates revenues and incurs expenditures. Can you identify any unusual circumstances facing the USOC that complicate its budgeting efforts? (Answer on page 513.)





**LO 1**

Describe the budgeting process and the benefits it provides.

## THE PLANNING PROCESS

Planning normally addresses short, intermediate, and long-range time horizons. Short-term plans are more specific than long-term plans. Consider, for example, your decision to attend college. Long-term planning requires considering general questions such as

- Do I want to go to college?
- How do I expect to benefit from the experience?
- Do I want a broad knowledge base, or am I seeking to learn specific job skills?
- In what field do I want to concentrate my studies?

Many students go to college before answering these questions. They discover the disadvantages of poor planning the hard way. While their friends are graduating, they are starting over in a new major.

Intermediate-range planning usually covers three to five years. In this stage, you consider which college to attend, how to support yourself while in school, and whether to live on or off campus.

Short-term planning focuses on the coming year. In this phase you plan specific courses to take, decide which instructors to choose, schedule part-time work, and join a study group. Short-term plans are specific and detailed. Their preparation may seem tedious, but careful planning generally leads to efficient resource use and high levels of productivity.

## THREE LEVELS OF PLANNING FOR BUSINESS ACTIVITY

Businesses describe the three levels of planning as *strategic planning*, *capital budgeting*, and *operations budgeting*. **Strategic planning** involves making long-term decisions such as defining the scope of the business, determining which products to develop or discontinue, and identifying the most profitable market niche. Upper-level management is responsible for these decisions. Strategic plans are descriptive rather than quantitative. Objectives such as “to have the largest share of the market” or “to be the best-quality producer” result from strategic planning. Although strategic planning is an integral component of managing a business, an in-depth discussion of it is beyond the scope of this text.

**Capital budgeting** focuses on intermediate range planning. It involves such decisions as whether to buy or lease equipment, whether to stimulate sales, or whether to increase the company’s asset base. Capital budgeting is discussed in detail in a later chapter.

**Operations budgeting** concentrates on short-term plans. A key component of operations budgeting is the *master budget* which describes short-term objectives in specific amounts of sales targets, production goals, and financing plans. The master budget describes how management intends to achieve its objectives and directs the company’s short-term activities.

The master budget normally covers one year. It is frequently divided into quarterly projections and often subdivides quarterly data by month. Effective managers cannot wait until year-end to know whether operations conform to budget targets. Monthly data provide feedback to permit making necessary corrections promptly.

Many companies use **perpetual**, or **continuous, budgeting** covering a 12-month reporting period. As the current month draws to a close, an additional month is added at the end of the budget period, resulting in a continuous 12-month budget. A perpetual budget offers the advantage of keeping management constantly focused on thinking ahead to the next 12 months. The more traditional annual approach to budgeting invites a frenzied stop-and-go mentality, with managers preparing the budget in a year-end rush that is soon forgotten. Changing conditions may not be discussed until the next year-end budget is due. A perpetual budget overcomes these disadvantages.

## ADVANTAGES OF BUDGETING

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Budgeting is costly and time-consuming. The sacrifices, however, are more than offset by the benefits. Budgeting promotes planning and coordination; it enhances performance measurement and corrective action.

### Planning

Almost everyone makes plans. Each morning, most people think about what they will do during the day. Thinking ahead is planning. Most business managers think ahead about how they will direct operations. Unfortunately, planning is frequently as informal as making a few mental notes. Informal planning cannot be effectively communicated. The business manager might know what her objectives are, but neither her superiors nor her subordinates know. Because it serves as a communication tool, budgeting can solve these problems. The budget formalizes and documents managerial plans, clearly communicating objectives to both superiors and subordinates.

### Coordination

Sometimes a choice benefits one department at the expense of another. For example, a purchasing agent may order large quantities of raw materials to obtain discounts from suppliers. But excessive quantities of materials pose a storage problem for the inventory supervisor who must manage warehouse costs. The budgeting process forces coordination among departments to promote decisions in the best interests of the company as a whole.

### Performance Measurement

Budgets are specific, quantitative representations of management's objectives. Comparing actual results to budget expectations provides a way to evaluate performance. For example, if a company budgets sales of \$10 million, it can judge the performance of the sales department against that level. If actual sales exceed \$10 million, the company should reward the sales department; if actual sales fall below \$10 million, the company should seek an explanation for the shortfall from the sales manager.

### Corrective Action

Budgeting provides advance notice of potential shortages, bottlenecks, or other weaknesses in operating plans. For example, a cash budget alerts management to when the company can expect cash shortages during the coming year. The company can make borrowing arrangements well before it needs the money. Without knowing ahead of time, management might be unable to secure necessary financing on short notice, or it may have to pay excessively high interest rates to obtain funds. Budgeting advises managers of potential problems in time for them to carefully devise effective solutions.

## BUDGETING AND HUMAN BEHAVIOR

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Effective budgeting requires genuine sensitivity on the part of upper management to the effect on employees of budget expectations. People are often uncomfortable with budgets. Budgets are constraining. They limit individual freedom in favor of an established plan. Many people find evaluation based on budget expectations stressful. Most students experience a similar fear about testing. Like examinations, budgets represent

### LO 2

Explain the relationship between budgeting and human behavior.

standards by which performance is evaluated. Employees worry about whether their performance will meet expectations.

The attitudes of high-level managers significantly impact budget effectiveness. Subordinates are keenly aware of management's expectations. If upper-level managers degrade, make fun of, or ignore the budget, subordinates will follow suit. If management uses budgets to humiliate, embarrass, or punish subordinates, employees will resent the treatment and the budgeting process. Upper-level managers must demonstrate that they view the budget as a sincere effort to express realistic goals employees are expected to meet. An honest, open, respectful atmosphere is essential to budgeting success.

**Participative budgeting** has frequently proved successful in creating a healthy atmosphere. This technique invites participation in the budget process by personnel at all levels of the organization, not just upper-level managers. Information flows from the bottom up as well as from the top down during budget preparation. Because they are directly responsible for meeting budget goals, subordinates can offer more realistic targets. Including them in budget preparation fosters development of a team effort. Participation fosters more cooperation and motivation, and less fear. With participative budgeting, subordinates cannot complain that the budget is management's plan. The budget is instead a self-imposed constraint. Employees can hold no one responsible but themselves if they fail to accomplish the budget objectives they established.

Upper management participates in the process to ensure that employee-generated objectives are consistent with company objectives. Furthermore, if subordinates were granted complete freedom to establish budget standards, they might be tempted to adopt lax standards to ensure they will meet them. Both managers and subordinates must cooperate if the participatory process is to produce an effective budget. If developed carefully, budgets can motivate employees to achieve superior performance. Normal human fears must be overcome, and management must create an honest budget atmosphere.

## THE MASTER BUDGET

### LO 1

Describe the budgeting process and the benefits it provides.

The **master budget** is a group of detailed budgets and schedules representing the company's operating and financial plans for a future accounting period. The master budget usually includes (1) *operating budgets*, (2) *capital budgets*, and (3) *pro forma financial statements*. The budgeting process normally begins with preparing the **operating budgets**, which focus on detailed operating activities. This chapter illustrates operating budgets for Hampton Hams, a retail sales company that uses (1) a sales budget, (2) an inventory purchases budget, (3) a selling and administrative (S&A) expense budget, and (4) a cash budget.

The sales budget includes a schedule of cash receipts from customers. The inventory purchases and S&A expense budgets include schedules of cash payments for inventory and expenses. Preparing the master budget begins with the sales forecast. Based on the sales forecast, the detailed budgets for inventory purchases and operating expenses are developed. The schedules of cash receipts and cash payments provide the foundation for preparing the cash budget.

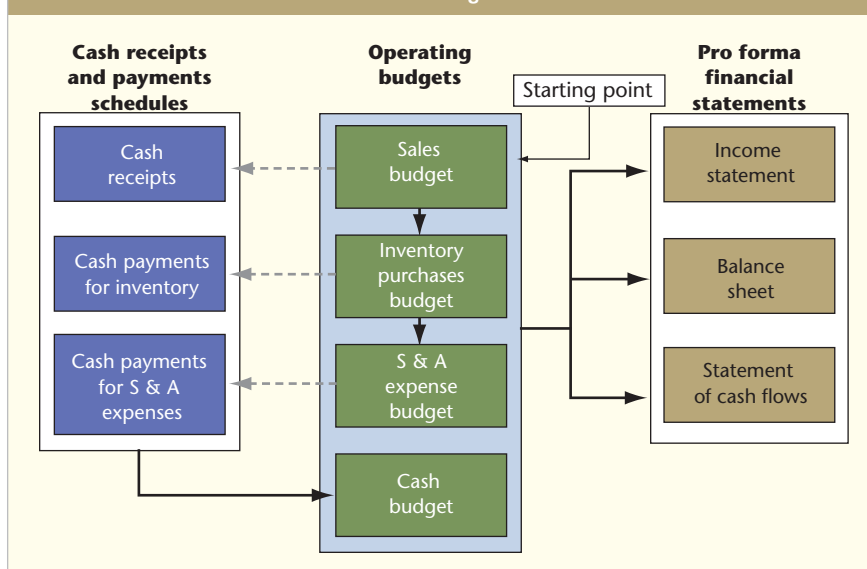
The **capital budget** describes the company's intermediate-range plans for investments in facilities, equipment, new products, store outlets, and lines of business. The capital budget affects several operating budgets. For example, equipment acquisitions result in additional depreciation expense on the S&A expense budget. The cash flow effects of capital investments influence the cash budget.

The operating budgets are used to prepare *pro forma statements*. **Pro forma financial statements** are based on projected (budgeted) rather than historical information. Hampton Hams prepares a pro forma income statement, balance sheet, and statement of cash flows.

Exhibit 14.1 shows how information flows in a master budget.

## EXHIBIT 14.1

### Information Flows in the Master Budget



## HAMPTON HAMS BUDGETING ILLUSTRATION

Hampton Hams (HH), a major corporation, sells cured hams nationwide through retail outlets in shopping malls. By focusing on a single product and standardized operations, the company controls costs stringently. As a result, it offers high-quality hams at competitive prices.

Hampton Hams has experienced phenomenal growth during the past five years. It opened two new stores in Indianapolis, Indiana, last month and plans to open a third new store in October. Hampton Hams finances new stores by borrowing on a line of credit arranged with National Bank. National's loan officer has requested monthly budgets for each of the first three months of the new store's operations. The accounting department is preparing the new store's master budget for October, November, and December. The first step is developing a sales budget.



### Sales Budget

Preparing the master budget begins with the sales forecast. The accuracy of the sales forecast is critical because all the other budgets are derived from the sales budget. Normally, the marketing department coordinates the development of the sales forecast. Sales estimates frequently flow from the bottom up to the higher management levels. Sales personnel prepare sales projections for their products and territories and pass them up the line where they are combined with the estimates of other sales personnel to develop regional and national estimates. Using various information sources, upper-level sales managers adjust the estimates generated by sales personnel. Adjustment information comes from industry periodicals and trade journals, economic analysis, marketing surveys, historical sales figures, and changes in competition. Companies assimilate this data using sophisticated computer programs, statistical techniques, and quantitative methods, or, simply, professional judgment. Regardless of the technique, the senior vice president of sales ultimately develops a sales forecast for which she is held responsible.

To develop the sales forecast for HH's new store, the sales manager studied the sales history of existing stores operating in similar locations. He then adjusted for start-up conditions. October is an opportune time to open a new store because customers will learn the store's location before the holiday season. The sales manager expects significant sales growth in November and December as customers choose the company's hams as the centerpiece for many Thanksgiving and winter holiday dinner tables.

**LO 3**

Prepare a sales budget and related schedule of cash receipts.

**EXHIBIT 14.2****Sales Budget**

	Oct	Nov	Dec	Pro Forma Data	
<b>Section 1: Projected Sales</b>					
Cash Sales	\$ 40,000	\$ 48,000	\$ 57,600		
Sales on Account	120,000	144,000	172,800	\$172,800	(a)
Total Budgeted Sales	\$160,000	\$192,000	\$230,400	\$582,400	(b)
<b>Section 2: Schedule of Cash Receipts</b>					
Current Cash Sales	\$ 40,000	\$ 48,000	\$ 57,600		
Plus Collections of Accounts Receivable	0	120,000	144,000		
Total Budgeted Collections	\$ 40,000	\$168,000	\$201,600		
(a) Quarter-end accounts receivable balance on the balance sheet.					
(b) Sales revenue on the income statement (sum of monthly amounts: \$160,000 + \$192,000 + \$230,400).					

The new store's sales are expected to be \$160,000 in October (\$40,000 in cash and \$120,000 on account). Sales are expected to increase 20 percent per month during November and December. Based on these estimates, the sales manager prepared the sales budget in Exhibit 14.2.

### Projected Sales

The sales budget has two sections. Section 1 shows the projected sales for each month. The November sales forecast reflects a 20 percent increase over October sales. For example, November *cash sales* are calculated as \$48,000 [ $\$40,000 + (\$40,000 \times 0.20)$ ] and December *cash sales* as \$57,600 [ $\$48,000 + (\$48,000 \times 0.20)$ ]. *Sales on account* are similarly computed.

### Schedule of Cash Receipts

Section 2 is a schedule of the cash receipts for the projected sales. This schedule is used later to prepare the cash budget. The accountant has assumed in this schedule that Hampton Hams will collect accounts receivable from credit sales *in full* in the month following the sale. In practice, collections may be spread over several months, and some receivables may become bad debts that are never collected. Regardless of additional complexities, the objective is to estimate the amount and timing of expected cash receipts.

In the HH case, *total cash receipts* are determined by adding the current month's *cash sales* to the cash collected from the previous month's *credit sales* (accounts receivable balance). Cash receipts for each month are determined as follows.

- October receipts are projected to be \$40,000. Because the store opens in October, no accounts receivable from September exist to be collected in October. Cash receipts for October equal the amount of October's cash sales.
- November receipts are projected to be \$168,000 (\$48,000 November cash sales + \$120,000 cash collected from October sales on account).
- December receipts are projected to be \$201,600 (\$57,600 December cash sales + \$144,000 cash collected from November sales on account).



## Focus On INTERNATIONAL ISSUES

### CASH FLOW PLANNING IN BORDEAUX

The year 2005 was considered a great year for wine in the Bordeaux region of France, and the winemakers could look forward to selling their wines for high prices, but there was one catch; these wines would not be released to consumers until late in 2008. The winemakers had incurred most of their costs in 2005 when the vines were being tended and the grapes were being processed into wine. In many industries this would mean the companies would have to finance their inventory for almost four years—not an insignificant cost. The company must finance the inventory by either borrowing the money, which results in out-of-pocket interest expense, or using its own funds. The second option generates an opportunity cost resulting from the interest revenue that could have been earned if these funds were not being used to finance the inventory.

To address this potential cash flow problem, many of the winemakers in Bordeaux offer some of their wines for sale as “futures.” That means the wines are purchased and paid for while they are still aging in barrels in France. Selling wine as futures reduces the time inventory must be financed from four years to only one to two years. Of course there are other types of costs in such deals. For one, the wines must be offered at lower prices than they are expected to sell for upon release. The winemakers have obviously decided this cost is less than the cost of financing inventory through borrowed money, or they would not do it.

Companies in other industries use similar techniques to speed up cash flow, such as factoring of accounts receivable. A major reason entities prepare cash budgets is to be sure they will have enough cash on hand to pay bills as they come due. If the budget indicates a temporary cash flow deficit, action must be taken to avoid the problem, and new budgets must be prepared based on these options. Budgeting is not a static process.



### Pro Forma Financial Statement Data

The Pro Forma Data column in the sales budget displays two figures HH will report on the quarter-end (December 31) budgeted financial statements. Since HH expects to collect December credit sales in January, the *accounts receivable balance* will be \$172,800 on the December 31, 2010, pro forma balance sheet (shown later in Exhibit 14.7).

The \$582,400 of *sales revenue* in the Pro Forma Data column will be reported on the budgeted income statement for the quarter (shown later in Exhibit 14.6). The sales revenue represents the sum of October, November, and December sales (\$160,000 + \$192,000 + \$230,400 = \$582,400).

### Inventory Purchases Budget

The inventory purchases budget shows the amount of inventory HH must purchase each month to satisfy the demand projected in the sales budget. The *total inventory needed* each month equals the amount of inventory HH plans to sell that month plus the amount of inventory HH wants on hand at month-end. To the extent that total inventory needed exceeds the inventory on hand at the beginning of the month, HH will need to purchase additional inventory. The amount of inventory to purchase is computed as follows.

#### LO 4

Prepare an inventory purchases budget and related schedule of cash payments.

Cost of budgeted sales	XXX
Plus: Desired ending inventory	XXX
Total inventory needed	XXX
Less: Beginning inventory	(XXX)
Required purchases	XXX



## EXHIBIT 14.3

## Inventory Purchases Budget

	Oct	Nov	Dec	Pro Forma Data
<b>Section 1: Projected Purchases</b>				
Budgeted Cost of Goods Sold	\$112,000	\$134,400	\$161,280	\$407,680 (a)
Plus Desired Ending Inventory	33,600	40,320	35,000	\$35,000 (b)
Total Inventory Needed	145,600	174,720	196,280	
Less Beginning Inventory	0	33,600	40,320	
Required Purchases (on account)	\$145,600	\$141,120	\$155,960	\$62,384 (c)
<b>Section 2: Schedule of Cash Payments for Inventory Purchases</b>				
Pay 60% of Current Month Accts Pay	\$87,360	\$84,672	\$93,576	
Pay 40% of Prior Month Accts Pay	0	58,240	56,448	
Total Budgeted Disbursements for Inventory	\$87,360	\$142,912	\$150,024	
(a) Cost of goods sold reported on pro forma income statement: (Sum of monthly amounts \$112,000 + \$134,400 + \$161,280 = \$407,680).				
(b) Ending inventory balance reported on pro forma balance sheet.				
(c) Ending accounts payable balance reported on proforma balance sheet (\$155,960 x .40)				

It is HH's policy to maintain an ending inventory equal to 25 percent of the next month's *projected cost of goods sold*. HH's cost of goods sold normally equals 70 percent of *sales*. Using this information and the sales budget, the accounting department prepared the inventory purchases budget shown in Exhibit 14.3.

Section 1 of the inventory purchases budget shows required purchases for each month. HH determined *budgeted cost of goods sold* for October by multiplying October *budgeted sales* by 70 percent ( $\$160,000 \times 0.70 = \$112,000$ ). Budgeted cost of goods sold for November and December were similarly computed. The October *desired ending inventory* was computed by multiplying November *budgeted cost of goods sold* by 25 percent ( $\$134,400 \times 0.25 = \$33,600$ ). Desired ending inventory for November is \$40,320 ( $\$161,280 \times .25$ ). Desired ending inventory for December is based on January projected cost of goods sold (not shown in the exhibit). HH expects ham sales to decline after the winter holidays. Because January projected cost of goods sold is only \$140,000, the December desired ending inventory falls to \$35,000 ( $\$140,000 \times .25$ ).

### *Schedule of Cash Payments for Inventory Purchases*

Section 2 is the schedule of cash payments for inventory purchases. HH makes all inventory purchases on account. The supplier requires that HH pay for 60 percent of inventory purchases in the month goods are purchased. HH pays the remaining 40 percent the month after purchase.

Cash payments are projected as follows (amounts are rounded to the nearest whole dollar).

- October cash payments for inventory are \$87,360. Because the new store opens in October, no accounts payable balance from September remains to be paid in October. Cash payments for October equal 60 percent of October inventory purchases.
- November cash payments for inventory are \$142,912 (40 percent of October purchases + 60 percent of November purchases).
- December cash payments for inventory are \$150,024 (40 percent of November purchases + 60 percent of December purchases).

### Pro Forma Financial Statement Data

The Pro Forma Data column in the inventory purchases budget displays three figures HH will report on the quarter-end budgeted financial statements. The \$407,680 *cost of goods sold* reported on the pro forma income statement (shown later in Exhibit 14.6) is the sum of the monthly cost of goods sold amounts ( $\$112,000 + \$134,400 + \$161,280 = \$407,680$ ).

The \$35,000 *ending inventory* as of December 31, 2010, is reported on the pro forma balance sheet (shown later in Exhibit 14.7). December 31 is the last day of both the month of December and the three-month quarter represented by October, November, and December.

The \$62,384 of *accounts payable* reported on the pro forma balance sheet (shown later in Exhibit 14.7) represents the 40 percent of December inventory purchases HH will pay for in January ( $\$155,960 \times .40$ ).

### CHECK Yourself 14.1

Main Street Sales Company purchased \$80,000 of inventory during June. Purchases are expected to increase by 2 percent per month in each of the next three months. Main Street makes all purchases on account. It normally pays cash to settle 70 percent of its accounts payable during the month of purchase and settles the remaining 30 percent in the month following purchase. Based on this information, determine the accounts payable balance Main Street would report on its July 31 balance sheet.

**Answer** Purchases for the month of July are expected to be \$81,600 ( $\$80,000 \times 1.02$ ). Main Street will pay 70 percent of the resulting accounts payable in cash during July. The remaining 30 percent represents the expected balance in accounts payable as of July 31. Therefore, the balance would be \$24,480 ( $\$81,600 \times 0.3$ ).

## Selling and Administrative Expense Budget

Section 1 of Exhibit 14.4 shows the selling and administrative (S&A) expense budget for Hampton Hams' new store. Most of the projected expenses are self-explanatory; depreciation and interest, however, merit comment. The depreciation expense is based on projections in the *capital expenditures budget*. Although not presented in this chapter, the capital budget calls for the cash purchase of \$130,000 of store fixtures. The fixtures were purchased on October 1. The supplier allows a thirty-day inspection period. As a result, payment for the fixtures was made at the end of October. The fixtures are expected to have a useful life of 10 years and a \$10,000 salvage value. Using the straight-line method, HH estimates annual depreciation expense at \$12,000 ( $[\$130,000 - \$10,000] \div 10$ ). Monthly depreciation expense is \$1,000 ( $\$12,000 \text{ annual charge} \div 12 \text{ months}$ ).

Interest expense is missing from the S&A expense budget. HH cannot estimate interest expense until it completes its borrowing projections. Expected borrowing (financing activities) and related interest expense are shown in the *cash budget*.

### Schedule of Cash Payments for Selling and Administrative Expenses

Section 2 of the S&A expense budget shows the schedule of cash payments. There are several differences between the S&A expenses recognized on the pro forma income statement and the cash payments for S&A expenses. First, Hampton Hams pays sales commissions and utilities expense the month following their incurrence. Since the store opens in October there are no payments due from September. Cash payments for sales commissions and utilities in October are zero. In November, HH will pay the October expenses for these items and in December it will pay the November sales commissions and utilities expenses. Depreciation expense does not affect the cash

#### LO 5

Prepare a selling and administrative expense budget and related schedule of cash payments.

**EXHIBIT 14.4****Selling and Administrative Expense Budget**

Hampton Hams					
Selling and Administrative (S&A) Expense Budget					
	Oct	Nov	Dec	Pro Forma Data	
<b>Section 1: Projected S&amp;A Expenses</b>					
Salary Expense	\$24,000	\$24,000	\$24,000		
Sales Commissions, 2% of Sales	3,200	3,840	4,608	\$ 4,608 (a)	
Supplies Expense, 1% of Sales	1,600	1,920	2,304		
Utilities Expense	1,400	1,400	1,400	\$ 1,400 (b)	
Depreciation Expense on Store Fixtures	1,000	1,000	1,000	\$ 3,000 (c)	
Rent Expense	3,600	3,600	3,600		
Miscellaneous Expense	900	900	900		
<b>Total S&amp;A Expenses before Interest</b>	<b>\$35,700</b>	<b>\$36,660</b>	<b>\$37,812</b>	<b>\$110,172 (d)</b>	
<b>Section 2: Schedule of Cash Payments for S&amp;A Expenses</b>					
Salary Expense	\$24,000	\$24,000	\$24,000		
100% of Prior Month Sales Commissions	0	3,200	3,840		
Supplies Expense, 1% of Sales	1,600	1,920	2,304		
100% of Prior Month Utilities Expense	0	1,400	1,400		
Rent Expense	3,600	3,600	3,600		
Miscellaneous Expense	900	900	900		
<b>Total Payments for S&amp;A Expenses</b>	<b>\$30,100</b>	<b>\$35,020</b>	<b>\$36,044</b>		
(a) Sales commissions payable in January reported on the pro forma balance sheet.					
(b) Utilities payable in January reported on the pro forma balance sheet.					
(c) Accumulated depreciation on the pro forma balance sheet: sum of monthly amounts (\$1,000 + \$1,000 + \$1,000 = \$3,000).					
(d) S&A expense on the pro forma income statement: sum of monthly amounts (\$35,700 + \$36,660 + \$37,812 = \$110,172).					

payments schedule. The cash outflow for the store fixtures occurs when the assets are purchased, not when they are depreciated. The cost of the investment in store fixtures is in the cash budget, not in the cash outflow for S&A expenses.

### Pro Forma Financial Statement Data

The Pro Forma Data column of the S&A expense budget displays four figures HH will report on the quarter-end budgeted financial statements. The first and second figures are the sales commissions payable (\$4,608) and utilities payable (\$1,400) on the pro forma balance sheet in Exhibit 14.7. Because December sales commissions and utilities expense are not paid until January, these amounts represent liabilities as of December 31. The third figure in the column (\$3,000) is the amount of accumulated depreciation on the pro forma balance sheet in Exhibit 14.7. Since depreciation accumulates, the \$3,000 balance is the sum of the monthly depreciation amounts (\$1,000 + \$1,000 + \$1,000 = \$3,000). The final figure in the Pro Forma Data column (\$110,172) is the total S&A expenses reported on the pro forma income statement in Exhibit 14.6. The total S&A expense is the sum of the monthly amounts (\$35,700 + \$36,660 + 37,812 = \$110,172).

### Cash Budget

Little is more important to business success than effective cash management. If a company experiences cash shortages, it will be unable to pay its debts and may be forced into bankruptcy. If excess cash accumulates, a business loses the opportunity to earn investment income or reduce interest costs by repaying debt. Preparing a **cash budget** alerts management to anticipated cash shortages or excess cash balances. Management

## LO 6

Prepare a cash budget.

## EXHIBIT 14.5

### Cash Budget

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	A	B	C	D	E	F	G	H	I
1	<b>Hampton Hams</b>								
2	<b>Cash Budget</b>								
3					Pro Forma				
4	<b>Section 1: Cash Receipts</b>	Oct	Nov	Dec	Data				
5	Beginning Cash Balance	\$ 0	\$ 10,540	\$ 10,428					
6	Add Cash Receipts (Exhibit 7.2)	40,000	168,000	201,600	\$409,600 (a)				
7	Total Cash Available	40,000	178,540	212,028					
8	<b>Section 2: Cash Payments</b>								
9	For Inventory Purchases (Exhibit 7.3)	87,360	142,912	150,024	\$ 380,296 (b)				
10	For S&A Expenses (Exhibit 7.4)	30,100	35,020	36,044	\$ 101,164 (c)				
11	For Interest Expense		2,180	2,300	\$ 4,480 (d)				
12	For Purchase of Store Fixtures	130,000	0	0	\$ 130,000 (e)				
13	Total Budgeted Disbursements	247,460	180,112	188,368					
14	<b>Section 3: Financing Activities</b>								
15	Surplus (Shortage)	(207,460)	(1,572)	23,660					
16	Borrowing (Repayment)	218,000	12,000	(13,000)	\$ 217,000 (f)				
17	Ending Cash Balance	\$ 10,540	\$ 10,428	\$ 10,660	\$ 10,660 (g)				
18									
19	Pro forma data items (a) through (d) appear in the operating activities section of the pro forma statement of cash flows.								
20	Item (d), interest expense, also appears on the pro forma income statement. Each of these items is computed by summing								
21	the monthly amounts.								
22	(a) Cash receipts from customers: \$40,000 + \$168,000 + \$201,600 = \$409,600.								
23	(b) Cash payments for inventory purchases: \$87,360 + \$142,912 + \$150,024 = \$380,296.								
24	(c) Cash payments for S&A Expenses: \$30,100 + \$35,020 + \$36,044 = \$101,164.								
25	(d) Cash payments for interest expense: \$0 + \$2,180 + \$2,300 = \$4,480.								
26	(e) Investing activities section of the pro forma statement of cash flows.								
27	(f) Financing activities section of the pro forma statements of cash flows: \$218,000 + 12,000 - \$13,000 = \$217,000.								
28	and liabilities section of the pro forma balance sheet.								

can plan financing activities, making advance arrangements to cover anticipated shortages by borrowing and planning to repay past borrowings and make appropriate investments when excess cash is expected.

The cash budget is divided into three major sections: (1) a cash receipts section, (2) a cash payments section, and (3) a financing section. Much of the data needed to prepare the cash budget are included in the cash receipts and payments schedules previously discussed; however, further refinements to project financing needs and interest costs are sometimes necessary. The completed cash budget is shown in Exhibit 14.5.

#### Cash Receipts Section

The total cash available (Exhibit 14.5, row 7) is determined by adding the beginning cash balance to the cash receipts from customers. There is no beginning cash balance in October because the new store is opening that month. The November beginning cash balance is the October ending cash balance. The December beginning cash balance is the November ending cash balance. Cash receipts from customers comes from the *schedule of cash receipts* in the sales budget (Exhibit 14.2, section 2, row 13).

#### Cash Payments Section

Cash payments include expected cash outflows for inventory purchases, S&A expenses, interest expense, and investments. The cash payments for inventory purchases comes from the *schedule of cash payments for inventory purchases* (Exhibit 14.3, section 2, row 15). The cash payments for S&A expenses comes from the *schedule of cash payments for S&A expenses* (Exhibit 14.4, section 2, row 21).



## Reality BYTES

### BUDGETING IN GOVERNMENTAL ENTITIES

This chapter has presented several reasons organizations should prepare budgets, but for governmental entities, budgets are not simply good planning tools—law requires them. If a manager at a commercial enterprise does not accomplish the budget objectives established for his or her part of the business, the manager may receive a poor performance evaluation. At worst, the manager may be fired. If managers of governmental agencies spend more than their budgets allow, they may have broken the law. In some cases the managers could be required to personally repay the amount by which the budget was exceeded. Since governmental budgets are enacted by the relevant elected bodies, to violate the budget is to break the law.

Because budgets are so important for governments and are not to be exceeded, government accounting practices require that budgeted amounts be formally entered into the bookkeeping system. As you learned in your first course of accounting, companies do not make formal accounting entries when they order goods; they only make an entry when the goods are received. Governmental accounting systems are different. Each time goods or services are ordered by a government, an “encumbrance” is recorded against the budgeted amount so that agencies do not commit to spend more money than their budgets allow.



HH borrows or repays principal and pays interest on the last day of each month. The cash payments for interest are determined by multiplying the loan balance for the month by the monthly interest rate. Since there is no outstanding debt during October, there is no interest payment at the end of October. HH expects outstanding debt of \$218,000 during the month of November. The bank charges interest at the rate of 12% per year, or 1% per month. The November interest expense and cash payment for interest is \$2,180 ( $\$218,000 \times .01$ ). The outstanding loan balance during December is \$230,000. The December interest expense and cash payment for interest is \$2,300 ( $\$230,000 \times .01$ ). Determining the amount to borrow or repay at the end of each month is discussed in more detail in the next section of the text.

Finally, the cash payment for the store fixtures comes from the *capital expenditures budget* (not shown in this chapter).

### Financing Section

HH has a line of credit under which it can borrow or repay principal in increments of \$1,000 at the end of each month as needed. HH desires to maintain an ending cash balance of at least \$10,000 each month. With the \$207,460 projected cash shortage in row 15 of the cash budget (\$40,000 cash balance in row 7 less \$247,460 budgeted cash payments in row 13), HH must borrow \$218,000 on October 31 to maintain an ending cash balance of at least \$10,000. This \$218,000 balance is outstanding during November. On November 30, HH must borrow an additional \$12,000 to cover the November projected cash shortage of \$1,572 plus the \$10,000 desired ending cash balance. HH projects a surplus of \$23,660 for the month of December. This surplus will allow HH to repay \$13,000 of debt and still maintain the desired \$10,000 cash balance.

### Pro Forma Financial Statement Data

Figures in the Pro Forma Data column of the cash budget (Exhibit 14.5) are alphabetically referenced. The cash receipts from customers, item (a), and the cash payment items (b), (c), and (d) are reported in the operating activities section of the pro forma statement of cash flows (Exhibit 14.8). The interest expense, item (d), is also reported on the pro forma income statement (Exhibit 14.6). The figures are determined by summing the monthly amounts. The \$130,000 purchase of store fixtures, item (e), is

reported in the investing activities section of the pro forma statement of cash flows. The \$217,000 net borrowings, item (f), is reported in the financing activities section of the pro forma statement of cash flows (Exhibit 14.8) and also as a liability on the pro forma balance sheet (Exhibit 14.7). The \$10,660 ending cash balance, item (g), is reported as the ending balance on the pro forma statement of cash flows and as an asset on the pro forma balance sheet.

## CHECK Yourself 14.2

Astor Company expects to incur the following operating expenses during September: Salary Expense, \$25,000; Utility Expense, \$1,200; Depreciation Expense, \$5,400; and Selling Expense, \$14,000. In general, it pays operating expenses in cash in the month in which it incurs them. Based on this information alone, determine the total amount of cash outflow Astor would report in the Operating Activities section of the pro forma statement of cash flows.

**Answer** Depreciation is not included in cash outflows because companies do not pay cash when they recognize depreciation expense. The total cash outflow is \$40,200 (\$25,000 + \$1,200 + \$14,000).

## Pro Forma Income Statement

Exhibit 14.6 shows the budgeted income statement for Hampton Hams' new store. The figures for this statement come from Exhibits 14.2, 14.3, 14.4, and 14.5. The budgeted income statement provides an advance estimate of the new store's expected profitability. If expected profitability is unsatisfactory, management could decide to abandon the project or modify planned activity. Perhaps HH could lease less costly store space, pay employees a lower rate, or reduce the number of employees hired. The pricing strategy could also be examined for possible changes.

Budgets are usually prepared using spreadsheets or computerized mathematical models that allow managers to easily undertake "what-if" analysis. What if the growth rate differs from expectations? What if interest rates increase or decrease? Exhibits 14.2 through 14.5 in this chapter were prepared using Microsoft Excel. When variables such as growth rate, collection assumptions, or interest rates are changed, the spreadsheet software instantly recalculates the budgets. Although managers remain responsible for data analysis and decision making, computer technology offers powerful tools to assist in those tasks.

LO 7

Prepare a pro forma income statement, balance sheet, and statement of cash flows.

### EXHIBIT 14.6

HAMPTON HAMS		
Pro Forma Income Statement		
For the Quarter Ended December 31, 2010		
		Data Source
Sales revenue	\$ 582,400	Exhibit 14.2
Cost of goods sold	(407,680)	Exhibit 14.3
Gross margin	174,720	
Selling and administrative expenses	(110,172)	Exhibit 14.4
Operating income	64,548	
Interest expense	(4,480)	Exhibit 14.5
Net income	\$ 60,068	



## Pro Forma Balance Sheet

Most of the figures on the pro forma balance sheet in Exhibit 14.7 have been explained. The new store has no contributed capital because its operations will be financed through debt and retained earnings. The amount of retained earnings equals the amount of net income because no earnings from prior periods exist and no distributions are planned.

### EXHIBIT 14.7

HAMPTON HAMS			
Pro Forma Balance Sheet			
As of the Quarter Ended December 31, 2010			
			Data Source
<b>Assets</b>			
Cash		\$ 10,660	Exhibit 14.5
Accounts receivable		172,800	Exhibit 14.2
Inventory		35,000	Exhibit 14.3
Store fixtures	\$130,000		Exhibit 14.4 Discussion
Accumulated depreciation	<u>(3,000)</u>		Exhibit 14.4 Discussion
Book value of store fixtures		<u>127,000</u>	
Total assets		<u>\$345,460</u>	
<b>Liabilities</b>			
Accounts payable		\$ 62,384	Exhibit 14.3
Sales commissions payable		4,608	Exhibit 14.4
Utilities payable		1,400	Exhibit 14.4
Line of credit borrowings		217,000	Exhibit 14.5
<b>Equity</b>			
Retained earnings		<u>60,068</u>	
Total liabilities and equity		<u>\$345,460</u>	

## Pro Forma Statement of Cash Flows

Exhibit 14.8 shows the pro forma statement of cash flows. All information for this statement comes from the cash budget in Exhibit 14.5.

### EXHIBIT 14.8

HAMPTON HAMS		
Pro Forma Statement of Cash Flows		
For the Quarter Ended December 31, 2010		
<b>Cash flow from operating activities</b>		
Cash receipts from customers	\$409,600	
Cash payments for inventory	(380,296)	
Cash payments for S&A expenses	(101,164)	
Cash payments for interest expense	<u>(4,480)</u>	
Net cash flow for operating activities		\$ (76,340)
<b>Cash flow from investing activities</b>		
Cash outflow to purchase fixtures		(130,000)
<b>Cash flow from financing activities</b>		
Inflow from borrowing on line of credit		<u>217,000</u>
Net change in cash		10,660
Plus beginning cash balance		<u>0</u>
Ending cash balance		<u>\$ 10,660</u>

## Answers to The *Curious* Accountant

Budget preparation at the USOC is complicated by the fact that the timing of its revenues does not match the timing of its expenditures. The USOC

spends a lot of money helping to train athletes for the United States Olympic team. Training takes place year-round, every year, for many athletes. The USOC's training facilities in Colorado must also be maintained continuously.

Conversely, much of the USOC's revenues are earned in big batches, received every two years. This money comes from fees the USOC receives for the rights to broadcast the Olympic games on television in the United States. Most companies have a one-year budget cycle during which they attempt to anticipate the coming year's revenues and expenses. This model would not work well for the USOC. For example, in 2004, a year of summer Olympics, the USOC reported revenues of \$221.3 million and a surplus of \$72.1 million. In 2005, a year with no Olympic games, the USOC reported revenues of \$119.8 million and a deficit of \$15.2 million. In 2006, a year of winter games, the USOC had revenues of \$239.7 million and a surplus of \$74.9 million.

Every business, like every family, faces its own set of circumstances. Those individuals responsible for preparing an entity's budget must have a thorough understanding of the environment in which the entity operates. This is the reason the budget process must be participatory if it is to be successful. No one person, or small group, can anticipate all the issues that will face a large organization in the coming budget period; they need input from employees at all levels.

Source: Form 990s filed by the USOC with the IRS.

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### CHECK *Yourself* 14.3

How do pro forma financial statements differ from the financial statements presented in a company's annual report to stockholders?

**Answer** Pro forma financial statements are based on estimates and projections about business events that a company expects to occur in the future. The financial statements presented in a company's annual report to stockholders are based on historical events that occurred prior to the preparation of the statements.

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## A Look Back



The planning of financial matters is called *budgeting*. The degree of detail in a company's budget depends on the budget period. Generally, the shorter the time period, the more specific the plans. *Strategic planning* involves long-term plans, such as the overall objectives of the business. Examples of strategic planning include which products to manufacture and sell and which market niches to pursue. Strategic plans are stated in broad, descriptive terms. Capital budgeting deals with intermediate investment planning. *Operations budgeting* focuses on short-term plans and is used to create the master budget.

A budget committee is responsible for consolidating numerous departmental budgets into a master budget for the whole company. The *master budget* has detailed objectives stated in specific amounts; it describes how management intends to achieve its objectives. The master budget usually covers one year. Budgeting supports planning, coordination, performance measurement, and corrective action.

Employees may be uncomfortable with budgets, which can be constraining. Budgets set standards by which performance is evaluated. To establish an effective budget system, management should recognize the effect on human behavior of budgeting. Upper-level management must set a positive atmosphere by taking budgets seriously and avoiding using them to humiliate subordinates. One way to create the proper atmosphere is to encourage subordinates' participation in the budgeting process; *participative budgeting* can lead to goals that are more realistic about what can be accomplished and to establish a team effort in trying to reach those goals.

The primary components of the master budget are the *operating budgets*, the *capital budgets*, and the *pro forma financial statements*. The budgeting process begins with preparing the operating budgets, which consist of detailed schedules and budgets prepared by various company departments. The first operating budget to be prepared is the sales budget. The detailed operating budgets for inventory purchases and S&A expenses are based on the projected sales from the sales budget. The information in the schedules of cash receipts (prepared in conjunction with the sales budget) and cash payments (prepared in conjunction with the inventory purchases and S&A expense budgets) is used in preparing the cash budget. The cash budget subtracts cash payments from cash receipts; the resulting cash surplus or shortage determines the company's financing activities.

The capital budget describes the company's long-term plans regarding investments in facilities, equipment, new products, or other lines of business. The information from the capital budget is used as input to several of the operating budgets.

The pro forma financial statements are prepared from information in the operating budgets. The operating budgets for sales, inventory purchases, and S&A expenses contain information that is used to prepare the income statement and balance sheet. The cash budget includes the amount of interest expense reported on the income statement, the ending cash balance, the capital acquisitions reported on the balance sheet, and most of the information included in the statement of cash flows.



## A Look Forward

Once a company has completed its budget, it has defined its plans. Then the plans must be followed. The next chapter investigates the techniques used to evaluate performance. You will learn to compare actual results to budgets, to calculate variances, and to identify the parties who are normally accountable for deviations from expectations. Finally, you will learn about the human impact management must consider in taking corrective action when employees fail to accomplish budget goals.



### SELF-STUDY REVIEW PROBLEM

The Getaway Gift Company operates a chain of small gift shops that are located in prime vacation towns. Getaway is considering opening a new store on January 1, 2010. Getaway's president recently attended a business seminar that explained how formal budgets could be useful in judging the new store's likelihood of succeeding. Assume you are the company's accountant. The president has asked you to explain the budgeting process and to provide

sample reports that show the new store's operating expectations for the first three months (January, February, and March). Respond to the following specific requirements.

### Required

- List the operating budgets and schedules included in a master budget.
- Explain the difference between pro forma financial statements and the financial statements presented in a company's annual reports to shareholders.
- Prepare a sample sales budget and a schedule of expected cash receipts using the following assumptions. Getaway estimates January sales will be \$400,000 of which \$100,000 will be cash and \$300,000 will be credit. The ratio of cash sales to sales on account is expected to remain constant over the three-month period. The company expects sales to increase 10 percent per month. The company expects to collect 100 percent of the accounts receivable generated by credit sales in the month following the sale. Use this information to determine the amount of accounts receivable that Getaway would report on the March 31 pro forma balance sheet and the amount of sales it would report on the first quarter pro forma income statement.
- Prepare a sample inventory purchases budget using the following assumptions. Cost of goods sold is 60 percent of sales. The company desires to maintain a minimum ending inventory equal to 25 percent of the following month's cost of goods sold. Getaway makes all inventory purchases on account. The company pays 70 percent of accounts payable in the month of purchase. It pays the remaining 30 percent in the following month. Prepare a schedule of expected cash payments for inventory purchases. Use this information to determine the amount of cost of goods sold Getaway would report on the first quarter pro forma income statement and the amounts of ending inventory and accounts payable it would report on the March 31 pro forma balance sheet.

### Solution to Requirement a

A master budget would include (1) a sales budget and schedule of cash receipts, (2) an inventory purchases budget and schedule of cash payments for inventory, (3) a general, selling, and administrative expenses budget and a schedule of cash payments related to these expenses, and (4) a cash budget.

### Solution to Requirement b

Pro forma statements result from the operating budgets listed in the response to Requirement a. Pro forma statements describe the results of expected future events. In contrast, the financial statements presented in a company's annual report reflect the results of events that have actually occurred in the past.

### Solution to Requirement c

General Information				
Sales growth rate 10%				Pro Forma Statement Data
Sales Budget	January	February	March	
Sales				
Cash sales	\$100,000	\$110,000	\$121,000	
Sales on account	<u>300,000</u>	<u>330,000</u>	<u>363,000</u>	\$ 363,000*
Total sales	<u>\$400,000</u>	<u>\$440,000</u>	<u>\$484,000</u>	\$1,324,000†
<b>Schedule of Cash Receipts</b>				
Current cash sales	\$100,000	\$110,000	\$121,000	
Plus 100% of previous month's credit sales	<u>0</u>	<u>300,000</u>	<u>330,000</u>	
Total budgeted collections	<u>\$100,000</u>	<u>\$410,000</u>	<u>\$451,000</u>	

\*Ending accounts receivable balance reported on March 31 pro forma balance sheet.

†Sales revenue reported on first quarter pro forma income statement (sum of monthly sales).

## Solution to Requirement d

General Information				
Cost of goods sold percentage 60%			Pro Forma Statement Data	
Desired ending inventory percentage of CGS 25%				
Inventory Purchases Budget	January	February	March	
Budgeted cost of goods sold	\$240,000	\$264,000	\$290,400	\$794,400*
Plus: Desired ending inventory	66,000	72,600	79,860	79,860†
Inventory needed	306,000	336,600	370,260	
Less: Beginning inventory	0	(66,000)	(72,600)	
Required purchases	\$306,000	\$270,600	\$297,660	89,298‡
<b>Schedule of Cash Payments for Inventory Purchases</b>				
70% of current purchases	\$214,200	\$189,420	\$208,362	
30% of prior month's purchases	0	91,800	81,180	
Total budgeted payments for inventory	\$214,200	\$281,220	\$289,542	

\*Cost of goods sold reported on first quarter pro forma income statement (sum of monthly amounts).

†Ending inventory balance reported on March 31 pro forma balance sheet.

‡Ending accounts payable balance reported on pro forma balance sheet ( $\$297,660 \times 0.3$ ).

## KEY TERMS

Budgeting 498	Master budget 502	Participative budgeting 502	Pro forma financial
Capital budget 502	Operations	Perpetual (continuous)	statements 502
Capital budgeting 500	budgeting 500	budgeting 500	strategic planning 500
Cash budget 508	Operating budgets 502		

## QUESTIONS

- Budgets are useful only for small companies that can estimate sales with accuracy. Do you agree with this statement?
- Why does preparing the master budget require a committee?
- What are the three levels of planning? Explain each briefly.
- What is the primary factor that distinguishes the three different levels of planning from each other?
- What is the advantage of using a perpetual budget instead of the traditional annual budget?
- What are the advantages of budgeting?
- How may budgets be used as a measure of performance?
- Ken Shilov, manager of the marketing department, tells you that "budgeting simply does not work." He says that he made budgets for his employees and when he reprimanded them for failing to accomplish budget goals, he got unfounded excuses. Suggest how Mr. Shilov could encourage employee cooperation.
- What is a master budget?
- What is the normal starting point in developing the master budget?
- How does the level of inventory affect the production budget? Why is it important to manage the level of inventory?
- What are the components of the cash budget? Describe each.
- The primary reason for preparing a cash budget is to determine the amount of cash to include on the budgeted balance sheet. Do you agree or disagree with this statement? Explain.
- What information does the pro forma income statement provide? How does its preparation depend on the operating budgets?
- How does the pro forma statement of cash flows differ from the cash budget?

## EXERCISES



## LO 1, 2



All applicable Exercises are available with McGraw-Hill  
**Connect Accounting.**

## Exercise 14-1 Budget responsibility

Candice Hargrove, the accountant, is a perfectionist. No one can do the job as well as she can. Indeed, she has found budget information provided by the various departments to be worthless.

She must change everything they give her. She has to admit that her estimates have not always been accurate, but she shudders to think of what would happen if she used the information supplied by the marketing and operating departments. No one seems to care about accuracy. Indeed, some of the marketing staff have even become insulting. When Ms. Hargrove confronted one of the salesmen with the fact that he was behind in meeting his budgeted sales forecast, he responded by saying, "They're your numbers. Why don't you go out and make the sales? It's a heck of a lot easier to sit there in your office and make up numbers than it is to get out and get the real work done." Ms. Hargrove reported the incident, but, of course, nothing was done about it.

### Required

Write a short report suggesting how the budgeting process could be improved.

### Exercise 14-2 *Preparing a sales budget*

LO 3, 7

Camtech, which expects to start operations on January 1, 2008, will sell digital cameras in shopping malls. Camtech has budgeted sales as indicated in the following table. The company expects a 10 percent increase in sales per month for February and March. The ratio of cash sales to sales on account will remain stable from January through March.

Sales	January	February	March
Cash sales	\$ 50,000	?	?
Sales on account	<u>80,000</u>	<u>?</u>	<u>?</u>
Total budgeted sales	<u>\$130,000</u>	<u>?</u>	<u>?</u>

### Required

- Complete the sales budget by filling in the missing amounts.
- Determine the amount of sales revenue Camtech will report on its second quarter pro forma income statement.

### Exercise 14-3 *Preparing a schedule of cash receipts*

LO 3, 7

The budget director of Camila's Florist has prepared the following sales budget. The company had \$200,000 in accounts receivable on July 1. Camila's Florist normally collects 100 percent of accounts receivable in the month following the month of sale.

Sales	July	August	September
<b>Sales Budget</b>			
Cash sales	\$ 60,000	\$ 72,000	\$ 86,400
Sales on account	<u>90,000</u>	<u>108,000</u>	<u>129,600</u>
Total budgeted sales	<u>\$150,000</u>	<u>\$180,000</u>	<u>\$216,000</u>
<b>Schedule of Cash Receipts</b>			
Current cash sales	?	?	?
Plus collections from accounts receivable	<u>?</u>	<u>?</u>	<u>?</u>
Total budgeted collections	<u>\$270,000</u>	<u>\$162,000</u>	<u>\$194,400</u>

### Required

- Complete the schedule of cash receipts by filling in the missing amounts.
- Determine the amount of accounts receivable the company will report on its third quarter pro forma balance sheet.

### Exercise 14-4 *Preparing sales budgets with different assumptions*

LO 3

Tumblin Corporation, which has three divisions, is preparing its sales budget. Each division expects a different growth rate because economic conditions vary in different regions of the



country. The growth expectations per quarter are 4 percent for East Division, 2 percent for West Division, and 6 percent for South Division.

Division	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
East Division	\$200,000	?	?	?
West Division	500,000	?	?	?
South Division	300,000	?	?	?

### Required

- Complete the sales budget by filling in the missing amounts. (Round figures to the nearest dollar.)
- Determine the amount of sales revenue that the company will report on its quarterly pro forma income statements.

### LO 3

#### Exercise 14-5 *Determining cash receipts from accounts receivable*

Cung's Dress Delivery operates a mail-order business that sells clothes designed for frequent travelers. It had sales of \$610,000 in December. Because Cung's Dress Delivery is in the mail-order business, all sales are made on account. The company expects a 30 percent drop in sales for January. The balance in the Accounts Receivable account on December 31 was \$96,400 and is budgeted to be \$73,600 as of January 31. Cung's Dress Delivery normally collects accounts receivable in the month following the month of sale.

### Required

- Determine the amount of cash Cung's Dress Delivery expects to collect from accounts receivable during January.
- Is it reasonable to assume that sales will decline in January for this type of business? Why or why not?

### LO 3



#### Exercise 14-6 *Using judgment in making a sales forecast*

Picken Inc. is a candy store located in a large shopping mall.

### Required

Write a brief memo describing the sales pattern that you would expect Picken to experience during the year. In which months will sales likely be high? In which months will sales likely be low? Explain why.

### LO 4

#### Exercise 14-7 *Preparing an inventory purchases budget*

Tucker Lighting Company sells lamps and other lighting fixtures. The purchasing department manager prepared the following inventory purchases budget. Tucker Lighting's policy is to maintain an ending inventory balance equal to 10 percent of the following month's cost of goods sold. April's budgeted cost of goods sold is \$85,000.

	January	February	March
Budgeted cost of goods sold	\$70,000	\$74,000	\$80,000
Plus: Desired ending inventory	7,400	?	?
Inventory needed	77,400	?	?
Less: Beginning inventory	18,000	?	?
Required purchases (on account)	\$59,400	?	?

### Required

- Complete the inventory purchases budget by filling in the missing amounts.
- Determine the amount of cost of goods sold the company will report on its first quarter pro forma income statement.

- c. Determine the amount of ending inventory the company will report on its pro forma balance sheet at the end of the first quarter.

**Exercise 14-8** *Preparing a schedule of cash payments for inventory purchases*

LO 4

Readers' Home buys books and magazines directly from publishers and distributes them to grocery stores. The wholesaler expects to purchase the following inventory.

	April	May	June
Required purchases (on account)	\$70,000	\$90,000	\$110,000

Readers' Home's accountant prepared the following schedule of cash payments for inventory purchases. Readers' Home's suppliers require that 90 percent of purchases on account be paid in the month of purchase; the remaining 10 percent are paid in the month following the month of purchase.

Schedule of Cash Payments for Inventory Purchases			
	April	May	June
Payment for current accounts payable	\$63,000	?	?
Payment for previous accounts payable	<u>4,000</u>	<u>?</u>	<u>?</u>
Total budgeted payments for inventory	<u>\$67,000</u>	<u>?</u>	<u>?</u>

**Required**

- Complete the schedule of cash payments for inventory purchases by filling in the missing amounts.
- Determine the amount of accounts payable the company will report on its pro forma balance sheet at the end of the second quarter.

**Exercise 14-9** *Determining the amount of expected inventory purchases and cash payments*

LO 4

Birchem Company, which sells electric razors, had \$260,000 of cost of goods sold during the month of June. The company projects a 5 percent increase in cost of goods sold during July. The inventory balance as of June 30 is \$28,000, and the desired ending inventory balance for July is \$29,000. Birchem pays cash to settle 80 percent of its purchases on account during the month of purchase and pays the remaining 20 percent in the month following the purchase. The accounts payable balance as of June 30 was \$35,000.

**Required**

- Determine the amount of purchases budgeted for July.
- Determine the amount of cash payments budgeted for inventory purchases in July.

**Exercise 14-10** *Preparing a schedule of cash payments for selling and administrative expenses*

LO 5

The budget director for Lenoir Window Cleaning Services prepared the following list of expected operating expenses. All expenses requiring cash payments are paid for in the month incurred except salary expense and insurance. Salary is paid in the month following the month in which it is incurred. The insurance premium for six months is paid on October 1. October is the first month of operations; accordingly, there are no beginning account balances.

	October	November	December
<b>Budgeted S&amp;A Expenses</b>			
Equipment lease expense	\$ 6,000	\$ 6,000	\$ 6,000
Salary expense	6,100	6,600	7,000
Cleaning supplies	2,800	2,730	3,066
Insurance expense	1,200	1,200	1,200
Depreciation on computer	1,800	1,800	1,800
Rent	1,700	1,700	1,700
Miscellaneous expenses	700	700	700
Total S&A expenses	<u>\$20,300</u>	<u>\$20,730</u>	<u>\$21,466</u>
<b>Schedule of Cash Payments for S&amp;A Expenses</b>			
Equipment lease expense	?	?	?
Prior month's salary expense, 100%	?	?	?
Cleaning supplies	?	?	?
Insurance premium	?	?	?
Depreciation on computer	?	?	?
Rent	?	?	?
Miscellaneous expenses	?	?	?
Total disbursements for S&A expenses	<u>\$18,400</u>	<u>\$17,230</u>	<u>\$18,066</u>

**Required**

- Complete the schedule of cash payments for S&A expenses by filling in the missing amounts.
- Determine the amount of salaries payable the company will report on its pro forma balance sheet at the end of the fourth quarter.
- Determine the amount of prepaid insurance the company will report on its pro forma balance sheet at the end of the fourth quarter.

**LO 4****Exercise 14-11** *Preparing inventory purchases budgets with different assumptions*

Executive officers of Shavez Company are wrestling with their budget for the next year. The following are two different sales estimates provided by two different sources.

Source of Estimate	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Sales manager	\$380,000	\$310,000	\$280,000	\$480,000
Marketing consultant	520,000	460,000	410,000	650,000

Shavez's past experience indicates that cost of goods sold is about 60 percent of sales revenue. The company tries to maintain 10 percent of the next quarter's expected cost of goods sold as the current quarter's ending inventory. This year's ending inventory is \$29,000. Next year's ending inventory is budgeted to be \$30,000.

**Required**

- Prepare an inventory purchases budget using the sales manager's estimate.
- Prepare an inventory purchases budget using the marketing consultant's estimate.

**LO 5, 7****Exercise 14-12** *Determining the amount of cash payments and pro forma statement data for selling and administrative expenses*

January budgeted selling and administrative expenses for the retail shoe store that May Rozell plans to open on January 1, 2009, are as follows: sales commissions, \$18,000; rent, \$15,000; utilities, \$5,000; depreciation, \$4,000; and miscellaneous, \$2,000. Utilities are paid in the month following their incursion. Other expenses are expected to be paid in cash in the month in which they are incurred.

**Required**

- Determine the amount of budgeted cash payments for January selling and administrative expenses.

- Determine the amount of utilities payable the store will report on the January 31st pro forma balance sheet.
- Determine the amount of depreciation expense the store will report on the income statement for the year 2009, assuming that monthly depreciation remains the same for the entire year.

### Exercise 14-13 *Preparing a cash budget*

LO 6, 7

The accountant for Lori's Dress Shop prepared the following cash budget. Lori's desires to maintain a cash cushion of \$14,000 at the end of each month. Funds are assumed to be borrowed and repaid on the last day of each month. Interest is charged at the rate of 2 percent per month.

Cash Budget	July	August	September
Section 1: Cash receipts			
Beginning cash balance	\$ 43,000	\$ ?	\$ ?
Add cash receipts	183,000	196,000	240,200
Total cash available (a)	226,000	?	?
Section 2: Cash payments			
For inventory purchases	163,646	139,900	172,474
For S&A expenses	54,000	62,060	61,536
For interest expense	0	?	?
Total budgeted disbursements (b)	217,646	?	?
Section 3: Financing activities			
Surplus (shortage)	8,354	?	?
Borrowing (repayments) (c)	5,646	?	?
Ending cash balance (a - b + c)	\$ 14,000	\$ 14,000	\$ 14,000

#### Required

- Complete the cash budget by filling in the missing amounts. Round all computations to the nearest whole dollar.
- Determine the amount of net cash flows from operating activities Lori's will report on the third quarter pro forma statement of cash flows.
- Determine the amount of net cash flows from financing activities Lori's will report on the third quarter pro forma statement of cash flows.

### Exercise 14-14 *Determining amount to borrow and pro forma financial statement balances*

LO 6, 7

Ellen Crawley owns a small restaurant in New York City. Ms. Crawley provided her accountant with the following summary information regarding expectations for the month of June. The balance in accounts receivable as of May 31 is \$55,000. Budgeted cash and credit sales for June are \$105,000 and \$525,000, respectively. Credit sales are made through Visa and MasterCard and are collected rapidly. Ninety percent of credit sales is collected in the month of sale, and the remainder is collected in the following month. Ms. Crawley's suppliers do not extend credit. Consequently, she pays suppliers on the last day of the month. Cash payments for June are expected to be \$640,000. Ms. Crawley has a line of credit that enables the restaurant to borrow funds on demand; however, they must be borrowed on the last day of the month. Interest is paid in cash also on the last day of the month. Ms. Crawley desires to maintain a \$30,000 cash balance before the interest payment. Her annual interest rate is 9 percent. Disregard any credit card fees.

#### Required

- Compute the amount of funds Ms. Crawley needs to borrow for June, assuming that the beginning cash balance is zero.
- Determine the amount of interest expense the restaurant will report on the June pro forma income statement.
- What amount will the restaurant report as interest expense on the July pro forma income statement?

## LO 7

**Exercise 14-15** *Preparing pro forma income statements with different assumptions*

Jim Denty, the controller of Grime Corporation, is trying to prepare a sales budget for the coming year. The income statements for the last four quarters follow.

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total
Sales revenue	\$170,000	\$200,000	\$210,000	\$260,000	\$840,000
Cost of goods sold	102,000	120,000	126,000	156,000	504,000
Gross profit	68,000	80,000	84,000	104,000	336,000
Selling & admin. expense	17,000	20,000	21,000	26,000	84,000
Net income	<u>\$ 51,000</u>	<u>\$ 60,000</u>	<u>\$ 63,000</u>	<u>\$ 78,000</u>	<u>\$252,000</u>

Historically, cost of goods sold is about 60 percent of sales revenue. Selling and administrative expenses are about 10 percent of sales revenue.

Gene Moreno, the chief executive officer, told Mr. Denty that he expected sales next year to be 10 percent above last year's level. However, Sarah Toole, the vice president of sales, told Mr. Denty that she believed sales growth would be only 5 percent.

**Required**

- Prepare a pro forma income statement including quarterly budgets for the coming year using Mr. Moreno's estimate.
- Prepare a pro forma income statement including quarterly budgets for the coming year using Ms. Toole's estimate.
- Explain why two executive officers in the same company could have different estimates of future growth.

**PROBLEMS**

## LO 3

**CHECK FIGURES**

- c. Feb.: \$116,400  
March: \$140,040

## LO 4, 7

**CHECK FIGURES**

- a. May: \$81,000  
c. June: \$84,800

**All applicable Problems are available with McGraw-Hill Connect Accounting.**

**Problem 14-16** *Preparing a sales budget and schedule of cash receipts*

Dorough Pointers Inc. expects to begin operations on January 1, 2009; it will operate as a specialty sales company that sells laser pointers over the Internet. Dorough expects sales in January 2009 to total \$120,000 and to increase 10 percent per month in February and March. All sales are on account. Dorough expects to collect 70 percent of accounts receivable in the month of sale, 20 percent in the month following the sale, and 10 percent in the second month following the sale.

**Required**

- Prepare a sales budget for the first quarter of 2009.
- Determine the amount of sales revenue Dorough will report on the first 2009 quarterly pro forma income statement.
- Prepare a cash receipts schedule for the first quarter of 2009.
- Determine the amount of accounts receivable as of March 31, 2009.

**Problem 14-17** *Preparing an inventory purchases budget and schedule of cash payments*

Caine Inc. sells fireworks. The company's marketing director developed the following cost of goods sold budget for April, May, June, and July.

	April	May	June	July
Budgeted cost of goods sold	\$70,000	\$80,000	\$90,000	\$76,000

Caine had a beginning inventory balance of \$3,500 on April 1 and a beginning balance in accounts payable of \$15,100. The company desires to maintain an ending inventory balance

equal to 10 percent of the next period's cost of goods sold. Caine makes all purchases on account. The company pays 50 percent of accounts payable in the month of purchase and the remaining 50 percent in the month following purchase.

### Required

- Prepare an inventory purchases budget for April, May, and June.
- Determine the amount of ending inventory Caine will report on the end-of-quarter pro forma balance sheet.
- Prepare a schedule of cash payments for inventory for April, May, and June.
- Determine the balance in accounts payable Caine will report on the end-of-quarter pro forma balance sheet.

### Problem 14-18 *Preparing pro forma income statements with different assumptions*

LO 7

Top executive officers of Leach Company, a merchandising firm, are preparing the next year's budget. The controller has provided everyone with the current year's projected income statement.

### CHECK FIGURE

a. 13.50%

	Current Year
Sales revenue	\$2,600,000
Cost of goods sold	<u>1,690,000</u>
Gross profit	910,000
Selling & admin. expenses	<u>325,000</u>
Net income	<u>\$ 585,000</u>

Cost of goods sold is usually 65 percent of sales revenue, and selling and administrative expenses are usually 10 percent of sales plus a fixed cost of \$65,000. The president has announced that the company's goal is to increase net income by 15 percent.

### Required

The following items are independent of each other.

- What percentage increase in sales would enable the company to reach its goal? Support your answer with a pro forma income statement.
- The market may become stagnant next year, and the company does not expect an increase in sales revenue. The production manager believes that an improved production procedure can cut cost of goods sold by 2 percent. What else can the company do to reach its goal? Prepare a pro forma income statement illustrating your proposal.
- The company decides to escalate its advertising campaign to boost consumer recognition, which will increase selling and administrative expenses to \$405,000. With the increased advertising, the company expects sales revenue to increase by 15 percent. Assume that cost of goods sold remains a constant proportion of sales. Can the company reach its goal?

### Problem 14-19 *Preparing a schedule of cash payments for selling and administrative expenses*

LO 5, 6

### CHECK FIGURE

a. Sept.: \$24,510

Wynn is a retail company specializing in men's hats. Its budget director prepared the list of expected operating expenses that follows. All items are paid when the expenses are incurred except sales commissions and utilities, which are paid in the month after they are incurred. July is the first month of operations, so there are no beginning account balances.

	July	August	September
Salary expense	\$14,000	\$14,000	\$14,000
Sales commissions (4 percent of sales)	1,700	1,700	1,700
Supplies expense	360	390	420
Utilities	1,100	1,100	1,100
Depreciation on store equipment	2,800	2,800	2,800
Rent	6,600	6,600	6,600
Miscellaneous	690	690	690
Total S&A expenses before interest	<u>\$27,250</u>	<u>\$27,280</u>	<u>\$27,310</u>



**Required**

- Prepare a schedule of cash payments for selling and administrative expenses.
- Determine the amount of utilities payable as of September 30.
- Determine the amount of sales commissions payable as of September 30.

**LO 6****CHECK FIGURE**

Feb. cash surplus before  
financing activities: \$9,200

**Problem 14-20 Preparing a cash budget**

McBride Medical Clinic has budgeted the following cash flows.

	January	February	March
Cash receipts	\$101,000	\$108,000	\$125,000
Cash payments			
For inventory purchases	92,000	72,000	83,000
For S&A expenses	30,000	32,000	26,000

McBride Medical had a cash balance of \$7,000 on January 1. The company desires to maintain a cash cushion of \$5,000. Funds are assumed to be borrowed, in increments of \$1,000, and repaid on the last day of each month; the interest rate is 1 percent per month. McBride pays its vendor on the last day of the month also. The company had a \$30,000 beginning balance in its line of credit liability account.

**Required**

Prepare a cash budget. (Round all computations to the nearest whole dollar.)

**LO 3, 4, 5****CHECK FIGURES**

- c. 1st QTR purchases for  
peaches: \$19,230  
2nd QTR purchases for  
oranges: \$321,420

**Problem 14-21 Preparing budgets with multiple products**

Fresh Fruits Corporation wholesales peaches and oranges. Nora Boyd is working with the company's accountant to prepare next year's budget. Ms. Boyd estimates that sales will increase 5 percent annually for peaches and 10 percent for oranges. The current year's sales revenue data follow.

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Total
Peaches	\$220,000	\$230,000	\$280,000	\$240,000	\$ 970,000
Oranges	410,000	480,000	550,000	370,000	1,810,000
Total	<u>\$630,000</u>	<u>\$710,000</u>	<u>\$830,000</u>	<u>\$610,000</u>	<u>\$2,780,000</u>

Based on the company's past experience, cost of goods sold is usually 60 percent of sales revenue. Company policy is to keep 10 percent of the next period's estimated cost of goods sold as the current period's ending inventory. (*Hint:* Use the cost of goods sold for the first quarter to determine the beginning inventory for the first quarter.)

**Required**

- Prepare the company's sales budget for the next year for each quarter by individual product.
- If the selling and administrative expenses are estimated to be \$600,000, prepare the company's budgeted annual income statement.
- Ms. Boyd estimates next year's ending inventory will be \$31,000 for peaches and \$52,000 for oranges. Prepare the company's inventory purchases budgets for the next year showing quarterly figures by product.

**LO 3, 4, 5****Problem 14-22 Preparing a master budget for a retail company with no beginning account balances**

Resha Company is a retail company that specializes in selling outdoor camping equipment. The company is considering opening a new store on October 1, 2009. The company president

formed a planning committee to prepare a master budget for the first three months of operation. He assigned you, the budget coordinator, the following tasks.

### Required

- October sales are estimated to be \$120,000 of which 40 percent will be cash and 60 percent will be credit. The company expects sales to increase at the rate of 25 percent per month. Prepare a sales budget.
- The company expects to collect 100 percent of the accounts receivable generated by credit sales in the month following the sale. Prepare a schedule of cash receipts.
- The cost of goods sold is 60 percent of sales. The company desires to maintain a minimum ending inventory equal to 10 percent of the next month's cost of goods sold. Ending inventory at December 31 is expected to be \$12,000. Assume that all purchases are made on account. Prepare an inventory purchases budget.
- The company pays 70 percent of accounts payable in the month of purchase and the remaining 30 percent in the following month. Prepare a cash payments budget for inventory purchases.
- Budgeted selling and administrative expenses per month follow.

Salary expense (fixed)	\$18,000
Sales commissions	5 percent of Sales
Supplies expense	2 percent of Sales
Utilities (fixed)	\$1,400
Depreciation on store equipment (fixed)*	\$4,000
Rent (fixed)	\$4,800
Miscellaneous (fixed)	\$1,200

\*The capital expenditures budget indicates that Resha will spend \$164,000 on October 1 for store fixtures, which are expected to have a \$20,000 salvage value and a three-year (36-month) useful life.

Use this information to prepare a selling and administrative expenses budget.

- Utilities and sales commissions are paid the month after they are incurred; all other expenses are paid in the month in which they are incurred. Prepare a cash payments budget for selling and administrative expenses.
- Resha borrows funds, in increments of \$1,000, and repays them on the last day of the month. The company also pays its vendors on the last day of the month. It pays interest of 1 percent per month in cash on the last day of the month. To be prudent, the company desires to maintain a \$12,000 cash cushion. Prepare a cash budget.
- Prepare a pro forma income statement for the quarter.
- Prepare a pro forma balance sheet at the end of the quarter.
- Prepare a pro forma statement of cash flows for the quarter.

### Problem 14-23 Behavioral impact of budgeting

Zigler Corporation has three divisions, each operating as a responsibility center. To provide an incentive for divisional executive officers, the company gives divisional management a bonus equal to 20 percent of the excess of actual net income over budgeted net income. The following is Everett Division's current year's performance.

	Current Year
Sales revenue	\$3,200,000
Cost of goods sold	<u>2,000,000</u>
Gross profit	1,200,000
Selling & admin. expenses	<u>640,000</u>
Net income	<u>\$ 560,000</u>

### CHECK FIGURES

- Dec. purchases: \$113,250
- Nov. surplus before financing activities: \$19,505

### LO 2

### CHECK FIGURES

- NI: \$588,000
- NI: \$644,000

The president has just received next year's budget proposal from the vice president in charge of Everett Division. The proposal budgets a 5 percent increase in sales revenue with an extensive explanation about stiff market competition. The president is puzzled. Everett has enjoyed revenue growth of around 10 percent for each of the past five years. The president had consistently approved the division's budget proposals based on 5 percent growth in the past. This time, the president wants to show that he is not a fool. "I will impose a 15 percent revenue increase to teach them a lesson!" the president says to himself smugly.

Assume that cost of goods sold and selling and administrative expenses remain stable in proportion to sales.

#### Required

- Prepare the budgeted income statement based on Everett Division's proposal of a 5 percent increase.
- If growth is actually 10 percent as usual, how much bonus would Everett Division's executive officers receive if the president had approved the division's proposal?
- Prepare the budgeted income statement based on the 15 percent increase the president imposed.
- If the actual results turn out to be a 10 percent increase as usual, how much bonus would Everett Division's executive officers receive since the president imposed a 15 percent increase?
- Propose a better budgeting procedure for Zigler.

## ANALYZE, THINK, COMMUNICATE

### ATC 14-1 Business Applications Case *Preparing and using pro forma statements*



Rachael Moulton and Bobby Lagg recently graduated from the same university. After graduation they decided not to seek jobs in established organizations but to start their own small business. They hoped this would provide more flexibility in their personal lives for a few years. Since both of them enjoyed cooking, they decided on a business selling vegetarian wraps and fruit juices from a street cart near their alma mater.

They bought a small enclosed cart for \$5,000 that was set up for selling food. This cost, along with the cost for supplies to get started, a business license, and street vendor license, brought their initial expenditures to \$6,500. They used \$1,000 of their personal savings, and they borrowed \$5,500 from Rachael's parents. They agreed to pay interest on the outstanding loan balance each month based on an annual rate of 5 percent. They will repay the principal over the next two years as cash becomes available.

After two months in business, September and October, they had average monthly revenues of \$8,200 and out-of-pocket costs of \$5,100 for ingredients, paper supplies, and so on, but not interest. Bobby thinks they should repay some of the money they borrowed, but Rachael thinks they should prepare a set of forecasted financial statements for their first year in business before deciding whether or not to repay any principal on the loan. She remembers a bit about budgeting from a survey of accounting course she took and thinks the results from their first two months in business can be extended over the next 10 months to prepare the budget they need. They estimate the cart will last at least three years, after which they expect to sell it for \$1,000 and move on to something else in their lives. Rachael agrees to prepare a forecasted (pro forma) income statement, balance sheet, and statement of cash flows for their first year in business, which includes the two months already passed.

#### Required

- Prepare the annual pro forma financial statements that you would expect Rachael to prepare based on her comments about her expectations for the business. Assume no principal will be repaid on the loan.
- Review the statements you prepared for the first requirement and prepare a list of reasons why Bobby and Rachael's business results probably will not agree with their budgeted statements.

## ATC 14-2 Group Assignment Master budget and pro forma statements

The following trial balance was drawn from the records of Havel Company as of October 1, 2010.



Cash	\$ 16,000	
Accounts receivable	60,000	
Inventory	40,000	
Store equipment	200,000	
Accumulated depreciation		\$ 76,800
Accounts payable		72,000
Line of credit loan		100,000
Common stock		50,000
Retained earnings		17,200
Totals	<u>\$316,000</u>	<u>\$316,000</u>

### Required

- Divide the class into groups, each with four or five students. Organize the groups into three sections. Assign Task 1 to the first section, Task 2 to the second section, and Task 3 to the third section.

### Group Tasks

- Based on the following information, prepare a sales budget and a schedule of cash receipts for October, November, and December. Sales for October are expected to be \$180,000, consisting of \$40,000 in cash and \$140,000 on credit. The company expects sales to increase at the rate of 10 percent per month. All of accounts receivable is collected in the month following the sale.
- Based on the following information, prepare a purchases budget and a schedule of cash payments for inventory purchases for October, November, and December. Cost of goods sold for October is expected to be \$72,000. Cost of goods sold is expected to increase by 10 percent per month in November and December. Havel expects January cost of goods sold to be \$89,000. The company desires to maintain a minimum ending inventory equal to 20 percent of the next month's cost of goods sold. Seventy-five percent of accounts payable is paid in the month that the purchase occurs; the remaining 25 percent is paid in the following month.
- Based on the following selling and administrative expenses budgeted for October, prepare a selling and administrative expenses budget for October, November, and December.

Cash payments for sales commissions and utilities are made in the month following the one in which the expense is incurred. Supplies and other operating expenses are paid in cash in the month in which they are incurred. As of October 1, no amounts were payable for either commissions or utilities from the previous month.

Sales commissions (10% increase per month)	\$ 7,200
Supplies expense (10% increase per month)	1,800
Utilities (fixed)	2,200
Depreciation on store equipment (fixed)	1,600
Salary expense (fixed)	34,000
Rent (fixed)	6,000
Miscellaneous (fixed)	1,000

- Select a representative from each section. Have the representatives supply the missing information in the following pro forma income statement and balance sheet for the fourth quarter of 2010. The statements are prepared as of December 31, 2010.

Income Statement		
Sales Revenue		\$ ?
Cost of Goods Sold		<u>?</u>
Gross Margin		357,480
Operating Expenses		<u>?</u>
Operating Income		193,290
Interest Expense		<u>(2,530)</u>
Net Income		<u>\$190,760</u>

Balance Sheet		
Assets		
Cash		\$ 9,082
Accounts Receivable		?
Inventory		?
Store Equipment	\$200,000	
Accumulated Depreciation Store Equipment	<u>?</u>	
Book Value of Equipment		118,400
Total Assets		<u>\$314,682</u>
Liabilities		
Accounts Payable		?
Utilities Payable		?
Sales Commissions Payable		?
Line of Credit		23,936
Equity		
Common Stock		50,000
Retained Earnings		<u>?</u>
Total Liabilities and Equity		<u>\$314,682</u>

- c. Indicate whether Havel will need to borrow money during October.

### ATC 14-3 Research Assignment *Analyzing budget data for the U.S. government*



The annual budget of the United States is very complex, but this case requires that you analyze only a small portion of the historical tables that are presented as a part of each year's budget. The fiscal year of the federal government ends on September 30. Obtain the budget documents needed at [www.gpoaccess.gov/usbudget](http://www.gpoaccess.gov/usbudget) and follow these steps.

- Under "Previous Budget" select FY 2009, and then click "Go."
- Click on "Browse the FY09 budget."
- Scroll down to the section "Supplemental Materials" and select "Historical Tables."
- To complete the requirements below you will need to review Table 1.1, Table 1.2, and Table 4.2.

#### Required

- a. Table 1.2 shows the budget as a percentage of gross domestic product (GDP). Using the data in the third column, "Surplus of Deficit," determine how many years since 1960 the budget has shown a surplus and how many times it has shown a deficit. Ignore the "TQ" data between 1976 and 1977. This was a year that the government changed the ending date of its fiscal year.
- b. Based on the data in Table 1.2, identify the three years with the highest deficits as a percentage of GDP. What were the deficit percentages for these years? Which year had the largest surplus and by what percentage?
- c. Using your findings for Requirement *b* regarding the year with the highest deficit as a percentage of GDP, go to Table 1.1 and calculate the deficit for that year as a *percentage of revenues*.
- d. The President of the United States was a Democrat from 1993 through 2000—Bill Clinton. The president from 2001 through 2009 was George Bush, a Republican. These men had significant input into the federal budget for the fiscal years 1994—2001 and 2002—2009,

respectively. Table 4.2 shows what percentage of the total federal budget was directed toward each department within the government. Compare the data on Table 4.2 for 1994–2001, the Clinton years, to the data for 2002–2009, the Bush years. Identify the five departments that appear to have changed the most from the Clinton years to the Bush years. Ignore “Allowances” and “Undistributed offsetting receipts.” Note, if you wish to approach this assignment more accurately, you can compute the average percentage for each department for the eight years each president served, and compare the two averages. The gpoaccess website includes a spreadsheet version of the historical data tables, allowing for a reasonably easy Excel analysis.

#### ATC 14-4 Writing Assignment *Continuous budgeting*

**Toll Brothers, Inc.**, is a large builder of luxury homes across the United States. From 2000 through 2006 it experienced continuous growth in revenues that averaged over 24 percent annually. Not only did it experience growth from year to year, but its revenue grew in each quarter of 2005 and 2006. Then things started to slow down. In 2007 its revenue dropped by 24 percent compared to 2006. Additionally, its revenue declined in two of the four quarters of 2007. Management of the company commented as follows in the company’s 2007 annual report.



*In the late summer and fall of 2005, there was a modest deceleration in the growth rate of demand. Additionally, in the aftermath of Hurricane Katrina, gas prices rose to \$3.00/gallon and consumer confidence dropped precipitously. When the music stopped, many territories were overwhelmed with excess home inventories. . . . We believed that a national geographic presence would provide some diversification of risk to insulate us from the type of local market crashes or regional declines that had characterized previous industry downswings. . . . However, the national scope of this downturn and the rapidity with which it swept across the nation suggest that there was greater correlation among regional housing markets than we had previously believed.*

\* \* \*

*In January 2006, it appeared that consumer confidence was starting to firm until a wave of subprime fears in late February 2007 took the momentum away. The financial markets began to develop jitters as word spread that subprime loan foreclosures might soon bring hundreds of thousands of additional homes onto the market. . . .*

#### Required

Assume you are Toll Brothers’ budget director. Write a memo to the management team explaining how the practice of continuous budgeting could overcome the shortcomings of an annual budget process in an uncertain market situation.

#### ATC 14-5 Ethical Dilemma *Bad budget system or unethical behavior?*

Clarence Cleaver is the budget director for the Harris County School District. Mr. Cleaver recently sent an urgent e-mail message to Sally Simmons, principal of West Harris County High. The message severely reprimanded Ms. Simmons for failing to spend the funds allocated to her to purchase computer equipment. Ms. Simmons responded that her school already has a sufficient supply of computers; the computer lab is never filled to capacity and usually is less than half filled. Ms. Simmons suggested that she would rather use the funds for teacher training. She argued that the reason the existing computers are not fully utilized is that the teachers lack sufficient computer literacy necessary to make assignments for their students.

Mr. Cleaver responded that it is not Ms. Simmons’s job to decide how the money is to be spent; that is the school board’s job. It is the principal’s job to spend the money as the board directed. He informed Ms. Simmons that if the money is not spent by the fiscal closing date, the school board would likely reduce next year’s budget allotment. To avoid a potential budget cut, Mr. Cleaver reallocated Ms. Simmons’s computer funds to Jules Carrington, principal of East Harris County High. Mr. Carrington knows how to buy computers regardless of whether they are needed. Mr. Cleaver’s final words were, “Don’t blame me if parents of West High students complain that East High has more equipment. If anybody comes to me, I’m telling them that you turned down the money.”



#### Required

- Do Mr. Cleaver’s actions violate the standards of ethical conduct shown in Exhibit 10.14 of Chapter 10?
- Explain how participative budgeting could improve the allocation of resources for the Harris County School District.



# CHAPTER 15

## Performance Evaluation

### LEARNING OBJECTIVES

**After you have mastered the material in this chapter you will be able to:**

- 1 Describe the concept of decentralization.
- 2 Distinguish between flexible and static budgets.
- 3 Classify variances as being favorable or unfavorable.
- 4 Compute and interpret sales and variable cost volume variances.
- 5 Compute and interpret flexible budget variances.
- 6 Evaluate investment opportunities using the return on investment technique.
- 7 Evaluate investment opportunities using the residual income technique.

### CHAPTER OPENING

Walter Keller, a production manager, complained to the accountant, Kelly Oberson, that the budget system failed to control his department's labor cost. Ms. Oberson responded, "People, not budgets, control costs." Budgeting is one of many tools management uses to control business operations. Managers are responsible for using control tools effectively. **Responsibility accounting** focuses on evaluating the performance of individual managers. For example, expenses controlled by a production department manager are presented in one report and expenses controlled by a marketing department manager are presented in a different report. This chapter discusses the development and use of a responsibility accounting system.

## The *Curious* Accountant

Warren Buffett, often identified as one of the richest men in the world, is the CEO of **Berkshire Hathaway, Inc.** (Berkshire). His company is actually a conglomerate that has major stockholdings in several large companies, including **American Express**, **Anheuser-Bush**, and **The Washington Post**. Additionally, Berkshire wholly owns 73 other businesses ranging in size and diversity from the insurance giant **GEICO**, to **Fruit of the Loom**, to **See's Candies**. In all, Berkshire has 217,000 employees. How can one person, who is turning 79 in 2009, manage such a large and diverse business? (Answer on page 533.)



**LO 1**

Describe the concept of decentralization.

## DECENTRALIZATION CONCEPT

Effective responsibility accounting requires clear lines of authority and responsibility. Divisions of authority and responsibility normally occur as a natural consequence of managing business operations. In a small business, one person can control everything: marketing, production, management, accounting. In contrast, large companies are so complex that authority and control must be divided among many people.

Consider the hiring of employees. A small business usually operates in a limited geographic area. The owner works directly with employees. She knows the job requirements, local wage rates, and the available labor pool. She is in a position to make informed hiring decisions. In contrast, a major corporation may employ thousands of employees throughout the world. The employees may speak different languages and have different social customs. Their jobs may require many different skills and pay a vast array of wage rates. The president of the corporation cannot make informed hiring decisions for the entire company. Instead, he delegates *authority* to a professional personnel manager and holds that manager *responsible* for hiring practices.

Decision-making authority is similarly delegated to individuals responsible for managing specific organization functions such as production, marketing, and accounting. Delegating authority and responsibility is referred to as **decentralization**.

### Responsibility Centers

Decentralized businesses are usually subdivided into distinct reporting units called responsibility centers. A **responsibility center** is an organizational unit that controls identifiable revenue or expense items. The unit may be a division, a department, a subdepartment, or even a single machine. For example, a transportation company may identify a semitrailer truck as a responsibility center. The company holds the truck driver responsible for the revenues and expenses associated with operating the truck. Responsibility centers may be divided into three categories: cost, profit, and investment.

A **cost center** is an organizational unit that incurs expenses but does not generate revenue. Cost centers normally fall on the lower levels of an organization chart. The manager of a cost center is judged on his ability to keep costs within budget parameters.

A **profit center** differs from a cost center in that it not only incurs costs but also generates revenue. The manager of a profit center is judged on his ability to produce revenue in excess of expenses.

**Investment center** managers are responsible for revenues, expenses, and the investment of capital. Investment centers normally appear at the upper levels of an organization chart. Managers of investment centers are accountable for assets and liabilities as well as earnings.

### Controllability Concept

The **controllability concept** is crucial to an effective responsibility accounting system. Managers should only be evaluated based on revenues or costs they control. Holding individuals responsible for things they cannot control is demotivating. Isolating control, however, may be difficult, as illustrated in the following case.

Dorothy Pasewark, a buyer for a large department store chain, was criticized when stores could not resell the merchandise she bought at the expected price. Ms. Pasewark countered that the sales staff caused the sluggish sales by not displaying the merchandise properly. The sales staff charged that the merchandise had too little sales potential to justify setting up more enticing displays. The division of influence between the buyer and the sales staff clouds the assignment of responsibility.

Since the exercise of control may be clouded, managers are usually held responsible for items over which they have *predominant* rather than *absolute* control. At times responsibility accounting may be imperfect. Management must strive to ensure that praise or criticism is administered as fairly as possible.

## Answers to The *Curious* Accountant

Mr. Buffett oversees the diverse operations of **Berkshire** by using a very decentralized management structure.

According to its 2006 annual report,

Berkshire had 217,000 employees and earned \$98 billion in revenue. Mr. Buffett managed this empire from his headquarters in Omaha, Nebraska, that consists of 19 employees and occupies only 9,708 square feet, although the company's vice-chairman, Charles Munger, who works out of Los Angeles, occupies another 655 square feet. The total payroll, including benefits, of both locations was only \$3,531,978 in 2006, and that amount is *not* in thousands. Mr. Buffett's own description about his and Mr. Munger's management style is, "... we delegate almost to the point of abdication." An exaggeration perhaps, but clearly a decentralized style.

Source: Company's annual report.

### PREPARING FLEXIBLE BUDGETS

A **flexible budget** is an extension of the *master budget* discussed previously. The master budget is based solely on the planned volume of activity. The master budget is frequently called a **static budget** because it remains unchanged even if the actual volume of activity differs from the planned volume. Flexible budgets differ from static budgets in that they show expected revenues and costs at a *variety* of volume levels.

To illustrate the differences between static and flexible budgets, consider Melrose Manufacturing Company, a producer of small, high-quality trophies used in award ceremonies. Melrose plans to make and sell 18,000 trophies during 2009. Management's best estimates of the expected sales price and per unit costs for the trophies are called *standard* prices and costs. The standard price and costs for the 18,000 trophies follow.

#### LO 2

Distinguish between flexible and static budgets.

Per unit sales price and variable costs	
Expected sales price	\$80.00
Standard materials cost	12.00
Standard labor cost	16.80
Standard overhead cost	5.60
Standard general, selling, and administrative cost	15.00
Fixed costs	
Manufacturing overhead cost	\$201,600
General, selling, and administrative cost	90,000



The static budget is highlighted with orange shading in Exhibit 15.1. Sales revenue is determined by multiplying the expected sales price per unit times the planned volume of activity ( $\$80 \times 18,000 = \$1,440,000$ ). Similarly, the variable costs are calculated by multiplying the standard cost per unit times the planned volume of activity. For example, the manufacturing materials cost is \$216,000 ( $\$12 \times 18,000$ ). The same computational procedures apply to the other variable costs. The variable costs are subtracted from the sales revenue to produce a contribution margin of \$550,800. The fixed costs are subtracted from the contribution margin to produce a budgeted net income of \$259,200.

**EXHIBIT 15.1****Static and Flexible Budgets in Excel Spreadsheet**

	Static Budget	Flexible Budgets				
Number of Units	18,000	16,000	17,000	18,000	19,000	20,000
Per Unit Standards						
Sales Revenue	\$80.00 \$1,440,000	\$1,280,000	\$1,360,000	\$1,440,000	\$1,520,000	\$1,600,000
Variable Manuf. Costs						
Materials	\$12.00 216,000	192,000	204,000	216,000	228,000	240,000
Labor	16.80 302,400	268,800	285,600	302,400	319,200	336,000
Overhead	5.60 100,800	89,600	95,200	100,800	106,400	112,000
Variable G,S,&A	15.00 270,000	240,000	255,000	270,000	285,000	300,000
Contribution Margin	550,800	489,600	520,200	550,800	581,400	612,000
Fixed Costs						
Manufacturing Overhead	201,600	201,600	201,600	201,600	201,600	201,600
G,S,&A	90,000	90,000	90,000	90,000	90,000	90,000
Net Income	\$ 259,200	\$ 198,000	\$ 228,600	\$ 259,200	\$ 289,800	\$ 320,400

What happens if the number of units sold is different from the planned volume? In other words, *what* happens to net income *if* Melrose sells more or less than 18,000 units? Managers frequently use flexible budgets to examine such *what if* scenarios. Flexible budget income statements for Melrose at sales volumes of 16,000, 17,000, 18,000, 19,000, and 20,000 are highlighted with blue shading in Exhibit 15.1.

The flexible budgets are prepared with the same per-unit standard amounts and fixed cost data used to produce the static budget. The only difference is the expected number of units sold. For example, the sales revenue at 16,000 units is \$1,280,000 ( $\$80 \times 16,000$ ), at 17,000 units it is \$1,360,000 ( $\$80 \times 17,000$ ), and so on. The variable materials cost at 16,000 units is \$192,000 ( $\$12 \times 16,000$ ), at 17,000 units it is \$204,000 ( $\$12 \times 17,000$ ), and so on. The other variable costs are computed in the same manner. Note that the fixed costs are the same at all levels of activity because, by definition, they are not affected by changes in volume.

Other flexible budgets are possible. Indeed, a flexible budget can be prepared for any number of units sold. You have probably noticed that Exhibit 15.1 was prepared using an Excel spreadsheet. Excel offers the opportunity to prepare an unlimited number of flexible budgets with minimal effort. For example, formulas can be created with cell references so that new budgets can be created simply by changing the number of units entered in a single cell.

Managers use flexible budgets for both planning and performance evaluation. For example, managers may assess whether the company's cash position is adequate by assuming different levels of volume. They may judge if the number of employees, amounts of materials, and equipment and storage facilities are appropriate for a variety of different potential levels of volume. In addition to helping plan, flexible budgets are critical to implementing an effective performance evaluation system.

## CHECK Yourself 15.1

The static (master) budget of Parcel, Inc., called for a production and sales volume of 25,000 units. At that volume, total budgeted fixed costs were \$150,000 and total budgeted variable costs were \$200,000. Prepare a flexible budget for an expected volume of 26,000 units.

**Answer** Budgeted fixed costs would remain unchanged at \$150,000 because changes in the volume of activity do not affect budgeted fixed costs. Budgeted variable costs would increase to \$208,000, computed as follows: Calculate the budgeted variable cost per unit ( $\$200,000 \div 25,000 \text{ units} = \$8$ ) and then multiply that variable cost per unit by the expected volume ( $\$8 \times 26,000 \text{ units} = \$208,000$ ).

## DETERMINING VARIANCES FOR PERFORMANCE EVALUATION

One means of evaluating managerial performance is to compare *standard* amounts with *actual* results. The differences between the standard and actual amounts are called **variances**; variances can be either **favorable** or **unfavorable**. When actual sales revenue is greater than expected (planned) revenue, a company has a favorable sales variance because higher sales increase net income. When actual sales are less than expected, an unfavorable sales variance exists. When actual costs are *less* than standard costs, cost variances are favorable because lower costs increase net income. Unfavorable cost variances exist when actual costs are *more* than standard costs. These relationships are summarized below.

- When actual sales exceed expected sales, variances are favorable.
- When actual sales are less than expected sales, variances are unfavorable.
- When actual costs exceed standard costs, variances are unfavorable.
- When actual costs are less than standard costs, variances are favorable.

### LO 3

Classify variances as being favorable or unfavorable.

## SALES AND VARIABLE COST VOLUME VARIANCES

The amount of a **sales volume variance** is the difference between the static budget (which is based on planned volume) and a flexible budget based on actual volume. Likewise, the **variable cost volume variances** are determined by calculating the differences between the static and flexible budget amounts. These variances measure management effectiveness in attaining the planned volume of activity. To illustrate, assume Melrose Manufacturing Company actually makes and sells 19,000 trophies during 2009. The planned volume of activity was 18,000 trophies. Exhibit 15.2 shows Melrose's static budget, flexible budget, and volume variances.

### LO 4

Compute and interpret sales and variable cost volume variances.

## Interpreting the Sales and Variable Cost Volume Variances

Because the static and flexible budgets are based on the same standard sales price and per-unit variable costs, the variances are solely attributable to the difference between the planned and actual volume of activity. Marketing managers are usually responsible for the volume variances. Because the sales volume drives production levels, production managers have little control over volume. Exceptions occur; for example, if poor production quality control leads to inferior goods that are difficult to sell, the



**EXHIBIT 15.2****Melrose Manufacturing Company's Volume Variances**

	<b>Static Budget</b>	<b>Flexible Budget</b>	<b>Volume Variances</b>	
Number of units	18,000	19,000	1,000	Favorable
Sales revenue	\$1,440,000	\$1,520,000	\$80,000	Favorable
Variable manufacturing costs				
Materials	216,000	228,000	12,000	Unfavorable
Labor	302,400	319,200	16,800	Unfavorable
Overhead	100,800	106,400	5,600	Unfavorable
Variable G, S, & A	270,000	285,000	15,000	Unfavorable
Contribution margin	550,800	581,400	30,600	Favorable
Fixed costs				
Manufacturing overhead	201,600	201,600	0	
G, S, & A	90,000	90,000	0	
Net income	\$ 259,200	\$ 289,800	\$30,600	Favorable

production manager is responsible. The production manager is responsible for production delays that affect product availability, which may restrict sales volume. Under normal circumstances, however, the marketing campaign determines the volume of sales. Upper-level marketing managers develop the promotional program and create the sales plan; they are in the best position to explain why sales goals are or are not met. When marketing managers refer to **making the numbers**, they usually mean reaching the sales volume in the static (master) budget.

In the case of Melrose Manufacturing Company, the marketing manager not only achieved but also exceeded by 1,000 units the planned volume of sales. Exhibit 15.2 shows the activity variances resulting from the extra volume. At the standard price, the additional volume produces a favorable revenue variance of \$80,000 (1,000 units  $\times$  \$80 per unit). The increase in volume also produces unfavorable variable cost variances. The net effect of producing and selling the additional 1,000 units is an increase of \$30,600 in the contribution margin, a positive result. These preliminary results suggest that the marketing manager is to be commended. The analysis, however, is incomplete. For example, examining market share could reveal whether the manager won customers from competitors or whether the manager simply reaped the benefit of an unexpected industrywide increase in demand. The increase in sales volume could have been attained by reducing the sales price; the success of that strategy will be analyzed further in a later section of this chapter.

Since the variable costs in the flexible budget are higher than the variable costs in the static budget, the variable cost volume variances are *unfavorable*. The unfavorable classification may be misleading because it focuses solely on the cost component of the income statement. While costs are higher than expected, so too may be revenue. Indeed, as shown in Exhibit 15.2, the total of the unfavorable variable cost variances is more than offset by the favorable revenue variance, resulting in a higher contribution margin. Frequently, the assessment of variances requires a holistic perspective.

### Fixed Cost Considerations

The fixed costs are the same in both the static and flexible budgets. By definition, the budgeted amount of fixed costs remains unchanged regardless of the volume of activity. However, this does not mean that there will be no fixed cost variances. Companies may certainly pay more or less than expected for a fixed cost. For example, a supervisor may receive an unplanned raise, causing actual salary costs to be more than the costs shown in the static budget. The difference between the *budgeted* fixed costs and

the *actual* fixed costs is called a **spending variance**. Spending variances will be discussed in more detail later in the chapter. At this point, it is important to note that the reason the fixed cost variances shown in Exhibit 15.2 are zero is because we are comparing two budgets (static versus flexible). Since total fixed cost is not affected by the level of activity, there will be no fixed cost variances associated with static versus flexible budgets.

While total fixed cost does not change in response to changes in the volume of activity, fixed cost per unit does change. Changes in the fixed cost per unit have important implications for decision making. For example, consider the impact on cost-plus pricing decisions. Because actual volume is unknown until the end of the year, selling prices must be based on planned volume. At the *planned volume* of activity of 18,000 units, Melrose's fixed cost per unit is expected to be as follows.

Fixed manufacturing cost	\$201,600
Fixed G, S, & A cost	90,000
Total fixed cost	<u>\$291,600</u> ÷ 18,000 units = \$16.20 per trophy

Based on the *actual volume* of 19,000 units, the fixed cost per unit is actually \$15.35 per trophy ( $\$291,600 \div 19,000$  units). Because Melrose's prices were established using the \$16.20 budgeted cost at planned volume rather than the \$15.35 budgeted cost at actual volume, the trophies were overpriced, giving competitors a price advantage. Although Melrose sold more trophies than expected, sales volume might have been even greater if the trophies had been competitively priced.

Underpricing (not encountered by Melrose in this example) can also be detrimental. If planned volume is overstated, the estimated fixed cost per unit will be understated and prices will be set too low. When the higher amount of actual costs is subtracted from revenues, actual profits will be lower than expected. To monitor the effects of volume on fixed cost per unit, companies frequently calculate a **fixed cost volume variance**.

The fixed cost volume variance is *unfavorable* if actual volume is less than planned because cost per unit is higher than expected. Conversely, if actual volume is greater than planned, cost per unit is less than expected, resulting in a *favorable* variance. Both favorable and unfavorable variances can have negative consequences. Managers should strive for the greatest possible degree of accuracy.

## FLEXIBLE BUDGET VARIANCES

For performance evaluation, management compares actual results to a flexible budget based on the *actual* volume of activity. Because the actual results and the flexible budget reflect the same volume of activity, any variances in revenues and variable costs result from differences between standard and actual per unit amounts. To illustrate computing and analyzing flexible budget variances, we assume that Melrose's *actual* per unit amounts during 2009 were those shown in the following table. The 2009 per unit *standard* amounts are repeated here for your convenience.

	Standard	Actual
Sales price	\$80.00	\$78.00
Variable materials cost	12.00	11.78
Variable labor cost	16.80	17.25
Variable overhead cost	5.60	5.75
Variable G, S, & A	15.00	14.90

Actual and budgeted fixed costs are shown in Exhibit 15.3.

### LO 5

Compute and interpret flexible budget variances.

Exhibit 15.3 shows Melrose's 2009 flexible budget, actual results, and flexible budget variances. The flexible budget is the same one compared to the static budget in Exhibit 15.2. Recall the flexible budget amounts come from multiplying the standard per-unit amounts by the actual volume of production. For example, the sales revenue in the flexible budget comes from multiplying the standard sales price by the actual volume ( $\$80 \times 19,000$ ). The variable costs are similarly computed. The *actual results* are calculated by multiplying the actual per-unit sales price and cost figures from the preceding table by the actual volume of activity. For example, the sales revenue in the Actual Results column comes from multiplying the actual sales price by the actual volume ( $\$78 \times 19,000 = \$1,482,000$ ). The actual cost figures are similarly computed. The differences between the flexible budget figures and the actual results are the **flexible budget variances**.

### EXHIBIT 15.3

#### Flexible Budget Variances for Melrose Manufacturing Company

	Flexible Budget	Actual Results	Flexible Budget Variances	
Number of units	19,000	19,000	0	
Sales revenue	\$1,520,000	\$1,482,000	\$38,000	Unfavorable
Variable manufacturing costs				
Materials	228,000	223,820	4,180	Favorable
Labor	319,200	327,750	8,550	Unfavorable
Overhead	106,400	109,250	2,850	Unfavorable
Variable G, S, & A	285,000	283,100	1,900	Favorable
Contribution margin	581,400	538,080	43,320	Unfavorable
Fixed costs				
Manufacturing overhead	201,600	210,000	8,400*	Unfavorable
G, S, & A	90,000	85,000	5,000*	Favorable
Net income	\$ 289,800	\$ 243,080	\$46,720	Unfavorable

\*Since fixed costs are the same in the static and flexible budgets, the fixed cost flexible budget variances are the same as the spending variances.

### Calculating the Sales Price Variance

Because both the flexible budget and actual results are based on the actual volume of activity, the flexible budget variance is attributable to sales price, not sales volume. In this case, the actual sales price of \$78 per unit is less than the standard price of \$80 per unit. Because Melrose sold its product for less than the standard sales price, the **sales price variance** is *unfavorable*. Even though the price variance is unfavorable, however, sales volume was 1,000 units more than expected. It is possible the marketing manager generated the additional volume by reducing the sales price. Whether the combination of lower sales price and higher sales volume is favorable or unfavorable depends on the amount of the unfavorable sales price variance versus the amount of the favorable sales volume variance. The *total* sales variance (price and volume) follows.

Actual sales (19,000 units $\times$ \$78 per unit)	\$1,482,000	
Expected sales (18,000 units $\times$ \$80 per unit)	1,440,000	
Total sales variance	<u>\$ 42,000</u>	Favorable

Alternatively,

Activity variance (sales volume)	\$ 80,000	Favorable
Sales price variance	(38,000)	Unfavorable
Total sales variance	<u>\$ 42,000</u>	Favorable

This analysis indicates that reducing the sales price had a favorable impact on *total* contribution margin. Use caution when interpreting variances as good or bad; in this instance, the unfavorable sales price variance was more than offset by the favorable sales volume variance. All unfavorable variances are not bad; all favorable variances are not good. Variances signal the need to investigate.

## CHECK Yourself 15.2

Scott Company's master budget called for a planned sales volume of 30,000 units. Budgeted direct materials cost was \$4 per unit. Scott actually produced and sold 32,000 units with an actual materials cost of \$3.90 per unit. Determine the volume variance for materials cost and identify the organizational unit most likely responsible for this variance. Determine the flexible budget variance for materials cost and identify the organizational unit most likely responsible for this variance.

### Answer

Planned Volume	30,000	Actual Volume	32,000	Actual Volume	32,000
×	×	×	×	×	×
Standard Cost	\$4.00	Standard Cost	\$4.00	Actual Cost	\$3.90
	<u>\$120,000</u>		<u>\$128,000</u>		<u>\$124,800</u>
		Volume Variance for Materials Cost		Flexible Budget Variance for Materials Cost	
		\$8,000 Unfavorable		\$3,200 Favorable	

The materials volume variance is unfavorable because the materials cost (\$128,000) is higher than was expected (\$120,000). However, this could actually be positive because higher volume was probably caused by increasing sales. Further analysis would be necessary to determine whether the overall effect on the company's profitability was positive or negative. The marketing department is most likely to be responsible for the volume variance.

The flexible budget materials cost variance is favorable because the cost of materials was less than expected at the actual volume of activity. Either the production department (used less than the expected amount of materials) or the purchasing department (obtained materials at a favorable price) is most likely to be responsible for this variance.

## The Human Element Associated with Flexible Budget Variances

The flexible budget cost variances offer insight into management efficiency. For example, Melrose Manufacturing Company's favorable materials variance could mean purchasing agents were shrewd in negotiating price concessions, discounts, or delivery terms and therefore reduced the price the company paid for materials. Similarly, production employees may have used materials efficiently, using less than expected. The unfavorable labor variance could mean managers failed to control employee wages or motivate employees to work hard. As with sales variances, cost variances require careful analysis. A favorable variance may, in fact, mask unfavorable conditions. For example, the favorable materials variance might have been caused by paying low prices for

inferior goods. Using substandard materials could have required additional labor in the production process, which would explain the unfavorable labor variance. Again, we caution that variances, whether favorable or unfavorable, alert management to investigate further.

## Need for Standards

As the previous discussion suggests, standards are the building blocks for preparing the static and flexible budgets. Standard costs help managers plan and also establish benchmarks against which actual performance can be judged. Highlighting differences between standard (expected) and actual performance focuses management attention on the areas of greatest need. Because management talent is a valuable and expensive resource, businesses cannot afford to have managers spend large amounts of time on operations that are functioning normally. Instead, managers should concentrate on areas not performing as expected. In other words, management should attend to the exceptions; this management philosophy is known as **management by exception**.

Standard setting fosters using the management by exception principle. By reviewing performance reports that show differences between actual and standard costs, management can focus its attention on the items that show significant variances. Areas with only minor variances need little or no review.

## MANAGERIAL PERFORMANCE MEASUREMENT

As previously discussed, managers are assigned responsibility for certain cost, profit, or investment centers. They are then evaluated based on how their centers perform relative to specific goals and objectives. The measurement techniques (variance analysis and contribution margin format income reporting) used for cost and profit centers have been discussed in this and previous chapters. The remainder of this chapter discusses performance measures for investment centers.

## RETURN ON INVESTMENT

### LO 6

Evaluate investment opportunities using the return on investment technique.

Society confers wealth, prestige, and power upon those who have control of assets. Unsurprisingly, managers are motivated to increase the amount of assets employed by the investment centers they control. When companies have additional assets available to invest, how do upper-level managers decide which centers should get them? The additional assets are frequently allotted to the managers who demonstrate the greatest potential for increasing the company's wealth. Companies often assess managerial potential by comparing the return on investment ratios of various investment centers. The **return on investment (ROI)** is the ratio of wealth generated (operating income) to the amount invested (operating assets) to generate the wealth. ROI is commonly expressed with the following equation.

$$\text{ROI} = \frac{\text{Operating income}}{\text{Operating assets}}$$

To illustrate using ROI for comparative evaluations, assume Panther Holding Company's corporate (first level) chief financial officer (CFO) determined the ROIs for the company's three divisions (second level investment centers). The CFO used the following accounting data from the records of each division.

	Lumber Manufacturing Division	Home Building Division	Furniture Manufacturing Division
Operating income	\$ 60,000	\$ 46,080	\$ 81,940
Operating assets	300,000	256,000	482,000

The ROI for each division is:

$$\text{Lumber manufacturing: } \frac{\text{Operating income}}{\text{Operating assets}} = \$60,000 \div \$300,000 = 20\%$$

$$\text{Home building: } \frac{\text{Operating income}}{\text{Operating assets}} = \$46,080 \div \$256,000 = 18\%$$

$$\text{Furniture manufacturing: } \frac{\text{Operating income}}{\text{Operating assets}} = \$81,940 \div \$482,000 = 17\%$$

All other things being equal, higher ROIs indicate better performance. In this case the Lumber Manufacturing Division manager is the best performer. Assume Panther obtains additional funding for expanding the company's operations. Which investment center is most likely to receive the additional funds?

If the manager of the Lumber Manufacturing Division convinces the upper-level management team that his division would continue to outperform the other two divisions, the Lumber Manufacturing Division would most likely get the additional funding. The manager of the lumber division would then invest the funds in additional operating assets, which would in turn increase the division's operating income. As the division prospers, Panther would reward the manager for exceptional performance. Rewarding the manager of the lumber division would likely motivate the other managers to improve their divisional ROIs. Internal competition would improve the performance of the company as a whole.

## Qualitative Considerations

Why do companies compute ROI using operating income and operating assets instead of using net income and total assets? Suppose Panther's corporate headquarters closes a furniture manufacturing plant because an economic downturn temporarily reduces the demand for furniture. It would be inappropriate to include these nonoperating plant assets in the denominator of the ROI computation. Similarly, if Panther sells the furniture plant and realizes a large gain on the sale, including the gain in the numerator of the ROI formula would distort the result. Since the manager of the Furniture Manufacturing Division does not control closing the plant or selling it, it is unreasonable to include the effects of these decisions in computing the ROI. These items would, however, be included in computing net income and total assets. Most companies use operating income and operating assets to compute ROI because those variables measure performance more accurately.

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## CHECK Yourself 15.3

Green View is a lawn services company whose operations are divided into two districts. The District 1 manager controls \$12,600,000 of operating assets. District 1 produced \$1,512,000 of operating income during the year. The District 2 manager controls \$14,200,000 of operating assets. District 2 reported \$1,988,000 of operating income for the same period. Use return on investment to determine which manager is performing better.

### Answer

#### District 1

$$\text{ROI} = \text{Operating income} \div \text{Operating assets} = \$1,512,000 \div \$12,600,000 = 12\%$$

#### District 2

$$\text{ROI} = \text{Operating income} \div \text{Operating assets} = \$1,988,000 \div \$14,200,000 = 14\%$$

Because the higher ROI indicates the better performance, the District 2 manager is the superior performer. This conclusion is based solely on quantitative results. In real-world practice, companies also consider qualitative factors.

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## Factors Affecting Return on Investment

Management can gain insight into performance by dividing the ROI formula into two separate ratios as follows.

$$\text{ROI} = \frac{\text{Operating income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Operating assets}}$$

The first ratio on the right side of the equation is called the margin. The **margin** is a measure of management's ability to control operating expenses relative to the level of sales. In general, high margins indicate superior performance. Management can increase the margin by reducing the level of operating expenses necessary to generate sales. Decreasing operating expenses increases profitability.

The second ratio in the expanded ROI formula is called turnover. **Turnover** is a measure of the amount of operating assets employed to support the achieved level of sales. Operating assets are scarce resources. To maximize profitability, they must be used wisely. Just as excessive expenses decrease profitability, excessive investments in operating assets also limit profitability.

Both the short and expanded versions of the ROI formula produce the same end result. To illustrate, we will use the ROI for the Lumber Manufacturing Division of Panther Holding Company. Recall that the division employed \$300,000 of operating assets to produce \$60,000 of operating income, resulting in the following ROI.

$$\text{ROI} = \frac{\text{Operating income}}{\text{Operating assets}} = \frac{\$60,000}{\$300,000} = 20\%$$

Further analysis of the accounting records indicates the Lumber Manufacturing Division had sales of \$600,000. The following computation demonstrates that the expanded ROI formula produces the same result as the short formula.

$$\begin{aligned} \text{ROI} &= \text{Margin} \times \text{Turnover} \\ &= \frac{\text{Operating income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Operating assets}} \\ &= \frac{\$60,000}{\$600,000} \times \frac{\$600,000}{\$300,000} \\ &= .10 \times 2 \\ &= 20\% \end{aligned}$$

Dividing the ROI formula into a margin and a turnover computation encourages managers to examine the benefits of controlling assets as well as expenses.

Because ROI blends many aspects of managerial performance into a single ratio that enables comparisons between companies, comparisons between investment centers within companies, and comparisons between different investment opportunities within an investment center, ROI has gained widespread acceptance as a performance measure.

### CHECK *Yourself* 15.4

What three actions can a manager take to improve ROI?

**Answer**

1. Increase sales
2. Reduce expenses
3. Reduce the investment base

## RESIDUAL INCOME

Suppose Panther Holding Company evaluates the manager of the Lumber Manufacturing Division (LMD) based on his ability to maximize ROI. The corporation's overall ROI is approximately 18 percent. LMD, however, has consistently outperformed the other investment centers. Its ROI is currently 20 percent. Now suppose the manager has an opportunity to invest additional funds in a project likely to earn a 19 percent ROI. Would the manager accept the investment opportunity?

These circumstances place the manager in an awkward position. The corporation would benefit from the project because the expected ROI of 19 percent is higher than the corporate average ROI of 18 percent. Personally, however, the manager would suffer from accepting the project because it would reduce the division ROI to less than the current 20 percent. The manager is forced to choose between his personal best interests and the best interests of the corporation. When faced with decisions such as these, many managers choose to benefit themselves at the expense of their corporations, a condition described as **suboptimization**.

To avoid *suboptimization*, many businesses base managerial evaluation on **residual income**. This approach measures a manager's ability to maximize earnings above some targeted level. The targeted level of earnings is based on a minimum desired ROI. Residual income is calculated as follows.

$$\text{Residual income} = \text{Operating income} - (\text{Operating assets} \times \text{Desired ROI})$$

To illustrate, recall that LMD currently earns \$60,000 of operating income with the \$300,000 of operating assets it controls. ROI is 20 percent (\$60,000 ÷ \$300,000). Assume Panther's desired ROI is 18 percent. LMD's residual income is therefore

$$\begin{aligned} \text{Residual income} &= \text{Operating income} - (\text{Operating assets} \times \text{Desired ROI}) \\ &= \$60,000 - (\$300,000 \times .18) \\ &= \$60,000 - \$54,000 \\ &= \$6,000 \end{aligned}$$

Now assume that Panther Holding Company has \$50,000 of additional funds available to invest. Because LMD consistently performs at a high level, Panther's corporate

LO 7

Evaluate investment opportunities using the residual income technique.

## Focus On INTERNATIONAL ISSUES

### DO MANAGERS IN DIFFERENT COMPANIES STRESS THE SAME PERFORMANCE MEASURES?

About the only ratio companies are required to disclose in their annual reports to stockholders is the earnings per share ratio. Nevertheless, many companies choose to show their performance as measured by other ratios, as well as providing nonratio data not required by GAAP. The types of ratio data companies choose to include in their annual reports provides a sense of what performance measure they consider most important.

A review of several publicly traded companies from the United Kingdom, Japan, and the United States will show that the most common ratios presented are variations of the return on sales percentage and the return on investment percentage, although they may be called by different names. The country in which the company is located does not seem to determine which ratio it will emphasize.

One nonratio performance measure that is popular with companies in all three countries is free cash flow, and it is usually reported in total pounds, yen, or dollars. Be sure to exercise caution before comparing one company's free cash flow, return on sales, or return on investment to those of other companies. There are no official rules governing how these data are calculated, and different companies make different interpretations about how to compute these measurements.



management team offers the funds to the LMD manager. The manager believes he could invest the additional \$50,000 at a 19 percent rate of return.

If the LMD manager's evaluation is based solely on ROI, he is likely to reject the additional funding because investing the funds at 19 percent would lower his overall ROI. If the LMD manager's evaluation is based on residual income, however, he is likely to accept the funds because an additional investment at 19 percent would increase his residual income as follows.

$$\begin{aligned}\text{Operating income} &= \$50,000 \times .19 \\ &= \$9,500\end{aligned}$$

$$\begin{aligned}\text{Residual income} &= \text{Operating income} - (\text{Operating assets} \times \text{Desired ROI}) \\ &= \$9,500 - (\$50,000 \times .18) \\ &= \$9,500 - \$9,000 \\ &= \$500\end{aligned}$$

Accepting the new project would add \$500 to LMD's residual income. If the manager of LMD is evaluated based on his ability to maximize residual income, he would benefit by investing in any project that returns an ROI in excess of the desired 18 percent. The reduction in LMD's overall ROI does not enter into the decision. The residual income approach solves the problem of suboptimization.

The primary disadvantage of the residual income approach is that it measures performance in absolute dollars. As a result, a manager's residual income may be larger simply because her investment base is larger rather than because her performance is superior.

To illustrate, return to the example where Panther Holding Company has \$50,000 of additional funds to invest. Assume the manager of the Lumber Manufacturing Division (LMD) and the manager of the Furniture Manufacturing Division (FMD) each have investment opportunities expected to earn a 19 percent return. Recall that Panther's desired ROI is 18 percent. If corporate headquarters allots \$40,000 of the

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## Reality **BYTES**

Thinking about the *investment* in return on investment usually conjures up images of buildings and equipment, but investments typically include a much broader range of expenditures. For example, if **Wal-Mart** plans to open a new store it has to make an investment in inventory to stock the store that is as permanent as the building. But investment expenditures can be for items much less tangible than inventory. Consider the making of a movie.

While it is true that making a movie can require expenditures for items such as cameras and sets, the single highest cost can often be for actors' salaries. Although movie fans may focus on how much a movie grosses at the box office, from a business perspective it is the movie's ROI that matters.

From an ROI perspective the question is, "which actors are worth the money they are paid?" To this end, BusinessWeek.com created the ROI Award for actors. Calculating ROI for an actor in a movie, rather than for the entire investment in the movie, can be tricky and requires several estimates. For example, should the credit for the spectacular success of the Harry Potter movies go to its main actor, Daniel Radcliffe, or the special effects, or the author, J. K. Rowling? Nevertheless, BusinessWeek.com reviewed the financial performance of movies starring various actors and actresses over the period of a few years and calculated an ROI for the leading stars.

*And the winner is . . . ?* In 2006 the ROI Award went to Tyler Perry who starred in *Diary of a Mad Black Woman* and *Madea's Family Reunion*. Mr. Perry's ROI was calculated at 120 percent, suggesting that for every dollar he was paid, the movie earned \$2.20 for the movie's producers. As a comparison, Tom Cruise and Will Smith had ROIs of 53 percent. Mr. Perry's movies did not sell the most tickets, but they had the highest ROIs.

Source: *BusinessWeek.com* on MSN Money, July 19, 2006.

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funds to the manager of LMD and \$10,000 to the manager of FMD, the increase in residual income earned by each division is as follows.

$$\text{LMD's Residual income} = (\$40,000 \times .19) - (\$40,000 \times .18) = \$400$$

$$\text{FMD's Residual income} = (\$10,000 \times .19) - (\$10,000 \times .18) = \$100$$

Does LMD's higher residual income mean LMD's manager is outperforming FMD's manager? No. It means LMD's manager received more operating assets than FMD's manager received.

## Calculating Multiple ROIs and/or RIs for the Same Company

You may be asked to calculate different ROI and RI measures for the same company. For example, ROI and/or RI may be calculated for the company as a whole, for segments of the company, for specific investment opportunities, and for individual managers. An example is shown in Check Yourself 15.5.

### CHECK Yourself 15.5

Tambor Incorporated (TI) earned operating income of \$4,730,400 on operating assets of \$26,280,000 during 2009. The Western Division earned \$748,000 on operating assets of \$3,400,000. TI has offered the Western Division \$1,100,000 of additional operating assets. The manager of the Western Division believes he could use the additional assets to generate operating income amounting to \$220,000. TI has a desired return on investment (ROI) of 17 percent. Determine the ROI and RI for TI, the Western Division, and the additional investment opportunity.

#### Answer

**Return on investment (ROI) = Operating income ÷ Operating assets**

$$\text{ROI for TI} = \$4,730,400 \div \$26,280,000 = 18\%$$

$$\text{ROI for Western Division} = \$748,000 \div \$3,400,000 = 22\%$$

$$\text{ROI for Investment Opportunity} = \$220,000 \div \$1,100,000 = 20\%$$

**Residual income (RI) = Operating income – (Operating assets × Desired ROI)**

$$\text{RI for TI} = \$4,730,400 - (\$26,280,000 \times .17) = \$262,800$$

$$\text{RI for Western Division} = \$748,000 - (\$3,400,000 \times .17) = \$170,000$$

$$\text{RI for Investment Opportunity} = \$220,000 - (\$1,100,000 \times .17) = \$33,000$$

## Responsibility Accounting and the Balanced Scorecard

Throughout the text we have discussed many financial measures companies use to evaluate managerial performance. Examples include standard cost systems to evaluate cost center managers; the contribution margin income statement to evaluate profit center managers; and ROI or residual income to evaluate the performance of investment center managers. Many companies may have goals and objectives such as “satisfaction guaranteed” or “we try harder” that are more suitably evaluated using nonfinancial measures. To assess how well they accomplish the full range of their missions, many companies use a *balanced scorecard*.

A **balanced scorecard** includes financial and nonfinancial performance measures. Standard costs, income measures, ROI, and residual income are common financial measures used in a balanced scorecard. Nonfinancial measures include defect rates, cycle time, on-time deliveries, number of new products or innovations, safety measures, and customer satisfaction surveys. Many companies compose their scorecards to highlight leading versus lagging measures. For example, customer satisfaction survey data is a leading indicator of the sales growth which is a lagging measure. The balanced scorecard is a holistic approach to evaluating managerial performance. It is gaining widespread acceptance among world-class companies.



## A Look Back

The practice of delegating authority and responsibility is referred to as *decentralization*. Clear lines of authority and responsibility are essential in establishing a responsibility accounting system. In a responsibility accounting system, segment managers are held accountable for profits based on the amount of control they have over the profits in their segment.

*Responsibility reports* are used to compare actual results with budgets. The reports should be simple with variances highlighted to promote the *management by exception* doctrine. Individual managers should be held responsible only for those revenues or costs they control. Each manager should receive only summary information about the performance of the responsibility centers under her supervision.

A *responsibility center* is the point in an organization where control over revenue or expense is located. *Cost centers* are segments that incur costs but do not generate revenues. *Profit centers* incur costs and also generate revenues, producing a measurable profit. *Investment centers* incur costs, generate revenues, and use identifiable capital investments.

One of the primary purposes of responsibility accounting is to evaluate managerial performance. Comparing actual results with standards and budgets and calculating *return on investment* are used for this purpose. Because return on investment uses revenues, expenses, and investment, problems with measuring these parameters must be considered. The return on investment can be analyzed in terms of the margin earned on sales as well as the turnover (asset utilization) during the period. The *residual income approach* is sometimes used to avoid *suboptimization*, which occurs when managers choose to reject investment projects that would benefit their company's ROI but would reduce their investment center's ROI. The residual income approach evaluates managers based on their ability to generate earnings above some targeted level of earnings.



## A Look Forward

The next chapter expands on the concepts in this chapter. You will see how managers select investment opportunities that will affect their future ROIs. You will learn to apply present value techniques to compute the net present value and the internal rate of return for potential investment opportunities. You will also learn to use less sophisticated analytical techniques such as payback and the unadjusted rate of return.



### SELF-STUDY REVIEW PROBLEM 1

Bugout Pesticides Inc. established the following standard price and costs for a termite control product that it sells to exterminators.

Variable price and cost data (per unit)	Standard	Actual
Sales price	\$52.00	\$49.00
Materials cost	10.00	10.66
Labor cost	12.00	11.90
Overhead cost	7.00	7.05
General, selling, and administrative (G, S, & A) cost	8.00	7.92
<b>Expected fixed costs (in total)</b>		
Manufacturing	\$150,000	\$140,000
General, selling, and administrative	60,000	64,000

The 2009 master budget was established at an expected volume of 25,000 units. Actual production and sales volume for the year was 26,000 units.

### Required

- Prepare the pro forma income statement for Bugout's 2009 master budget.
- Prepare a flexible budget income statement at the actual volume.
- Determine the sales activity (volume) variances and indicate whether they are favorable or unfavorable. Comment on how Bugout would use the variances to evaluate performance.
- Determine the flexible budget variances and indicate whether they are favorable or unfavorable.
- Identify the two variances Bugout is most likely to analyze further. Explain why you chose these two variances. Who is normally responsible for the variances you chose to investigate?

### Solution to Requirements a, b, and c

Number of units		25,000	26,000	
	Per Unit Standards	Master Budget	Flexible Budget	Volume Variances
Sales revenue	\$52	\$1,300,000	\$1,352,000	\$52,000 F
Variable manufacturing costs				
Materials	10	(250,000)	(260,000)	10,000 U
Labor	12	(300,000)	(312,000)	12,000 U
Overhead	7	(175,000)	(182,000)	7,000 U
Variable G, S, & A	8	(200,000)	(208,000)	8,000 U
Contribution margin		375,000	390,000	15,000 F
Fixed costs				
Manufacturing		(150,000)	(150,000)	0
G, S, & A		(60,000)	(60,000)	0
Net income		\$ 165,000	\$ 180,000	\$15,000 F

The sales activity variances are useful in determining how changes in sales volume affect revenues and costs. Since the flexible budget is based on standard prices and costs, the variances do not provide insight into differences between standard prices and costs versus actual prices and costs.

### Solution to Requirement d

Number of units		26,000	26,000	
	Actual Unit Price/Cost	Flexible Budget*	Actual Results	Flexible Budget Variances
Sales revenue	\$49.00	\$1,352,000	\$1,274,000	\$78,000 U
Variable manufacturing costs				
Materials	10.66	(260,000)	(277,160)	17,160 U
Labor	11.90	(312,000)	(309,400)	2,600 F
Overhead	7.05	(182,000)	(183,300)	1,300 U
Variable G, S, & A	7.92	(208,000)	(205,920)	2,080 F
Contribution margin		390,000	298,220	91,780 U
Fixed costs				
Manufacturing		(150,000)	(140,000)	10,000 F
G, S, & A		(60,000)	(64,000)	4,000 U
Net income		\$ 180,000	\$ 94,220	\$85,780 U

\*The price and cost data for the flexible budget come from the previous table.



**Solution to Requirement e**

The management by exception doctrine focuses attention on the sales price variance and the materials variance. The two variances are material in size and are generally under the control of management. Upper-level marketing managers are responsible for the sales price variance. These managers are normally responsible for establishing the sales price. In this case, the actual sales price is less than the planned sales price, resulting in an unfavorable flexible budget variance. Mid-level production supervisors and purchasing agents are normally responsible for the materials cost variance. This variance could have been caused by waste or by paying more for materials than the standard price.

**SELF-STUDY REVIEW PROBLEM 2**

The following financial statements apply to Hola Division, one of three investment centers operated by Costa Corporation. Costa Corporation has a desired rate of return of 15 percent. Costa Corporation Headquarters has \$80,000 of additional operating assets to assign to the investment centers.

<b>HOLA DIVISION</b>	
Income Statement	
For the Year Ended December 31, 2009	
Sales revenue	\$ 78,695
Cost of goods sold	<u>(50,810)</u>
Gross margin	27,885
Operating expenses	
Selling expenses	(1,200)
Depreciation expense	<u>(1,125)</u>
Operating income	25,560
Nonoperating expense	
Loss on sale of land	<u>(3,200)</u>
Net income	<u>\$ 22,360</u>

<b>HOLA DIVISION</b>	
Balance Sheet	
As of December 31, 2009	
Assets	
Cash	\$ 8,089
Accounts receivable	22,870
Merchandise inventory	33,460
Equipment less acc. dep.	77,581
Nonoperating assets	<u>8,250</u>
Total assets	<u>\$150,250</u>
Liabilities	
Accounts payable	\$ 5,000
Notes payable	58,000
Stockholders' equity	
Common stock	55,000
Retained earnings	<u>32,250</u>
Total liab. and stk. equity	<u>\$150,250</u>

**Required**

- Should Costa use operating income or net income to determine the rate of return (ROI) for the Hola investment center? Explain.

- b. Should Costa use operating assets or total assets to determine the ROI for the Hola investment center? Explain.
- c. Calculate the ROI for Hola.
- d. The manager of the Hola division has an opportunity to invest the funds at an ROI of 17 percent. The other two divisions have investment opportunities that yield only 16 percent. The manager of Hola rejects the additional funding. Why would the manager of Hola reject the funds under these circumstances?
- e. Calculate the residual income from the investment opportunity available to Hola and explain how residual income could be used to encourage the manager to accept the additional funds.

### Solution to Requirement a

Costa should use operating income because net income frequently includes items over which management has no control, such as the loss on sale of land.

### Solution to Requirement b

Costa should use operating assets because total assets frequently includes items over which management has no control, such as assets not currently in use.

### Solution to Requirement c

$$\text{ROI} = \text{Operating income} / \text{Operating assets} = \$25,560 / \$142,000 = 18\%$$

### Solution to Requirement d

Since the rate of return on the investment opportunity (17 percent) is below Hola's current ROI (18 percent), accepting the opportunity would decrease Hola's average ROI, which would have a negative effect on the manager's performance evaluation. While it is to the advantage of the company as a whole for Hola to accept the investment opportunity, it will reflect negatively on the manager to do so. This phenomenon is called *suboptimization*.

### Solution to Requirement e

Operating income from the investment opportunity is \$13,600 ( $\$80,000 \times .17$ )

$$\text{Residual income} = \text{Operating income} - (\text{Operating assets} \times \text{Desired ROI})$$

$$\text{Residual income} = \$13,600 - (\$80,000 \times .15)$$

$$\text{Residual income} = \$13,600 - \$12,000$$

$$\text{Residual income} = \$1,600$$

Since the investment opportunity would increase Hola's residual income, the acceptance of the opportunity would improve the manager's performance evaluation, thereby motivating the manager to accept it.

## KEY TERMS

Balanced scorecard 545	Flexible budget 533	Residual income 543	Static budget 533
Controllability concept 532	Flexible budget variance 538	Responsibility accounting 530	Suboptimization 543
Cost center 532	Investment center 532	Responsibility center 532	Turnover 542
Decentralization 532	Making the numbers 536	Return on investment 540	Unfavorable variance 535
Favorable variance 535	Management by exception 540	Sales price variance 538	Variable cost volume variance 535
Fixed cost volume variance 537	Margin 542	Sales volume variance 535	Variances 535
	Profit center 532	Spending variance 537	

## QUESTIONS

1. Pam Kelly says she has no faith in budgets. Her company, Kelly Manufacturing Corporation, spent thousands of dollars to install a sophisticated budget system. One year later the company's expenses are still out of control. She believes budgets simply do not work. How would you respond to Ms. Kelly's beliefs?

2. What is a responsibility center?
3. What are the three types of responsibility centers? Explain how each differs from the others.
4. What is the difference between a static budget and a flexible budget? When is each used?
5. When the operating costs for Bill Smith's production department were released, he was sure that he would be getting a raise. His costs were \$20,000 less than the planned cost in the master budget. His supervisor informed him that the results look good but that a more in-depth analysis is necessary before raises can be assigned. What other considerations could Mr. Smith's supervisor be interested in before she rates his performance?
6. When are sales and cost variances favorable and unfavorable?
7. Joan Mason, the marketing manager for a large manufacturing company, believes her unfavorable sales volume variance is the responsibility of the production department. What production circumstances that she does not control could have been responsible for her poor performance?
8. When would variable cost volume variances be expected to be unfavorable? How should unfavorable variable cost volume variances be interpreted?
9. What factors could lead to an increase in sales revenues that would not merit congratulations to the marketing manager?
10. With respect to fixed costs, what are the consequences of the actual volume of activity exceeding the planned volume?
11. How are flexible budget variances determined? What causes these variances?
12. Minnie Divers, the manager of the marketing department for one of the industry's leading retail businesses, has been notified by the accounting department that her department experienced an unfavorable sales volume variance in the preceding period but a favorable sales price variance. Based on these contradictory results, how would you interpret her overall performance as suggested by her variances?
13. How do variance reports promote the management by exception doctrine?
14. Carmen Douglas claims that her company's performance evaluation system is unfair. Her company uses return on investment (ROI) to evaluate performance. Ms. Douglas says that even though her ROI is lower than another manager's, her performance is far superior. Is it possible that Ms. Douglas is correct? Explain your position.
15. What two factors affect the computation of return on investment?
16. What three ways can a manager increase the return on investment?
17. How can a residual income approach to performance evaluation reduce the likelihood of suboptimization?
18. Is it true that the manager with the highest residual income is always the best performer?

## EXERCISES



### LO 3

**All applicable Exercises are available with McGraw-Hill Connect Accounting.**

#### Exercise 15-1 *Classifying variances as favorable or unfavorable*

##### Required

Indicate whether each of the following variances is favorable or unfavorable. The first one has been done as an example.

Item to Classify	Standard	Actual	Type of Variance
Materials cost	\$2.90 per pound	\$3.00 per pound	Unfavorable
Materials usage	91,000 pounds	90,000 pounds	
Labor cost	\$10.00 per hour	\$9.60 per hour	
Labor usage	61,000 hours	61,800 hours	
Fixed cost spending	\$400,000	\$390,000	
Fixed cost per unit (volume)	\$3.20 per unit	\$3.16 per unit	
Sales volume	40,000 units	42,000 units	
Sales price	\$3.60 per unit	\$3.63 per unit	

### LO 3

#### Exercise 15-2 *Determining amount and type (favorable vs. unfavorable) of variance*

##### Required

Compute variances for the following items and indicate whether each variance is favorable (F) or unfavorable (U).

Item	Budget	Actual	Variance	F or U
Sales revenue	\$580,000	\$600,000		
Cost of goods sold	\$385,000	\$360,000		
Material purchases at 5,000 pounds	\$275,000	\$280,000		
Materials usage	\$180,000	\$178,000		
Sales price	\$500	\$489		
Production volume	950 units	900 units		
Wages at 4,000 hours	\$60,000	\$58,700		
Labor usage at \$16 per hour	\$96,000	\$97,000		
Research and development expense	\$22,000	\$25,000		
Selling and administrative expenses	\$49,000	\$40,000		

### Exercise 15-3 *Preparing master and flexible budgets*

LO 2

Marlow Manufacturing Company established the following standard price and cost data.

Sales price	\$7.50 per unit
Variable manufacturing cost	3.00 per unit
Fixed manufacturing costs	3,000 total
Fixed selling and administrative costs	1,000 total

Marlow planned to produce and sell 1,100 units. Actual production and sales amounted to 1,300 units.

#### Required

- Prepare the pro forma income statement in contribution format that would appear in a master budget.
- Prepare the pro forma income statement in contribution format that would appear in a flexible budget.

### Exercise 15-4 *Determining sales and variable cost volume variances*

LO 4

#### Required

Use the information provided in Exercise 15-3.

- Determine the sales and variable cost volume variances.
- Classify the variances as favorable (F) or unfavorable (U).
- Comment on the usefulness of the variances with respect to performance evaluation and identify the member of the management team most likely to be responsible for these variances.
- Determine the amount of fixed cost that will appear in the flexible budget.
- Determine the fixed cost per unit based on planned activity and the fixed cost per unit based on actual activity. Assuming Marlow uses information in the master budget to price the company's product, comment on how the volume variance could affect the company's profitability.



### Exercise 15-5 *Determining flexible budget variances*

LO 5

Use the standard price and cost data provided in Exercise 15-3. Assume that the actual sales price is \$7.20 per unit and that the actual variable cost is \$3.30 per unit. The actual fixed manufacturing cost is \$2,850, and the actual selling and administrative expenses are \$1,025.

#### Required

- Determine the flexible budget variances.
- Classify the variances as favorable (F) or unfavorable (U).

- c. Provide another name for the fixed cost flexible budget variance.
- d. Comment on the usefulness of the variances with respect to performance evaluation and identify the member(s) of the management team who is (are) most likely to be responsible for these variances.

**LO 2****Exercise 15-6** *Using a flexible budget to accommodate market uncertainty*

According to its original plan, Burnett Consulting Services Company would charge its customers for service at \$220 per hour in 2009. The company president expects consulting services provided to customers to reach 45,000 hours at that rate. The marketing manager, however, argues that actual results may range from 40,000 hours to 50,000 hours because of market uncertainty. Burnett's standard variable cost is \$90 per hour, and its standard fixed costs are \$2,800,000.

**Required**

Develop flexible budgets based on the assumptions of service levels at 40,000 hours, 45,000 hours, and 50,000 hours.

**LO 2****Exercise 15-7** *Evaluating a decision to increase sales volume by lowering sales price*

Stapp Educational Services had budgeted its training service charge at \$80 per hour. The company planned to provide 30,000 hours of training services during 2009. By reducing the service charge to \$70 per hour, the company was able to increase the actual number of hours to 31,500.

**Required**

- a. Determine the sales volume variance, and indicate whether it is favorable (F) or unfavorable (U).
- b. Determine the flexible budget variance, and indicate whether it is favorable (F) or unfavorable (U).
- c. Did reducing the price of training services increase profitability? Explain.

**LO 3****Exercise 15-8** *Responsibility for the fixed cost volume variance*

McIntosh Company expected to sell 400,000 of its pagers during 2009. It set the standard sales price for the pager at \$30 each. During June, it became obvious that the company would be unable to attain the expected volume of sales. McIntosh's chief competitor, Coker, Inc., had lowered prices and was pulling market share from McIntosh. To be competitive, McIntosh matched Coker's price, lowering its sales price to \$28 per pager. Coker responded by lowering its price even further to \$24 per pager. In an emergency meeting of key personnel, McIntosh's accountant, Patricia Lowell, stated, "Our cost structure simply won't support a sales price in the \$24 range." The production manager, Gary Thomas, said, "I don't understand why I'm here. The only unfavorable variance on my report is a fixed cost volume variance and that one is not my fault. We can't be making the product if the marketing department isn't selling it."

**Required**

- a. Describe a scenario in which the production manager is responsible for the fixed cost volume variance.
- b. Describe a scenario in which the marketing manager is responsible for the fixed cost volume variance.
- c. Explain how a decline in sales volume would affect McIntosh's ability to lower its sales price.

**LO 2****Exercise 15-9** *Income statement for internal use*

Harris Company has provided the following 2008 data.

<b>Budget</b>	
Sales	\$400,000
Variable product costs	155,000
Variable selling expenses	45,000
Other variable expenses	3,600
Fixed product costs	16,600
Fixed selling expenses	24,300
Other fixed expenses	2,200
Interest expense	800
<b>Variances</b>	
Sales	8,600 U
Variable product costs	4,000 F
Variable selling expenses	2,500 U
Other variable expenses	1,200 U
Fixed product costs	220 F
Fixed selling expenses	390 F
Other fixed expenses	150 U
Interest expense	80 F

### Required

- Prepare in good form a budgeted and actual income statement for internal use. Separate operating income from net income in the statements.
- Calculate variances and identify these as favorable (F) or unfavorable (U).

### Exercise 15-10 Evaluating a cost center including flexible budgeting concepts

Darden Medical Equipment Company makes a blood pressure measuring kit. Dan Bushaw is the production manager. The production department's static budget and actual results for 2009 follow.

LO 5



	Static Budget	Actual Results
	20,000 kits	21,000 kits
Direct materials	\$154,000	\$166,000
Direct labor	136,000	139,800
Variable manufacturing overhead	37,000	46,600
Total variable costs	327,000	352,400
Fixed manufacturing overhead	167,000	164,000
Total manufacturing cost	\$494,000	\$516,400

### Required

- Convert the static budget into a flexible budget.
- Use the flexible budget to evaluate Mr. Bushaw's performance.
- Explain why Mr. Bushaw's performance evaluation does not include sales revenue and net income.

### Exercise 15-11 Evaluating a profit center

Sharon Kysar, the president of Shortt Toys Corporation, is trying to determine this year's pay raises for the store managers. Shortt Toys has seven stores in the southwestern United States. Corporate headquarters purchases all toys from different manufacturers globally and distributes them to individual stores. Additionally, headquarters makes decisions regarding location and size of stores. These practices allow Shortt Toys to receive volume discounts from vendors and to implement coherent marketing strategies. Within a set of general guidelines, store managers have the flexibility to adjust product prices and hire local employees. Ms. Kysar is considering three possible performance measures for evaluating the individual stores: cost of goods sold, return on sales (net income divided by sales), and return on investment.

LO 6, 7





**Required**

- Using the concept of controllability, advise Ms. Kysar about the best performance measure.
- Explain how a balanced scorecard can be used to help Ms. Kysar.

**LO 6****Exercise 15-12 Return on investment**

An investment center of Lipscomb Corporation shows an operating income of \$7,680 on total operating assets of \$32,000.

**Required**

Compute the return on investment.

**LO 6****Exercise 15-13 Return on investment**

Oswalt Company calculated its return on investment as 13 percent. Sales are now \$180,000, and the amount of total operating assets is \$300,000.

**Required**

- If expenses are reduced by \$18,000 and sales remain unchanged, what return on investment will result?
- If both sales and expenses cannot be changed, what change in the amount of operating assets is required to achieve the same result?

**LO 7****Exercise 15-14 Residual income**

Vaughn Corporation has a desired rate of return of 9 percent. Ted Eason is in charge of one of Vaughn's three investment centers. His center controlled operating assets of \$2,300,000 that were used to earn \$307,000 of operating income.

**Required**

Compute Mr. Eason's residual income.

**LO 7****Exercise 15-15 Residual income**

Eddy's Cough Drops operates two divisions. The following information pertains to each division for 2005.

	Division A	Division B
Sales	\$150,000	\$54,000
Operating income	\$ 15,040	\$ 8,100
Average operating assets	\$ 63,000	\$45,000
Company's desired rate of return	18%	18%

**Required**

- Compute each division's residual income.
- Which division increased the company's profitability more?

**LO 6, 7****Exercise 15-16 Return on investment and residual income****Required**

Supply the missing information in the following table for Tolbert Company.

Sales	\$264,000
ROI	?
Operating assets	?
Operating income	?
Turnover	2.2
Residual income	?
Margin	0.13
Desired rate of return	18%

### Exercise 15-17 Comparing return on investment with residual income

LO 6, 7

The Rite Division of Marlin Corporation has a current ROI of 20 percent. The company target ROI is 15 percent. The Rite Division has an opportunity to invest \$4,000,000 at 18 percent but is reluctant to do so because its ROI will fall to 19.2 percent. The present investment base for the division is \$6,000,000.

#### Required

Demonstrate how Marlin can motivate the Rite Division to make the investment by using the residual income method.

## PROBLEMS

All applicable Problems are available with McGraw-Hill  
*Connect Accounting*.

connect  
ACCOUNTING

### Problem 15-18 Determining sales and variable cost volume variances

LO 4

Holligan Publications established the following standard price and costs for a hardcover picture book that the company produces.

#### CHECK FIGURES

- a. NI = \$165,000
- b. NI at 29,000 units: \$153,600

Standard price and variable costs:	
Sales price	\$37.00
Materials	8.70
Labor	4.30
Overhead	6.10
General, selling, and administrative	6.50
Planned fixed costs:	
Manufacturing	\$128,000
General, selling, and administrative	49,000

Holligan planned to make and sell 30,000 copies of the book.

#### Required

- a. Prepare the pro forma income statement that would appear in the master budget.
- b. Prepare flexible budget income statements, assuming volumes of 29,000 and 31,000 units.
- c. Determine the sales and variable cost volume variances, assuming volume is actually 31,000 units.
- d. Indicate whether the variances are favorable (F) or unfavorable (U).
- e. Comment on how Holligan could use the variances to evaluate performance.

### Problem 15-19 Determining and interpreting flexible budget variances

LO 5

Use the standard price and cost data supplied in Problem 15-18. Assume that Holligan actually produced and sold 31,000 books. The actual sales price and costs incurred follow.



Actual price and variable costs:	
Sales price	\$36.00
Materials	9.10
Labor	4.10
Overhead	6.20
General, selling, and administrative	6.10
Actual fixed costs:	
Manufacturing	\$120,000
General, selling, and administrative	55,000

#### CHECK FIGURE

Flexible budget variance of NI:  
\$25,900 U

**Required**

- Determine the flexible budget variances. Provide another name for the fixed cost flexible budget variance.
- Indicate whether each variance is favorable (F) or unfavorable (U).
- Identify the management position responsible for each variance. Explain what could have caused the variance.

**LO 5****CHECK FIGURES**

- NI = \$220,500
- NI = \$173,000

**Problem 15-20 Flexible budget planning**

Sam Yu, the president of Centech Computer Services, needs your help. He wonders about the potential effects on the firm's net income if he changes the service rate that the firm charges its customers. The following basic data pertain to fiscal year 2009.

Standard rate and variable costs:	
Service rate per hour	\$83.00
Labor	40.00
Overhead	7.10
General, selling, and administrative	4.40
Expected fixed costs:	
Facility repair	\$500,000.00
General, selling, and administrative	130,000.00

**Required**

- Prepare the pro forma income statement that would appear in the master budget if the firm expects to provide 27,000 hours of services in 2009.
- A marketing consultant suggests to Mr. Yu that the service rate may affect the number of service hours that the firm can achieve. According to the consultant's analysis, if Centech charges customers \$78 per hour, the firm can achieve 33,000 hours of services. Prepare a flexible budget using the consultant's assumption.
- The same consultant also suggests that if the firm raises its rate to \$88 per hour, the number of service hours will decline to 22,000. Prepare a flexible budget using the new assumption.
- Evaluate the three possible outcomes you determined in Requirements *a*, *b*, and *c* and recommend a pricing strategy.

**LO 6, 7****Problem 15-21 Different types of responsibility centers**

First National Bank is a large municipal bank with several branch offices. The bank's computer department handles all data processing for bank operations. In addition, the bank sells the computer department's expertise in systems development and excess machine time to several small business firms, serving them as a service bureau.

The bank currently treats the computer department as a cost center. The manager of the computer department prepares a cost budget annually for senior bank officials to approve. Monthly operating reports compare actual and budgeted expenses. Revenues from the department's service bureau activities are treated as other income by the bank and are not reflected on the computer department's operating reports. The costs of servicing these clients are included in the computer department reports, however.

The manager of the computer department has proposed that bank management convert the computer department to a profit or investment center.

**Required**

- Describe the characteristics that differentiate a cost center, a profit center, and an investment center from each other.
- Would the manager of the computer department be likely to conduct the operations of the department differently if the department were classified as a profit center or an investment center rather than as a cost center? Explain.

**LO 6, 7****Problem 15-22 Comparing return on investment and residual income**

Angelo Corporation operates three investment centers. The following financial statements apply to the investment center named Owen Division.

OWEN DIVISION	
Income Statement	
For the Year Ended December 31, 2008	
Sales revenue	\$113,385
Cost of goods sold	<u>(60,420)</u>
Gross margin	52,965
Operating expenses	
Selling expenses	(1,345)
Depreciation expense	<u>(1,300)</u>
Operating income	52,320
Nonoperating income	
Gain on sale of land	<u>4,460</u>
Net income	<u>\$ 54,780</u>

### CHECK FIGURE

c. 27.5%

OWEN DIVISION	
Balance Sheet	
As of December 31, 2008	
Assets	
Cash	\$ 18,303
Accounts receivable	37,032
Merchandise inventory	37,455
Equipment less accum. dep.	90,000
Non-operating assets	<u>10,000</u>
Total assets	<u>\$192,790</u>
Liabilities	
Accounts payable	\$ 6,700
Notes payable	67,310
Stockholders' equity	
Common stock	64,000
Retained earnings	<u>54,780</u>
Total liab. and stk. equity	<u>\$192,790</u>

### Required

- Should operating income or net income be used to determine the rate of return (ROI) for the Owen investment center? Explain your answer.
- Should operating assets or total assets be used to determine the ROI for the Owen investment center? Explain your answer.
- Calculate the ROI for Owen.
- Angelo has a desired ROI of 10 percent. Headquarters has \$91,000 of funds to assign its investment centers. The manager of the Owen division has an opportunity to invest the funds at an ROI of 13 percent. The other two divisions have investment opportunities that yield only 12 percent. Even so, the manager of Owen rejects the additional funding. Explain why the manager of Owen would reject the funds under these circumstances.
- Explain how residual income could be used to encourage the manager to accept the additional funds.

### Problem 15-23 Return on investment

Hugo Corporation's balance sheet indicates that the company has \$350,000 invested in operating assets. During 2008, Hugo earned operating income of \$56,000 on \$700,000 of sales.

### Required

- Compute Hugo's margin for 2008.
- Compute Hugo's turnover for 2008.
- Compute Hugo's return on investment for 2008.

LO 6



### CHECK FIGURES

- 16%
- (3) 23.3%

- d. Recompute Hugo's ROI under each of the following independent assumptions.
- (1) Sales increase from \$700,000 to \$840,000, thereby resulting in an increase in operating income from \$56,000 to \$67,200.
  - (2) Sales remain constant, but Hugo reduces expenses resulting in an increase in operating income from \$56,000 to \$58,000.
  - (3) Hugo is able to reduce its invested capital from \$350,000 to \$240,000 without affecting operating income.

**LO 6, 7****CHECK FIGURES**

- b. The ROI would decline to 19.60%.  
c. RI would increase by \$30,000.

**Problem 15-24 Comparing return on investment and residual income**

The manager of the Alston Division of Stanford Manufacturing Corporation is currently producing a 20 percent return on invested capital. Stanford's desired rate of return is 16 percent. The Alston Division has \$6,000,000 of capital invested in operating assets and access to additional funds as needed. The manager is considering a new investment in operating assets that will require a \$1,500,000 capital commitment and promises an 18 percent return.

**Required**

- a. Would it be advantageous for Stanford Manufacturing Corporation if the Alston Division makes the investment under consideration?
- b. What effect would the proposed investment have on the Alston Division's return on investment? Show computations.
- c. What effect would the proposed investment have on the Alston Division's residual income? Show computations.
- d. Would return on investment or residual income be the better performance measure for the Alston Division's manager? Explain.

**ANALYZE, THINK, COMMUNICATE****ATC 15-1 Business Applications Case Static versus flexible budget variances**

Justin Radeka is the manufacturing production supervisor for Clear-View Optics Company. Trying to explain why he did not get the year-end bonus he had expected, he told his wife, "This is the dumbest place I ever worked. Last year the company set up this budget assuming it would sell 230,000 lenses. Well, it sold only 220,000. The company lost money and gave me a bonus for not using as much materials and labor as was called for in the budget. This year, the company has the same 230,000 goal and it sells 250,000. The company's making all kinds of money. You'd think I'd get this big fat bonus. Instead, management tells me I used more materials and labor than was budgeted. They say the company would have made a lot more money if I'd stayed within my budget. I guess I gotta wait for another bad year before I get a bonus. Like I said, this is the dumbest place I ever worked."

Clear-View Company's master budget and the actual results for the most recent year of operating activity follow.

	Master Budget	Actual Results	Variances	F or U
Number of units	230,000	250,000	20,000	
Sales revenue	\$4,600,000	\$5,037,500	\$437,500	F
Variable manufacturing costs				
Materials	(759,000)	(835,000)	76,000	U
Labor	(391,000)	(420,000)	29,000	U
Overhead	(414,000)	(442,500)	28,500	U
Variable general, selling, and admin. costs	(552,000)	(612,500)	60,500	U
Contribution margin	2,484,000	2,727,500	243,500	F
Fixed costs				
Manufacturing overhead	(1,570,000)	(1,585,700)	15,700	U
General, selling, and admin. costs	(575,000)	(563,500)	11,500	F
Net income	\$ 339,000	\$ 578,300	\$239,300	F

### Required

- Did Clear-View increase unit sales by cutting prices or by using some other strategy?
- Is Mr. Radeka correct in his conclusion that something is wrong with the company's performance evaluation process? If so, what do you suggest be done to improve the system?
- Prepare a flexible budget and recompute the budget variances.
- Explain what might have caused the fixed costs to be different from the amount budgeted.
- Assume that the company's material price variance was favorable and its material usage variance was unfavorable. Explain why Mr. Radeka may not be responsible for these variances. Now, explain why he may have been responsible for the material usage variance.
- Assume the labor price variance is unfavorable. Was the labor usage variance favorable or unfavorable?

### ATC 15-2 Group Assignment *Return on investment versus residual income*

Bellco, a division of Becker International Corporation, is operated under the direction of Antoin Sedatt. Bellco is an independent investment center with approximately \$72,000,000 of assets that generate approximately \$8,640,000 in annual net income. Becker International has additional investment capital of \$12,000,000 that is available for the division managers to invest. Mr. Sedatt is aware of an investment opportunity that will provide an 11 percent annual net return. Becker International's desired rate of return is 10 percent.



### Required

Divide the class into groups of four or five students and then organize the groups into two sections. Assign Task 1 to the first section and Task 2 to the second section.

### Group Tasks

- Assume that Mr. Sedatt's performance is evaluated based on his ability to maximize return on investment (ROI). Compute ROI using the following two assumptions: Bellco retains its current asset size and Bellco accepts and invests the additional \$12,000,000 of assets. Determine whether Mr. Sedatt should accept the opportunity to invest additional funds. Select a spokesperson to present the decision made by the group.
- Assume that Mr. Sedatt's performance is evaluated based on his ability to maximize residual income. Compute residual income using the following two assumptions: Bellco retains its current asset base and Bellco accepts and invests the additional \$12,000,000 of assets. Determine whether Mr. Sedatt should accept the opportunity to invest additional funds. Select a spokesperson to present the decision made by the group.
- Have a spokesperson from one of the groups in the first section report the two ROIs and the group's recommendation for Mr. Sedatt. Have the groups in this section reach consensus on the ROI and the recommendation.
- Have a spokesperson from the second section report the two amounts of residual income and disclose the group's recommendation for Mr. Sedatt. Have this section reach consensus on amounts of residual income.
- Which technique (ROI or residual income) is more likely to result in suboptimization?

### ATC 15-3 Research Assignment *Using real-world data from Wendy's*

Obtain the 2002, 2003, 2004, 2005, and 2006 income statements for **Wendy's International, Inc.** The 2004–2006 statements are included in Wendy's 2006 annual report and Form 10-Ks. The 2002 and 2003 statements are in its 2003 and 2004 annual reports.

To obtain the Form 10-Ks you can use the EDGAR system following the instructions in Appendix A, or they can be found under the "Investors" link on the company's corporate website: [www.wendys.com](http://www.wendys.com). The company's annual reports are also available on its website.



### Required

- Compute the percentage change for each category of revenues and expenses for 2002 to 2003, 2003 to 2004, and 2004 to 2005, except for the item "Other expenses (income)." Also, ignore income taxes and the items below it. Note: do not compute percentages for subtotals and totals, such as "Total costs and expenses," or "Operating income." Using an Excel spreadsheet will make this task easier. Once these averages are obtained (you should have



three averages for each of the 10 revenue and expense items), calculate an average of the changes for each item. The answer for the “Franchise revenues” item is shown as an example.

	Percentage Change
2002–2003	3%
2003–2004	(50)
2004–2005	<u>13</u>
Average of the changes	(11)%

- b. Prepare a budgeted income statement for 2006, and compare the budgeted data to the actual results for 2006. To calculate budgeted amounts, multiply the average change in each revenue and expense item, from Requirement *b*, by the dollar amount of the corresponding revenue or expense from 2005. This will represent the budgeted amount for that item for 2006. Don’t forget to use decimal data and not percentage data. Subtract the actual 2006 results from the budgeted results. Finally, divide the actual versus budgeted difference by the budgeted amount to determine a percentage variance from the budget. Calculate totals and subtotals on the budgeted income statement, such as “Total revenues” and “Income from continuing operations before taxes,” by adding or subtracting the appropriate items. The answer for the “Franchise revenues” item is shown as an example. (Dollar amounts are in thousands.)

	(1) 2005 Actual	(2) Average 3-year Change	(3) (1 × 2) 2006 Budget	(4) 2006 Actual	(5) (3 – 4) Variance	(5 ÷ 3) Percentage Variance from Budget
Franchise revenues	\$317,053	(.11)	\$281,408	\$284,670	\$3,262	.0116 [1.16%]

#### ATC 15-4 Writing Assignment *Nonfinancial performance measures*

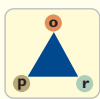


The article “How Nonfinancial Performance Measures Are Used” (*Management Accounting*, February 1998) describes several emerging performance measures that do not rely on financial data. Read this article and complete the following requirements.

##### Required

- What are nonfinancial performance measures? Provide several examples.
- The article describes five categories of nonfinancial performance measures. Identify these categories. Which category do executives consider most important?
- Can you compute variances for nonfinancial performance measures? Explain.
- Comment on the extent to which executives use nonfinancial measures.
- The authors indicate that their study identified three red flags that executives need to address to use nonfinancial performance measures more effectively. Identify and briefly discuss these three red flags.

#### ATC 15-5 Ethical Dilemma *Manipulating return on investment and residual income*



The October 5, 1998, issue of *BusinessWeek* includes the article “Who Can You Trust?” authored by Sarah Bartlett. Among other dubious accounting practices, the article describes a trick known as the “big bath,” which occurs when a company makes huge unwarranted asset write-offs that drastically overstate expenses. Outside auditors (CPAs) permit companies to engage in the practice because the assets being written off are of questionable value. Because the true value of the assets cannot be validated, auditors have little recourse but to accept the valuations suggested by management. Recent examples of questionable write-offs include **Motorola**’s \$1.8 billion restructuring charge and the multibillion-dollar write-offs for “in-process” research taken by high-tech companies such as **Compaq Computer Corp.** and **WorldCom, Inc.**

**Required**

- a. Why would managers want their companies to take a big bath? (*Hint: Consider how a big bath affects return on investment and residual income in the years following the write-off.*)
- b. Annual reports are financial reports issued to the public. The reports are the responsibility of auditors who are CPAs who operate under the ethical standards promulgated by the American Institute of Certified Public Accountants. As a result, attempts to manipulate annual report data are not restricted by the Institute of Management Accountants Standards of Ethical Conduct shown in Exhibit 10.14 of Chapter 10. Do you agree or disagree with this conclusion? Explain your position.

# CHAPTER 16

## Planning *for* Capital Investments

### LEARNING OBJECTIVES

**After you have mastered the material in this chapter you will be able to:**

- 1** Explain the time value of money concept and apply it to capital investment decisions.
- 2** Determine the present value of future cash flows.
- 3** Determine and interpret the net present value of an investment opportunity.
- 4** Determine and interpret the internal rate of return of an investment opportunity.
- 5** Identify cash flows associated with an investment opportunity.
- 6** Compare capital investment alternatives.
- 7** Determine the payback period for an investment opportunity.
- 8** Determine the unadjusted rate of return for an investment opportunity.
- 9** Conduct a postaudit of a completed investment.

### CHAPTER OPENING

The president of EZ Rentals (EZ) is considering expanding the company's rental service business to include LCD projectors that can be used with notebook computers. A marketing study forecasts that renting projectors could generate revenue of \$200,000 per year. The possibility of increasing revenue is alluring, but EZ's president has a number of unanswered questions. How much do the projectors cost? What is their expected useful life? Will they have a salvage value? Does EZ have the money to buy them? Does EZ have the technical expertise to support the product? How much will training cost? How long will customer demand last? What if EZ buys the projectors and they become technologically obsolete? How quickly will EZ be able to recover the investment? Are there more profitable ways to invest EZ's funds?

Spending large sums of money that will have long-term effects on company profits makes most managers anxious. What if a cell phone manufacturer spends millions of dollars to build a factory in the United States and its competitors locate their manufacturing facilities in countries that provide cheap labor? The manufacturer's cell phones will be overpriced, but it cannot move overseas because it cannot find a buyer for the factory. What if a pharmaceutical company spends millions of dollars to develop a drug which then fails to receive FDA approval? What if a communications company installs underground cable but satellite transmission steals its market? What if a company buys computer equipment that rapidly becomes technologically obsolete? Although these possibilities may be remote, they can be expensive when they do occur. For example, a recent annual report from Wachovia Bank discloses a \$70 million dollar write-off of computer equipment. This chapter discusses some of the analytical techniques companies use to evaluate major investment opportunities.

## The *Curious* Accountant

The January 29, 2007, drawing for the Powerball multi-state lottery produced one winning ticket. The ticket, which was purchased in Missouri, had an advertised value of \$254 million. This amount, however, was based on the assumption that the winner would take his prize as 30 equal annual payments of \$8,466,667. If the winnings were taken in this manner, the first payment would be made immediately, and the others would be paid annually over the next 29 years. The winner also had the option of taking an immediate, lump-sum payment of \$120 million.

Assume that you work as a personal financial planner and that one of your clients held the winning lottery ticket. If you think you could invest your client's winnings and earn an annual return of 7 percent, would you advise your client to take the lump-sum payment or the annual payments? Why? (The answer is on page 577.)



## LO 1

Explain the time value of money concept and apply it to capital investment decisions.



## CAPITAL INVESTMENT DECISIONS

Purchases of long-term operational assets are **capital investments**. Capital investments differ from stock and bond investments in an important respect. Investments in stocks and bonds can be sold in organized markets such as the New York Stock Exchange. In contrast, investments in capital assets normally can be recovered only by using those assets. Once a company purchases a capital asset, it is committed to that investment for an extended period of time. If the market turns sour, the company is stuck with the consequences. It may also be unable to seize new opportunities because its capital is committed. Business profitability ultimately hinges, to a large extent, on the quality of a few key capital investment decisions.

A capital investment decision is essentially a decision to exchange current cash outflows for the expectation of receiving future cash inflows. For EZ Rentals, purchasing LCD projectors, cash outflows today, provides the opportunity to collect \$200,000 per year in rental revenue, cash inflows in the future. Assuming the projectors have useful lives of four years and no salvage value, how much should EZ be willing to pay for the future cash inflows? If you were EZ's president, would you spend \$700,000 today to receive \$200,000 each year for the next four years? You would give up \$700,000 today for the opportunity to receive \$800,000 ( $4 \times \$200,000$ ) in the future. What if you collect less than \$200,000 per year? If revenue is only \$160,000 per year, you would lose \$60,000 [ $\$700,000 - (4 \times \$160,000)$ ]. Is \$700,000 too much to pay for the opportunity to receive \$200,000 per year for four years? If \$700,000 is too much, would you spend \$600,000? If not, how about \$500,000? There is no one right answer to these questions. However, understanding the *time value of money* concept can help you develop a rational response.

### Time Value of Money

The **time value of money** concept recognizes that *the present value of a dollar received in the future is less than a dollar*. For example, you may be willing to pay only \$0.90 today for a promise to receive \$1.00 one year from today. The further into the future the receipt is expected to occur, the smaller is its present value. In other words, one dollar to be received two years from today is worth less than one dollar to be received one year from today. Likewise, one dollar to be received three years from today is less valuable than one dollar to be received two years from today, and so on.

The present value of cash inflows decreases as the time until expected receipt increases for several reasons. First, you could deposit today's dollar in a savings account to earn *interest* that increases its total value. If you wait for your money, you lose the opportunity to earn interest. Second, the expectation of receiving a future dollar carries an element of *risk*. Changed conditions may result in the failure to collect. Finally, *inflation* diminishes the buying power of the dollar. In other words, the longer you must wait to receive a dollar, the less you will be able to buy with it.

When a company invests in capital assets, it sacrifices present dollars in exchange for the opportunity to receive future dollars. Since trading current dollars for future dollars is risky, companies expect compensation before they invest in capital assets. The compensation a company expects is called *return on investment (ROI)*. As discussed in Chapter 15, ROI is expressed as a percentage of the investment. For example, the ROI for a \$1,000 investment that earns annual income of \$100 is 10 percent ( $\$100 \div \$1,000 = 10\%$ ).

### Determining the Minimum Rate of Return

To establish the minimum expected *return on investment* before accepting an investment opportunity, most companies consider their cost of capital. To attract capital, companies must provide benefits to their creditors and owners. Creditors expect interest

payments; owners expect dividends and increased stock value. Companies that earn lower returns than their cost of capital eventually go bankrupt; they cannot continually pay out more than they collect. *The cost of capital represents the minimum rate of return on investments.* Calculating the cost of capital is a complex exercise which is beyond the scope of this text. It is addressed in finance courses. We discuss how management accountants use the cost of capital to evaluate investment opportunities. Companies describe the cost of capital in a variety of ways: the *minimum rate of return*, the *desired rate of return*, the *required rate of return*, the *hurdle rate*, the *cutoff rate*, or the *discount rate*. These terms are used interchangeably throughout this chapter.

## CHECK Yourself 16.1

Study the following cash inflow streams expected from two different potential investments.

	Year 1	Year 2	Year 3	Total
Alternative 1	\$2,000	\$3,000	\$4,000	\$9,000
Alternative 2	4,000	3,000	2,000	9,000

Based on visual observation alone, which alternative has the higher present value? Why?

**Answer** Alternative 2 has the higher present value. The size of the discount increases as the length of the time period increases. In other words, a dollar received in year 3 has a lower present value than a dollar received in year 1. Since most of the expected cash inflows from Alternative 2 are received earlier than those from Alternative 1, Alternative 2 has a higher present value even though the total expected cash inflows are the same.

## CONVERTING FUTURE CASH INFLOWS TO THEIR EQUIVALENT PRESENT VALUES

Given a desired rate of return and the amount of a future cash flow, present value can be determined using algebra. To illustrate, refer to the \$200,000 EZ expects to earn the first year it leases LCD projectors.<sup>1</sup> Assuming EZ desires a 12 percent rate of return, what amount of cash would EZ be willing to invest today (present value outflow) to obtain a \$200,000 cash inflow at the end of the year (future value)? The answer follows.<sup>2</sup>

### LO 2

Determine the present value of future cash flows.

$$\text{Investment} + (0.12 \times \text{Investment}) = \text{Future cash inflow}$$

$$1.12 \text{ Investment} = \$200,000$$

$$\text{Investment} = \$200,000 \div 1.12$$

$$\text{Investment} = \$178,571$$

If EZ invests \$178,571 cash on January 1 and earns a 12 percent return on the investment, EZ will have \$200,000 on December 31. An investor who is able to earn a 12 percent return on investment is indifferent between having \$178,571 now or

<sup>1</sup>The following computations assume the \$200,000 cash inflow is received on the last day of each year. In actual practice the timing of cash inflows is less precise and present value computations are recognized to be approximate, not exact.

<sup>2</sup>All computations in this chapter are rounded to the nearest whole dollar.



receiving \$200,000 one year from now. The two options are equal, as shown in the following mathematical proof:

$$\text{Investment} + (0.12 \times \text{Investment}) = \$200,000$$

$$\$178,571 + (0.12 \times \$178,571) = \$200,000$$

$$\$178,571 + 21,429 = \$200,000$$

$$\$200,000 = \$200,000$$

## Present Value Table for Single-Amount Cash Inflows

The algebra illustrated above is used to convert a one-time future receipt of cash to its present value. One-time receipts of cash are frequently called **single-payment**, or **lump-sum**, cash flows. Because EZ desires a 12 percent rate of return, the present value of the first cash inflow is \$178,571. We can also determine the present value of a \$200,000 single amount (lump sum) at the end of the second, third, and fourth years. Instead of using cumbersome algebraic computations to convert these future values to their present value equivalents, financial analysts frequently use a table of conversion factors to convert future values to their present value equivalents. The table of conversion factors used to convert future values into present values is commonly called a **present value table**.<sup>3</sup> A typical present value table presents columns with different return rates and rows with different periods of time, like Table 1 in the Appendix located at the end of this chapter.

To illustrate using the present value table, locate the conversion factor in Table 1 at the intersection of the 12% column and the one-period row. The conversion factor is 0.892857. Multiplying this factor by the \$200,000 expected cash inflow yields \$178,571 ( $\$200,000 \times 0.892857$ ). This is the same value determined algebraically in the previous section of this chapter. The conversion factors in the present value tables simplify converting future values to present values.

The conversion factors for the second, third, and fourth periods are 0.797194, 0.711780, and 0.635518, respectively. These factors are in the 12% column at rows 2, 3, and 4, respectively. Locate these factors in Table 1 of the Appendix. Multiplying the conversion factors by the future cash inflow for each period produces their present value equivalents, shown in Exhibit 16.1. Exhibit 16.1 indicates that investing \$607,470 today at a 12 percent rate of return is equivalent to receiving \$200,000 per year for four years. Because EZ Rentals desires to earn (at least) a 12 percent rate of return, the company should be willing to pay up to \$607,470 to purchase the LCD projectors.

## Present Value Table for Annuities

The algebra described previously for converting equal lump-sum cash inflows to present value equivalents can be further simplified by adding the present value table factors

### EXHIBIT 16.1

#### Present Value of a \$200,000 Cash Inflow to be Received for Four Years

PV	=	FV	×	Present Value Table Factor	=	Present Value Equivalent
Period 1 PV	=	\$200,000	×	0.892857	=	\$178,571
Period 2 PV	=	200,000	×	0.797194	=	159,439
Period 3 PV	=	200,000	×	0.711780	=	142,356
Period 4 PV	=	200,000	×	0.635518	=	127,104
Total						<u>\$607,470</u>

<sup>3</sup>The present value table is based on the formula  $[1 \div (1 + r)^n]$  where  $r$  equals the rate of return and  $n$  equals the number of periods.

together before multiplying them by the cash inflows. The total of the present value table factors in Exhibit 16.1 is 3.037349 ( $0.892857 + 0.797194 + 0.711780 + 0.635518$ ). Multiplying this **accumulated conversion factor** by the expected annual cash inflow results in the same present value equivalent of \$607,470 ( $\$200,000 \times 3.037349$ ). As with lump-sum conversion factors, accumulated conversion factors can be calculated and organized in a table with *columns* for different rates of return and *rows* for different periods of time. Table 2 in the Appendix is a present value table of accumulated conversion factors. Locate the conversion factor at the intersection of the 12% column and the fourth time-period row. The factor at this intersection is 3.037349, confirming that the accumulated conversion factors represent the sum of the single-payment conversion factors.

The conversion factors in Table 2 apply to annuities. An **annuity** is a series of cash flows that meets three criteria: (1) equal payment amounts; (2) equal time intervals between payments; and (3) a constant rate of return. For EZ Rentals, the expected cash inflows from renting LCD projectors are all for equivalent amounts (\$200,000); the expected intervals between cash inflows are equal lengths of time (one year); and the rate of return for each inflow is constant at 12 percent. The series of expected cash inflows from renting the projectors is therefore an annuity. The present value of an annuity table can be used only if all of these conditions are satisfied.

The present value of an annuity table (Table 2) simplifies converting future cash inflows to their present value equivalents. EZ Rentals can convert the cash inflows as shown in Exhibit 16.1, using four conversion factors, multiplying each conversion factor by the annual cash inflow (four multiplications), and adding the resulting products. In contrast, EZ can recognize that the series of payments is an annuity, which requires multiplying a single conversion factor from Table 2 by the amount of the annuity payment. Regardless of the conversion method, the result is the same (a present value of \$607,470). Recall that EZ can also make the conversion using algebra. The table values are derived from algebraic formulas. The present value tables reduce the computations needed to convert future values to present values.

## Software Programs That Calculate Present Values

Software programs offer an even more efficient means of converting future values into present value equivalents. These programs are frequently built into handheld financial calculators and computer spreadsheet programs. As an example, we demonstrate the procedures used in a Microsoft Excel spreadsheet.

An Excel spreadsheet offers a variety of financial functions, one of which converts a future value annuity into its present value equivalent. This present value function uses the syntax  $PV(rate, nper, pmt)$  in which *rate* is the desired rate of return, *nper* is the number of periods, and *pmt* is the amount of the payment (periodic cash inflow). To convert a future value annuity into its present value equivalent, provide the function with the appropriate amounts for the rate, number of periods, and amount of the annuity (cash inflows) into a spreadsheet cell. Press the Enter key and the present value equivalent appears in the spreadsheet cell.

The power of the spreadsheet to perform computations instantly is extremely useful for answering what-if questions. Exhibit 16.2 demonstrates this power by providing spreadsheet conversions for three different scenarios. The first scenario demonstrates the annuity assumptions for EZ Rentals, providing the present value equivalent (\$607,470) of a four-year cash inflow of \$200,000 per year at a 12 percent rate of interest. The present value is a *negative* number. This format indicates that an initial \$607,470 *cash outflow* is required to obtain the four-year series of cash inflows. The present value equivalent in Scenario 2 shows the present value if the annuity assumptions reflect a 14 percent, rather than 12 percent, desired rate of return. The present value equivalent in Scenario 3 shows the present value if the annuity assumptions under Scenario 1 are changed to reflect annual cash inflows of \$300,000, rather than \$200,000. A wide range of scenarios could be readily considered by changing any or all the variables in the spreadsheet function. In each case, the computer does the calculations, giving the manager more time to analyze the data rather than compute it.

**EXHIBIT 16.2****Microsoft Excel Spreadsheet Present Value Function**

The screenshot shows a Microsoft Excel spreadsheet titled 'Microsoft Excel - Book1'. The spreadsheet is on 'Sheet1' and contains the following data:

	A	B	C	D	E	F	G	H	I	J
1										
2			PV(rate,nper,pmt)							
3										
4			Scenario 1							
5			PV(0.12,4,200000)							
6			(\$607,470)							
7										
8			Scenario 2							
9			PV(0.14,4,200000)							
10			(\$582,742)							
11										
12			Scenario 3							
13			PV(0.12,4,300000)							
14			(\$911,205)							
15										

Although software is widely used in business practice, the diversity of interfaces used by different calculators and spreadsheet programs makes it unsuitable for textbook presentations. This text uses the present value tables in the Appendix in the text illustrations and the end-of-chapter exercises and problems. If you use software to solve these problems, your answers will be the same. All these tools—formulas, conversion tables, software—are based on the same mathematical principles and will produce the same results.

### Ordinary Annuity Assumption

All the conversion methods described above assume the cash inflows occur at the *end* of each accounting period. This distribution pattern is called an **ordinary annuity**.<sup>4</sup> In practice, cash inflows are likely to be received throughout the period, not just at the end. For example, EZ Rentals is likely to collect cash revenue from renting projectors each month rather than in a single lump-sum receipt at the end of each of the four years. Companies frequently use the ordinary annuity assumption in practice because it simplifies time value of money computations. Because capital investment decisions are necessarily based on uncertain projections about future cash inflows, the lives of investment opportunities, and the appropriate rates of return, achieving pinpoint accuracy is impossible. Sacrificing precision for simplicity by using the ordinary annuity assumption is a reasonable trade-off in the decision-making process.

### Reinvestment Assumption

The present value computations in the previous sections show that investing \$607,470 today at a 12 percent rate of return is equivalent to receiving four individual \$200,000 payments at the end of four successive years. Exhibit 16.3 illustrates that a cash inflow of \$200,000 per year is equivalent to earning a 12 percent rate of return on a \$607,470 investment.<sup>5</sup>

<sup>4</sup>When equal cash inflows occur at the *beginning* of each accounting period, the distribution is called an *annuity due*. Although some business transactions are structured as annuities due, they are less common than ordinary annuities. This text focuses on the ordinary annuity assumption.

<sup>5</sup>Exhibit 16.3 is analogous to an amortization table for a long-term note with equal payments of principal and interest.

### EXHIBIT 16.3

#### Cash Flow Classifications for EZ's Investment in Projectors

Time Period	(a) Investment Balance During the Year	(b) Annual Cash Inflow	(c) Return on Investment (a × 0.12)	(d) Recovered Investment (b – c)	(e) Year-End Investment Balance (a – d)
1	\$607,470	\$200,000	\$ 72,896	\$127,104	\$480,366
2	480,366	200,000	57,644	142,356	338,010
3	338,010	200,000	40,561	159,439	178,571
4	178,571	200,000	21,429	178,571	0
Totals		<u>\$800,000</u>	<u>\$192,530</u>	<u>\$607,470</u>	

It is customary to assume that the desired rate of return includes the effects of *compounding*.<sup>6</sup> Saying an investment is “earning the desired rate of return” assumes the cash inflows generated by the investment are reinvested at the desired rate of return. In this case, we are assuming that EZ will reinvest the \$200,000 annual cash inflows in other investments that will earn a 12 percent return.

## TECHNIQUES FOR ANALYZING CAPITAL INVESTMENT PROPOSALS

Managers can choose from among numerous analytical techniques to help them make capital investment decisions. Each technique has advantages and disadvantages. A manager may apply more than one technique to a particular proposal to take advantage of more information. Since most companies have computer capabilities that include a variety of standard capital budgeting programs, applying different techniques to the same proposal normally requires little extra effort. Limiting analysis to only one tool could produce biased results. Obtaining more than one perspective offers substantial benefit.

### Net Present Value

By using the present value conversion techniques described earlier, EZ Rentals' management determined it would be willing to invest \$607,470 today (present value) to obtain a four-year, \$200,000 future value annuity cash inflow. The \$607,470 investment is *not* the cost of the LCD projectors, it is the amount EZ is willing to pay for them. The projectors may cost EZ Rentals more or less than their present value. To determine whether EZ should invest in the projectors, management must compare the present value of the future cash inflows (\$607,470) to the cost of the projectors (the current cash outflow required to purchase them). Subtracting the cost of the investment from the present value of the future cash inflows determines the **net present value** of the investment opportunity. A positive net present value indicates the investment will yield a rate of return higher than 12 percent. A negative net present value means the return is less than 12 percent.

### LO 3

Determine and interpret the net present value of an investment opportunity.

<sup>6</sup>*Compounding* refers to reinvesting investment proceeds so the total amount of invested capital increases, resulting in even higher returns. For example, assume \$100 is invested at a 10 percent compounded annual rate of return. At the end of the first year, the investment yields a \$10 return (\$100 × 0.10). The \$10 return plus any recovered investment is reinvested so that the total amount of invested capital at the beginning of the second year is \$110. The return for the second year is \$11 (\$110 × 0.10). All funds are reinvested so that the return for the third year is \$12.10 [(\$110 + \$11) × 0.10].

To illustrate, assume EZ can purchase the projectors for \$582,742. Assuming the desired rate of return is 12 percent, EZ should buy them. The net present value of the investment opportunity is computed as follows.

Present value of future cash inflows	\$607,470
Cost of investment (required cash outflow)	(582,742)
Net present value	<u>\$ 24,728</u>

The positive net present value suggests the investment will earn a rate of return in excess of 12 percent (if cash flows are indeed \$200,000 each year). Because the projected rate of return is higher than the desired rate of return, this analysis suggests EZ should accept the investment opportunity. Based on the above analysis we are able to establish the following decision rule.

**Net present value decision rule:** If the net present value is equal to or greater than zero, accept the investment opportunity.

## CHECK Yourself 16.2

To increase productivity, Wald Corporation is considering the purchase of a new machine that costs \$50,000. Wald expects using the machine to increase annual net cash inflows by \$12,500 for each of the next five years. Wald desires a minimum annual rate of return of 10 percent on the investment. Determine the net present value of the investment opportunity and recommend whether Wald should acquire the machine.

### Answer

Present value of future cash flows = Future cash flow  $\times$  Table 2 factor ( $n = 5, r = 10\%$ )

Present value of future cash flows =  $\$12,500 \times 3.790787 = \$47,385$

Net present value = PV of future cash flows – Cost of machine

Net present value =  $\$47,385 - \$50,000 = (\$2,615)$

The negative net present value indicates the investment will yield a rate of return below the desired rate of return. Wald should not acquire the new machine.

## Internal Rate of Return

### LO 4

Determine and interpret the internal rate of return of an investment opportunity.

The net present value method indicates EZ's investment in the projectors will provide a return in excess of the desired rate, but it does not provide the actual rate of return to expect from the investment. If EZ's management team wants to know the rate of return to expect from investing in the projectors, it must use the *internal rate of return method*. The **internal rate of return** is the rate at which the present value of cash inflows equals the cash outflows. It is the rate that will produce a zero net present value. For EZ Rentals, the internal rate of return can be determined as follows. First, compute the *present value table factor* for a \$200,000 annuity that would yield a \$582,742 present value cash outflow (cost of investment).

Present value table factor  $\times$  \$200,000 = \$582,742

Present value table factor =  $\$582,742 \div \$200,000$

Present value table factor = 2.91371

Second, since the expected annual cash inflows represent a four-year annuity, scan Table 2 in the Appendix at period  $n = 4$ . Try to locate the table factor 2.91371. The



rate listed at the top of the column in which the factor is located is the internal rate of return. Turn to Table 2 and determine the internal rate of return for EZ Rentals before you read further. The above factor is in the 14 percent column. The difference in the table value (2.913712) and the value computed here (2.91371) is not significant. If EZ invests \$582,742 in the projectors and they produce a \$200,000 annual cash flow for four years, EZ will earn a 14 percent rate of return on the investment.

The *internal rate of return* may be compared with a *desired rate of return* to determine whether to accept or reject a particular investment project. Assuming EZ desires to earn a minimum rate of return of 12 percent, the preceding analysis suggests it should accept the investment opportunity because the internal rate of return (14 percent) is higher than the desired rate of return (12 percent). An internal rate of return below the desired rate suggests management should reject a particular proposal. The desired rate of return is sometimes called the *cutoff rate* or the *hurdle rate*. To be accepted, an investment proposal must provide an internal rate of return higher than the hurdle rate, cutoff rate, or desired rate of return. These terms are merely alternatives for the *cost of capital*. Ultimately, to be accepted, an investment must provide an internal rate of return higher than a company's cost of capital. Based on the above analysis we are able to establish the following decision rule.

**Internal rate of return decision rule:** If the internal rate of return is equal to or greater than the desired rate of return, accept the investment opportunity.

## TECHNIQUES FOR MEASURING INVESTMENT CASH FLOWS

The EZ Rentals example represents a simple capital investment analysis. The investment option involved only one cash outflow and a single annuity inflow. Investment opportunities often involve a greater variety of cash outflows and inflows. The following section of this chapter discusses different types of cash flows encountered in business practice.

### LO 5

Identify cash flows associated with an investment opportunity.

### Cash Inflows

*Cash inflows* generated from capital investments come from *four basic sources*. As in the case of EZ Rentals, the most common source of cash inflows is incremental revenue. **Incremental revenue** refers to the *additional* cash inflows from operating activities generated by using additional capital assets. For example, a taxi company expects revenues from taxi fares to increase if it purchases additional taxicabs. Similarly, investing in new apartments should increase rent revenue; opening a new store should result in additional sales revenue.

A second type of cash inflow results from *cost savings*. Decreases in cash outflows have the same beneficial effect as increases in cash inflows. Either way, a firm's cash position improves. For example, purchasing an automated computer system may enable a company to reduce cash outflows for salaries. Similarly, relocating a manufacturing facility closer to its raw materials source can reduce cash outflows for transportation costs.

An investment's *salvage value* provides a third source of cash inflows. Even when one company has finished using an asset, the asset may still be useful to another company. Many assets are sold after a company no longer wishes to use them. The salvage value represents a one-time cash inflow obtained when a company terminates an investment.

Companies can also experience a cash inflow through a *reduction in the amount of working capital* needed to support an investment. A certain level of working capital is required to support most business investments. For example, a new retail store outlet requires cash, receivables, and inventory to operate. When an investment is terminated, the decrease in the working capital commitment associated with the investment normally results in a cash inflow.



## Cash Outflows

Cash outflows fall into three primary categories. One category consists of outflows for the *initial investment*. Managers must be alert to all the cash outflows connected with purchasing a capital asset. The purchase price, transportation costs, installation costs, and training costs are examples of typical cash outflows related to an initial investment.

A second category of cash outflows may result from *increases in operating expenses*. If a company increases output capacity by investing in additional equipment, it may experience higher utility bills, labor costs, and maintenance expenses when it places the equipment into service. These expenditures increase cash outflows.

Third, *increases in working capital* commitments result in cash outflows. Frequently, investments in new assets must be supported by a certain level of working capital. For example, investing in a copy machine requires spending cash to maintain a supply of paper and toner. Managers should treat an increased working capital commitment as a cash outflow in the period the commitment occurs.

Exhibit 16.4 lists the cash inflows and outflows discussed above. The list is not exhaustive but does summarize the most common cash flows businesses experience.

### EXHIBIT 16.4

#### Typical Cash Flows Associated With Capital Investments

##### Inflows

1. Incremental revenue
2. Cost savings
3. Salvage values
4. Recovery of working capital

##### Outflows

1. Initial investment
2. Incremental expenses
3. Working capital commitments

## TECHNIQUES FOR COMPARING ALTERNATIVE CAPITAL INVESTMENT OPPORTUNITIES

### LO 6

Compare capital investment alternatives.

The management of Torres Transfer Company is considering two investment opportunities. One alternative, involving the purchase of new equipment for \$80,000, would enable Torres to modernize its maintenance facility. The equipment has an expected useful life of five years and a \$4,000 salvage value. It would replace existing equipment that had originally cost \$45,000. The existing equipment has a current book value of \$15,000 and a trade-in value of \$5,000. The old equipment is technologically obsolete but can operate for an additional five years. On the day Torres purchases the new equipment, it would also pay the equipment manufacturer \$3,000 for training costs to teach employees to operate the new equipment. The modernization has two primary advantages. One, it will improve management of the small parts inventory. The company's accountant believes that by the end of the first year, the carrying value of the small parts inventory could be reduced by \$12,000. Second, the modernization is expected to increase efficiency, resulting in a \$21,500 reduction in annual operating expenses.

The other investment alternative available to Torres is purchasing a truck. Adding another truck would enable Torres to expand its delivery area and increase revenue. The truck costs \$115,000. It has a useful life of five years and a \$30,000 salvage value. Operating the truck will require the company to increase its inventory of supplies, its petty cash account, and its accounts receivable and payable balances. These changes would add \$5,000 to the company's working capital base immediately upon buying the truck. The working capital cash outflow is expected to be recovered at the end of the truck's useful life. The truck is expected to produce \$69,000 per year in additional revenues. The driver's salary and other operating expenses are expected to be \$32,000 per year. A major overhaul costing \$20,000 is expected to be required at the end of the third year of operation. Assuming Torres desires to earn a rate of return of 14 percent, which of the two investment alternatives should it choose?

## Net Present Value

Begin the analysis by calculating the net present value of the two investment alternatives. Exhibit 16.5 shows the computations. Study this exhibit. Each alternative is analyzed using three steps. Step 1 requires identifying all cash inflows; some may be annuities, and others may be lump-sum receipts. In the case of Alternative 1, the cost

## EXHIBIT 16.5

### Net Present Value Analysis

	Amount	×	Conversion Factor	=	Present Value
<b>Alternative 1: Modernize Maintenance Facility</b>					
Step 1: Cash inflows					
1. Cost savings	\$21,500	×	3.433081*	=	\$ 73,811
2. Salvage value	4,000	×	0.519369†	=	2,077
3. Working capital recovery	12,000	×	0.877193‡	=	10,526
Total					<u>\$ 86,414</u>
Step 2: Cash outflows					
1. Cost of equipment (\$80,000 cost—\$5,000 trade-in)	\$75,000	×	1.000000§	=	\$ 75,000
2. Training costs	3,000	×	1.000000§	=	3,000
Total					<u>\$ 78,000</u>
Step 3: Net present value					
Total present value of cash inflows					\$ 86,414
Total present value of cash outflows					(78,000)
Net present value					<u>\$ 8,414</u>
<b>Alternative 2: Purchase Delivery Truck</b>					
Step 1: Cash inflows					
1. Incremental revenue	\$69,000	×	3.433081*	=	\$236,883
2. Salvage value	30,000	×	0.519369†	=	15,581
2. Working capital recovery	5,000	×	0.519369†	=	2,597
Total					<u>\$255,061</u>
Step 2: Cash outflows					
1. Cost of truck	\$115,000	×	1.000000§	=	\$115,000
2. Working capital increase	5,000	×	1.000000§	=	5,000
3. Increased operating expense	32,000	×	3.433081§§	=	109,859
4. Major overhaul	20,000	×	0.674972§§	=	13,499
Total					<u>\$243,358</u>
Step 3: Net present value					
Total present value of cash inflows					\$255,061
Total present value of cash outflows					(243,358)
Net present value					<u>\$ 11,703</u>

\*Present value of annuity table 2,  $n = 5$ ,  $r = 14\%$ .

§Present value at beginning of period 1.

†Present value of single payment table 1,  $n = 5$ ,  $r = 14\%$ .

§§Present value of single payment table 1,  $n = 3$ ,  $r = 14\%$ .

‡Present value of single payment table 1,  $n = 1$ ,  $r = 14\%$ .

saving is an annuity, and the inflow from the salvage value is a lump-sum receipt. Once the cash inflows have been identified, the appropriate conversion factors are identified and the cash inflows are converted to their equivalent present values. Step 2 follows the same process to determine the present value of the cash outflows. Step 3 subtracts the present value of the outflows from the present value of the inflows to determine the net present value. The same three-step approach is used to determine the net present value of Alternative 2.

With respect to Alternative 1, the original cost and the book value of the existing equipment are ignored. As indicated in a previous chapter, these measures represent *sunk costs*; they are not relevant to the decision. The concept of relevance applies to long-term capital investment decisions just as it applies to short-term special decisions. To be relevant to a capital investment decision, costs or revenues must involve different present and future cash flows for each alternative. Since the historical cost of the old equipment does not differ between the alternatives, it is not relevant.

Since the *net present value* of each investment alternative is *positive*, either investment will generate a return in excess of 14 percent. Which investment is the more favorable? The data could mislead a careless manager. Alternative 2 might seem the better choice because it has a greater present value than Alternative 1 (\$11,703 vs. \$8,414). Net present value, however, is expressed in *absolute dollars*. The net present value of a more costly capital investment can be greater than the net present value of a smaller investment even though the smaller investment earns a higher rate of return.

To compare different size investment alternatives, management can compute a **present value index** by dividing the present value of cash inflows by the present value of cash outflows. *The higher the ratio, the higher the rate of return per dollar invested in the proposed project.* The present value indices for the two alternatives Torres Transfer Company is considering are as follows.

$$\text{Present value index for Alternative 1} = \frac{\text{Present value of cash inflows}}{\text{Present value of cash outflows}} = \frac{\$86,414}{\$78,000} = 1.108$$

$$\text{Present value index for Alternative 2} = \frac{\text{Present value of cash inflows}}{\text{Present value of cash outflows}} = \frac{\$255,061}{\$243,358} = 1.048$$

Management can use the present value indices to rank the investment alternatives. In this case, Alternative 1 yields a higher return than Alternative 2.

## Internal Rate of Return

Management can also rank investment alternatives using the internal rate of return for each investment. Generally, *the higher the internal rate of return, the more profitable the investment.* We previously demonstrated how to calculate the internal rate of return for an investment that generates a simple cash inflow annuity. The computations are significantly more complex for investments with uneven cash flows. Recall that the internal rate of return is the rate that produces a zero net present value. Manually computing the rate that produces a zero net present value is a tedious trial-and-error process. You must first estimate the rate of return for a particular investment, then calculate the net present value. If the calculation produces a negative net present value, you try a lower estimated rate of return and recalculate. If this calculation produces a positive net present value, the actual internal rate of return lies between the first and second estimates. Make a third estimate and once again recalculate the net present value, and so on. Eventually you will determine the rate of return that produces a net present value of zero.

Many calculators and spreadsheet programs are designed to make these computations. We illustrate the process with a Microsoft Excel spreadsheet. Excel uses the syntax *IRR (values, guess)* in which *values* refers to cells that specify the cash flows for which you want to calculate the internal rate of return and *guess* is a number you estimate is close to the actual internal rate of return (IRR). The IRRs for the two investment alternatives available to Torres Transfer Company are shown in Exhibit 16.6. Study this exhibit. Excel requires netting cash outflows against cash inflows for each period in which both outflows and inflows are expected. For your convenience, we have labeled the net cash flows in the spreadsheet. Labeling is not necessary to execute the IRR function. The entire function, including values and guess, can be entered into a single cell of the spreadsheet. Persons familiar with spreadsheet programs learn to significantly simplify the input required.

The IRR results in Exhibit 16.6 confirm the ranking determined using the present value index. Alternative 1 (modernize maintenance facility), with an internal rate of return of 18.69 percent, ranks above Alternative 2 (purchase a truck) with an internal rate of return of 17.61 percent, even though Alternative 2 has a higher net present value (see Exhibit 16.5). Alternative 2, however, still may be the better investment option, depending on the amount available to invest. Suppose Torres has \$120,000 of available funds to invest. Because Alternative 1 requires an initial investment of only \$78,000, \$42,000 (\$120,000 – \$78,000) of capital will not be invested. If Torres has



no other investment opportunities for this \$42,000, the company would be better off investing the entire \$120,000 in Alternative 2 (\$115,000 cost of truck + \$5,000 working capital increase). Earning 17.61 percent on a \$120,000 investment is better than earning 18.69 percent on a \$78,000 investment with no return on the remaining \$42,000. Management accounting requires exercising judgment when making decisions.

## Relevance and the Time Value of Money

Suppose you have the opportunity to invest in one of two capital projects. Both projects require an immediate cash outflow of \$6,000 and will produce future cash inflows of \$8,000. The only difference between the two projects is the timing of the inflows. The receipt schedule for both projects follows.

Year	Project 1	Project 2
1	\$3,500	\$2,000
2	3,000	2,000
3	1,000	2,000
4	500	2,000
Total	<u>\$8,000</u>	<u>\$8,000</u>

Because both projects cost the same and produce the same total cash inflows, they may appear to be equal. Whether you select Project 1 or Project 2, you pay \$6,000 and receive \$8,000. Because of the time value of money, however, Project 1 is preferable to Project 2. To see why, determine the net present value of both projects, assuming a 10 percent desired rate of return.

Computation of Net Present Value for Project 1 and Project 2					
Net Present Value for Project 1					
Period	Cash Inflow	×	Conversion Factor Table 1, $r = 10\%$	=	Present Value
1	\$3,500	×	0.909091	=	\$ 3,182
2	3,000	×	0.826446	=	2,479
3	1,000	×	0.751315	=	751
4	500	×	0.683013	=	342
Present value of future cash inflows					6,754
Present value of cash outflow					(6,000)
Net present value Project 1					<u>\$ 754</u>
Net Present Value for Project 2					
	Cash Inflow Annuity	×	Conversion Factor Table 2, $r = 10\%, n = 4$		
Present value of cash inflow	\$2,000	×	3.169865		\$ 6,340
Present value of cash outflow					(6,000)
Net present value Project 2					<u>\$ 340</u>

The net present value of Project 1 (\$754) exceeds the net present value of Project 2 (\$340). The timing as well as the amount of cash flows has a significant impact on capital investment returns. Recall that to be relevant, costs or revenues must differ between alternatives. Differences in the timing of cash flow payments or receipts are also relevant for decision-making purposes.

## Answers to The *Curious* Accountant

One way to answer your client's question is to determine which option has the highest net present value. The present value of the lump-sum pay-

ment option is simple; it is the \$120 million the lottery is prepared to pay them now. The present value of the annuity option must be calculated, and it consists of two parts. The first of the 30 payments of \$8,466,667 will be paid immediately, so it is worth \$8,466,667 today. The remaining 29 payments will occur at one-year intervals, so their present value is computed as

$$\$8,466,667 \times 12.277674^* = \$103,950,977$$

Adding \$8,466,667 to \$103,950,977 yields a present value of \$112,417,644, which is a lot less than \$120 million. This suggests your client should take the lump-sum payment. Of course, the risk of the lottery not making its annual payments is very low. There is a greater risk that a financial planner may not earn a 7% annual return, so the winner would have to consider his or her tolerance for risk before making a final decision.

In the case of this particular lottery winner, qualitative factors may have negated the need for any time value of money considerations. The winners were an 84-year-old man and his 79-year-old wife. They could probably choose the lump-sum payment without bothering with the present value calculations.

\*This factor is not included in the tables at the end of the chapter, so it is provided here for the purposes of this illustration.

## Tax Considerations

The previous examples have ignored the effect of income taxes on capital investment decisions. Taxes affect the amount of cash flows generated by investments. To illustrate, assume Wu Company purchases an asset that costs \$240,000. The asset has a four-year useful life, no salvage value, and is depreciated on a straight-line basis. The asset generates cash revenue of \$90,000 per year. Assume Wu's income tax rate is 40 percent. What is the net present value of the asset, assuming Wu's management desires to earn a 10 percent rate of return after taxes? The first step in answering this question is to calculate the annual cash flow generated by the asset, as shown in Exhibit 16.7.

### EXHIBIT 16.7

#### Determining Cash Flow from Investment

	Period 1	Period 2	Period 3	Period 4
Cash revenue	\$ 90,000	\$ 90,000	\$ 90,000	\$ 90,000
Depreciation expense (noncash)	(60,000)	(60,000)	(60,000)	(60,000)
Income before taxes	30,000	30,000	30,000	30,000
Income tax at 40%	(12,000)	(12,000)	(12,000)	(12,000)
Income after tax	18,000	18,000	18,000	18,000
Depreciation add back	60,000	60,000	60,000	60,000
Annual cash inflow	<u>\$ 78,000</u>	<u>\$ 78,000</u>	<u>\$ 78,000</u>	<u>\$ 78,000</u>



Because recognizing depreciation expense does not require a cash payment (cash is paid when assets are purchased, not when depreciation is recognized), depreciation expense must be added back to after-tax income to determine the annual cash inflow. Once the cash flow is determined, the net present value is computed as shown here.

$$\begin{array}{rclclcl} \text{Cash flow} & \times & \text{Conversion factor} & = & \text{Present value} & - & \text{Present value} & = & \text{Net present} \\ \text{annuity} & & \text{Table 2, } r = 10\%, n = 4 & & \text{cash inflows} & & \text{cash outflows} & & \text{value} \\ \$78,000 & \times & 3.169865 & = & \$247,249 & - & \$240,000 & = & \$7,249 \end{array}$$

The depreciation sheltered some of the income from taxation. Income taxes apply to income after deducting depreciation expense. Without depreciation expense, income taxes each year would have been \$36,000 (\$90,000  $\times$  0.40) instead of \$12,000 (\$30,000  $\times$  0.40). The \$24,000 difference (\$36,000  $-$  \$12,000) is known as a *depreciation tax shield*. The amount of the depreciation tax shield can also be computed by multiplying the depreciation expense by the tax rate (\$60,000  $\times$  0.40 = \$24,000).

Because of the time value of money, companies benefit by maximizing the depreciation tax shield early in the life of an asset. For this reason, most companies calculate depreciation expense for tax purposes using the *modified accelerated cost recovery system (MACRS)* permitted by tax law rather than using straight-line depreciation. MACRS recognizes depreciation on an accelerated basis, assigning larger amounts of depreciation in the early years of an asset's useful life. The higher depreciation charges result in lower amounts of taxable income and lower income taxes. In the later years of an asset's useful life, the reverse is true, and lower depreciation charges result in higher taxes. Accelerated depreciation does not allow companies to avoid paying taxes but to delay them. The longer companies can delay paying taxes, the more cash they have available to invest.

## TECHNIQUES THAT IGNORE THE TIME VALUE OF MONEY

### LO 7

Determine the payback period for an investment opportunity.

Several techniques for evaluating capital investment proposals ignore the time value of money. Although these techniques are less accurate, they are quick and simple. When investments are small or the returns are expected within a short time, these techniques are likely to result in the same decisions that more sophisticated techniques produce.

### Payback Method

The **payback method** is simple to apply and easy to understand. It shows how long it will take to recover the initial cash outflow (the cost) of an investment. The formula for computing the payback period, measured in years, is as follows.

$$\text{Payback period} = \text{Net cost of investment} \div \text{Annual net cash inflow}$$

To illustrate, assume Winston Cleaners can purchase a new ironing machine that will press shirts in half the time of the one currently used. The new machine costs \$100,000 and will reduce labor cost by \$40,000 per year over a four-year useful life. The payback period is computed as follows.

$$\text{Payback period} = \$100,000 \div \$40,000 = 2.5 \text{ years}$$

### Interpreting Payback

Generally, investments with shorter payback periods are considered better. Because the payback method measures only investment recovery, not profitability, however, this conclusion can be invalid when considering investment alternatives. To illustrate, assume Winston Cleaners also has the opportunity to purchase a different machine that costs \$100,000 and provides an annual labor savings of \$40,000. However, the second machine will last for five instead of four years. The payback period is still 2.5 years (\$100,000  $\div$  \$40,000), but the second machine is a better investment because it improves profitability by providing an additional year of cost savings. The payback analysis does not measure this difference between the alternatives.

## Unequal Cash Flows

The preceding illustration assumed Winston's labor cost reduction saved the same amount of cash each year for the life of the new machine. The payback method requires adjustment when cash flow benefits are unequal. Suppose a company purchases a machine for \$6,000. The machine will be used erratically and is expected to provide incremental revenue over the next five years as follows.

2007	2008	2009	2010	2011
\$3,000	\$1,000	\$2,000	\$1,000	\$500

Based on this cash inflow pattern, what is the payback period? There are two acceptable solutions. One accumulates the incremental revenue until the sum equals the amount of the original investment.

Year	Annual Amount	Cumulative Total
2007	\$3,000	\$3,000
2008	1,000	4,000
2009	2,000	6,000

This approach indicates the payback period is three years.

A second solution uses an averaging concept. The average annual cash inflow is determined. This figure is then used in the denominator of the payback equation. Using the preceding data, the payback period is computed as follows.

1. Compute the average annual cash inflow.

$$\begin{aligned} 2007 + 2008 + 2009 + 2010 + 2011 &= \text{Total} \div 5 = \text{Average} \\ \$3,000 + \$1,000 + \$2,000 + \$1,000 + \$500 &= \$7,500 \div 5 = \$1,500 \end{aligned}$$

2. Compute the payback period.

$$\frac{\text{Net cost of investment}}{\text{Average annual net cash inflow}} = 6,000 \div 1,500 = 4 \text{ years}$$

The average method is useful when a company purchases a number of similar assets with differing cash return patterns.

## Unadjusted Rate of Return

The **unadjusted rate of return** method is another common evaluation technique. Investment cash flows are not adjusted to reflect the time value of money. The unadjusted rate of return is sometimes called the *simple rate of return*. It is computed as follows.

$$\text{Unadjusted rate of return} = \frac{\text{Average incremental increase in annual net income}}{\text{Net cost of original investment}}$$

To illustrate computing the unadjusted rate of return, assume The Dining Table, Inc., is considering establishing a new restaurant that will require a \$2,000,000 original investment. Management anticipates operating the restaurant for 10 years before significant renovations will be required. The restaurant is expected to provide an average after-tax return of \$280,000 per year. The unadjusted rate of return is computed as follows.

$$\text{Unadjusted rate of return} = \$280,000 \div \$2,000,000 = 14\% \text{ per year}$$

The accuracy of the unadjusted rate of return suffers from the failure to recognize the recovery of invested capital. With respect to a depreciable asset, the capital investment is normally recovered through revenue over the life of the asset. To illustrate, assume we purchase a \$1,000 asset with a two-year life and a zero salvage value. For

### LO 8

Determine the unadjusted rate of return for an investment opportunity.

simplicity, ignore income taxes. Assume the asset produces \$600 of cash revenue per year. The income statement for the first year of operation appears as follows.

Revenue	\$ 600
Depreciation expense	<u>(500)</u>
Net income	<u>\$ 100</u>

What is the amount of invested capital during the first year? First, a \$1,000 cash outflow was used to purchase the asset (the original investment). Next, we collected \$600 of cash revenue of which \$100 was a *return on investment* (net income) and \$500 was a **recovery of investment**. As a result, \$1,000 was invested in the asset at the beginning of the year and \$500 was invested at the end of the year. Similarly, we will recover an additional \$500 of capital during the second year of operation, leaving zero invested capital at the end of the second year. Given that the cash inflows from revenue are collected somewhat evenly over the life of the investment, the amount of invested capital will range from a beginning balance of \$1,000 to an ending balance of zero. On average, we will have \$500 invested in the asset (the midpoint between \$1,000 and zero). The average investment can be determined by dividing the total original investment by 2 ( $\$1,000 \div 2 = \$500$ ). The unadjusted rate of return based on average invested capital can be calculated as follows.

$$\begin{aligned} \text{Unadjusted rate of return} &= \frac{\text{Average incremental increase in annual net income}}{\text{Net cost of original investment} \div 2} \\ \text{(Based on average investment)} &= \frac{\$100}{\$1,000 \div 2} = 20\% \end{aligned}$$

To avoid distortions caused by the failure to recognize the recovery of invested capital, the unadjusted rate of return should be based on the *average investment* when working with investments in depreciable assets.

### CHECK Yourself 16.3

EZ Rentals can purchase a van that costs \$24,000. The van has an expected useful life of three years and no salvage value. EZ expects rental revenue from the van to be \$12,000 per year. Determine the payback period and the unadjusted rate of return.

**Answer**

Payback = Cost of the investment  $\div$  Annual cash inflow

Payback =  $\$24,000 \div \$12,000 = 2$  years

Unadjusted rate of return = Net income  $\div$  Average cost of the investment

Revenue	\$12,000	
Depreciation expense	<u>(8,000)</u>	[\$24,000 $\div$ 3 years]
Net income	<u>\$ 4,000</u>	

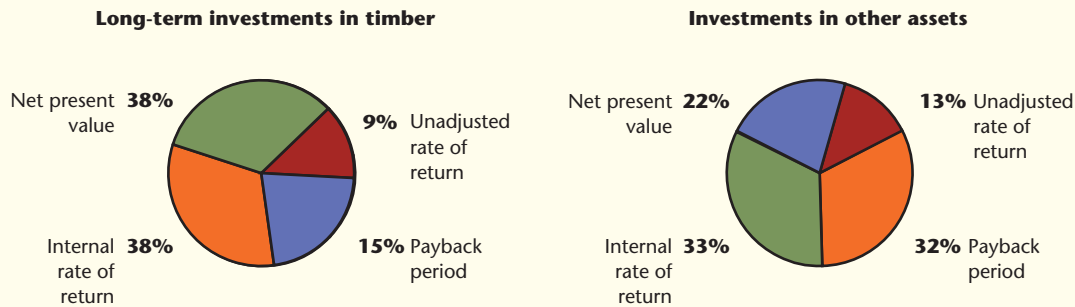
$$\text{Unadjusted rate of return} = \$4,000 \div (\$24,000 \div 2) = 33.33\%$$

### Real-World Reporting Practices

In a recent study, researchers found that companies in the forest products industry use discounted cash flow techniques more frequently when the capital project being considered is a long-term timber investment. The use of techniques that ignore the time value of money increased when other shorter-term capital investment projects were being considered. Exhibit 16.8 shows the researchers' findings.

## EXHIBIT 16.8

### Forestry Industry Investments



Data Source: J. Bailes, J. Nielsen, and S. Lawton, "How Forest Product Companies Analyze Capital Budgets," *Management Accounting*, October 1998, pp. 24–30.

## POSTAUDITS

The analytical techniques for evaluating capital investment proposals depend highly on estimates of future cash flows. Although predictions cannot be perfectly accurate, gross miscalculations can threaten the existence of an organization. For example, optimistic projections of future cash inflows that do not materialize will lead to investments that do not return the cost of capital. Managers must take their projections seriously. A postaudit policy can encourage managers to carefully consider their capital investment decisions. A **postaudit** is conducted at the completion of a capital investment project, using the same analytical technique that was used to justify the original investment. For example, if an internal rate of return was used to justify approving an investment project, the internal rate of return should be computed in the postaudit. In the postaudit computation, *actual* rather than estimated cash flows are used. Postaudits determine whether the expected results were achieved.

Postaudits should focus on continuous improvement rather than punishment. Managers who are chastised for failing to achieve expected results might become overly cautious when asked to provide estimates for future projects. Being too conservative can create problems as serious as those caused by being too optimistic. Managers can err two ways with respect to capital investment decisions. First, a manager might accept a project that should have been rejected. This mistake usually stems from excessively optimistic future cash flow projections. Second, a manager might reject a project that should have been accepted. These missed opportunities are usually the result of underestimating future cash flows. A too cautious manager can become unable to locate enough projects to fully invest the firm's funds.

Idle cash earns no return. If projects continue to outperform expectations, managers are probably estimating future cash flows too conservatively. If projects consistently fail to live up to expectations, managers are probably being too optimistic in their projections of future cash flows. Either way, the company suffers. The goal of a postaudit is to provide feedback that will help managers improve the accuracy of future cash flow projections, maximizing the quality of the firm's capital investments.

### LO 9

Conduct a postaudit of a completed investment.

**A Look Back**



Capital expenditures have a significant, long-term effect on profitability. They usually involve major cash outflows that are recovered through future cash inflows. The most common cash inflows include incremental revenue, operating cost savings, salvage value,

and working capital releases. The most common outflows are the initial investment, increases in operating expenses, and working capital commitments.

Several techniques for analyzing the cash flows associated with capital investments are available. The techniques can be divided into two categories: (1) techniques that use time value of money concepts and (2) techniques that ignore the time value of money. Generally, techniques that ignore the time value of money are less accurate but simpler and easier to understand. These techniques include the *payback method* and the *unadjusted rate of return method*.

The techniques that use time value of money concepts are the *net present value method* and the *internal rate of return method*. These methods offer significant improvements in accuracy but are more difficult to understand. They may involve tedious computations and require using experienced judgment. Computer software and programmed calculators that ease the tedious computational burden are readily available to most managers. Furthermore, the superiority of the techniques justifies learning how to use them. These methods should be used when investment expenditures are larger or when cash flows extend over a prolonged time period.

## APPENDIX

TABLE 1

Present Value of \$1

<i>n</i>	4%	5%	6%	7%	8%	9%	10%	12%	14%	16%	20%
1	0.961538	0.952381	0.943396	0.934579	0.925926	0.917431	0.909091	0.892857	0.877193	0.862069	0.833333
2	0.924556	0.907029	0.889996	0.873439	0.857339	0.841680	0.826446	0.797194	0.769468	0.743163	0.694444
3	0.888996	0.863838	0.839619	0.816298	0.793832	0.772183	0.751315	0.711780	0.674972	0.640658	0.578704
4	0.854804	0.822702	0.792094	0.762895	0.735030	0.708425	0.683013	0.635518	0.592080	0.552291	0.482253
5	0.821927	0.783526	0.747258	0.712986	0.680583	0.649931	0.620921	0.567427	0.519369	0.476113	0.401878
6	0.790315	0.746215	0.704961	0.666342	0.630170	0.596267	0.564474	0.506631	0.455587	0.410442	0.334898
7	0.759918	0.710681	0.665057	0.622750	0.583490	0.547034	0.513158	0.452349	0.399637	0.353830	0.279082
8	0.730690	0.676839	0.627412	0.582009	0.540269	0.501866	0.466507	0.403883	0.350559	0.305025	0.232568
9	0.702587	0.644609	0.591898	0.543934	0.500249	0.460428	0.424098	0.360610	0.307508	0.262953	0.193807
10	0.675564	0.613913	0.558395	0.508349	0.463193	0.422411	0.385543	0.321973	0.269744	0.226684	0.161506
11	0.649581	0.584679	0.526788	0.475093	0.428883	0.387533	0.350494	0.287476	0.236617	0.195417	0.134588
12	0.624597	0.556837	0.496969	0.444012	0.397114	0.355535	0.318631	0.256675	0.207559	0.168463	0.112157
13	0.600574	0.530321	0.468839	0.414964	0.367698	0.326179	0.289664	0.229174	0.182069	0.145227	0.093464
14	0.577475	0.505068	0.442301	0.387817	0.340461	0.299246	0.263331	0.204620	0.159710	0.125195	0.077887
15	0.555265	0.481017	0.417265	0.362446	0.315242	0.274538	0.239392	0.182696	0.140096	0.107927	0.064905
16	0.533908	0.458112	0.393646	0.338735	0.291890	0.251870	0.217629	0.163122	0.122892	0.093041	0.054088
17	0.513373	0.436297	0.371364	0.316574	0.270269	0.231073	0.197845	0.145644	0.107800	0.080207	0.045073
18	0.493628	0.415521	0.350344	0.295864	0.250249	0.211994	0.179859	0.130040	0.094561	0.069144	0.037561
19	0.474642	0.395734	0.330513	0.276508	0.231712	0.194490	0.163508	0.116107	0.082948	0.059607	0.031301
20	0.456387	0.376889	0.311805	0.258419	0.214548	0.178431	0.148644	0.103667	0.072762	0.051385	0.026084

**TABLE 2** Present Value of an Annuity of \$1

<i>n</i>	4%	5%	6%	7%	8%	9%	10%	12%	14%	16%	20%
1	0.961538	0.952381	0.943396	0.934579	0.925926	0.917431	0.909091	0.892857	0.877193	0.862069	0.833333
2	1.886095	1.859410	1.833393	1.808018	1.783265	1.759111	1.735537	1.690051	1.646661	1.605232	1.527778
3	2.775091	2.723248	2.673012	2.624316	2.577097	2.531295	2.486852	2.401831	2.321632	2.245890	2.106481
4	3.629895	3.545951	3.465106	3.387211	3.312127	3.239720	3.169865	3.037349	2.913712	2.798181	2.588735
5	4.451822	4.329477	4.212364	4.100197	3.992710	3.889651	3.790787	3.604776	3.433081	3.274294	2.990612
6	5.242137	5.075692	4.917324	4.766540	4.622880	4.485919	4.355261	4.111407	3.888668	3.684736	3.325510
7	6.002055	5.786373	5.582381	5.389289	5.206370	5.032953	4.868419	4.563757	4.288305	4.038565	3.604592
8	6.732745	6.463213	6.209794	5.971299	5.746639	5.534819	5.334926	4.967640	4.638864	4.343591	3.837160
9	7.435332	7.107822	6.801692	6.515232	6.246888	5.995247	5.759024	5.328250	4.946372	4.606544	4.030967
10	8.110896	7.721735	7.360087	7.023582	6.710081	6.417658	6.144567	5.650223	5.216116	4.833227	4.192472
11	8.760477	8.306414	7.886875	7.498674	7.138964	6.805191	6.495061	5.937699	5.452733	5.028644	4.327060
12	9.385074	8.863252	8.383844	7.942686	7.536078	7.160725	6.813692	6.194374	5.660292	5.197107	4.439217
13	9.985648	9.393573	8.852683	8.357651	7.903776	7.486904	7.103356	6.423548	5.842362	5.342334	4.532681
14	10.563123	9.898641	9.294984	8.745468	8.244237	7.786150	7.366687	6.628168	6.002072	5.467529	4.610567
15	11.118387	10.379658	9.712249	9.107914	8.559479	8.060688	7.606080	6.810864	6.142168	5.575456	4.675473
16	11.652296	10.837770	10.105895	9.446649	8.851369	8.312558	7.823709	6.973986	6.265060	5.668497	4.729561
17	12.165669	11.274066	10.477260	9.763223	9.121638	8.543631	8.021553	7.119630	6.372859	5.748704	4.774634
18	12.659297	11.689587	10.827603	10.059087	9.371887	8.755625	8.201412	7.249670	6.467420	5.817848	4.812195
19	13.133939	12.085321	11.158116	10.335595	9.603599	8.905115	8.364920	7.365777	6.550369	5.877455	4.843496
20	13.590326	12.462210	11.469921	10.594014	9.818147	9.128546	8.513564	7.469444	6.623131	5.928841	4.869580



### SELF-STUDY REVIEW PROBLEM

The CFO of Advo Corporation is considering two investment opportunities. The expected future cash inflows for each opportunity follow.

	Year 1	Year 2	Year 3	Year 4
Project 1	\$144,000	\$147,000	\$160,000	\$178,000
Project 2	204,000	199,000	114,000	112,000

Both investments require an initial payment of \$400,000. Advo's desired rate of return is 16 percent.

#### Required

- Compute the net present value of each project. Which project should Advo adopt based on the net present value approach?
- Based on the payback approach (incremental revenue summation method) which project should Advo adopt?



**Solution to Requirement a**

<b>Project 1</b>					
	<b>Cash Inflows</b>		<b>Table Factor*</b>		<b>Present Value</b>
Year 1	\$144,000	×	0.862069	=	\$124,138
Year 2	147,000	×	0.743163	=	109,245
Year 3	160,000	×	0.640658	=	102,505
Year 4	178,000	×	0.552291	=	98,308
PV of cash inflows					434,196
Cost of investment					(400,000)
Net present value					<u>\$ 34,196</u>

\*Table 1,  $n = 1$  through 4,  $r = 16\%$ 

<b>Project 2</b>					
	<b>Cash Inflows</b>		<b>Table Factor*</b>		<b>Present Value</b>
Year 1	\$204,000	×	0.862069	=	\$175,862
Year 2	199,000	×	0.743163	=	147,889
Year 3	114,000	×	0.640658	=	73,035
Year 4	112,000	×	0.552291	=	61,857
PV of cash inflows					458,643
Cost of investment					(400,000)
Net present value					<u>\$ 58,643</u>

\*Table 1,  $n = 1$  through 4,  $r = 16\%$ 

Advo should adopt Project 2 since it has a greater net present value.

**Solution to Requirement b**

<b>Cash Inflows</b>	<b>Project 1</b>	<b>Project 2</b>
Year 1	\$144,000	\$204,000
Year 2	<u>147,000</u>	<u>199,000</u>
Total	<u>\$291,000</u>	<u>\$403,000</u>

By the end of the second year, Project 2's cash inflows have more than paid for the cost of the investment. In contrast, Project 1 still falls short of investment recovery by \$109,000 (\$400,000 – \$291,000). Advo should adopt Project 2 since it has a shorter pay-back period.

**KEY TERMS**

Accumulated conversion factor 567

Annuity 567

Capital investments 564

Cost of capital 565

Incremental revenue 571

Internal rate of return 570

Minimum rate of return 565

Net present value 569

Ordinary annuity 568

Payback method 578

Postaudit 581

Present value index 574

Present value table 566

Recovery of investment 580

Single-payment (lump-sum) 566

Time value of money 564

Unadjusted rate of return 579

Working capital 571

## QUESTIONS

1. What is a capital investment? How does it differ from an investment in stocks or bonds?
2. What are three reasons that cash is worth more today than cash to be received in the future?
3. "A dollar today is worth more than a dollar in the future." "The present value of a future dollar is worth less than one dollar." Are these two statements synonymous? Explain.
4. Define the term *return on investment*. How is the return normally expressed? Give an example of a capital investment return.
5. How does a company establish its minimum acceptable rate of return on investments?
6. If you wanted to have \$500,000 one year from today and desired to earn a 10 percent return, what amount would you need to invest today? Which amount has more value, the amount today or the \$500,000 a year from today?
7. Why are present value tables frequently used to convert future values to present values?
8. Define the term *annuity*. What is one example of an annuity receipt?
9. How can present value "what-if" analysis be enhanced by using software programs?
10. Receiving \$100,000 per year for five years is equivalent to investing what amount today at 14 percent? Provide a mathematical formula to solve this problem, assuming use of a present value annuity table to convert the future cash flows to their present value equivalents. Provide the expression for the Excel spreadsheet function that would perform the present value conversion.
11. Maria Espinosa borrowed \$15,000 from the bank and agreed to repay the loan at 8 percent annual interest over four years, making payments of \$4,529 per year. Because part of the bank's payment from Ms. Espinosa is a recovery of the original investment, what assumption must the bank make to earn its desired 8 percent compounded annual return?
12. Two investment opportunities have positive net present values. Investment A's net present value amounts to \$40,000 while B's is only \$30,000. Does this mean that A is the better investment opportunity? Explain.
13. What criteria determine whether a project is acceptable under the net present value method?
14. Does the net present value method provide a measure of the rate of return on capital investments?
15. Which is the best capital investment evaluation technique for ranking investment opportunities?
16. Paul Henderson is a manager for Spark Company. He tells you that his company always maximizes profitability by accepting the investment opportunity with the highest internal rate of return. Explain to Mr. Henderson how his company may improve profitability by sometimes selecting investment opportunities with lower internal rates of return.
17. What is the relationship between desired rate of return and internal rate of return?
18. What typical cash inflow and outflow items are associated with capital investments?
19. "I always go for the investment with the shortest payback period." Is this a sound strategy? Why or why not?
20. "The payback method cannot be used if the cash inflows occur in unequal patterns." Do you agree or disagree? Explain.
21. What are the advantages and disadvantages associated with the unadjusted rate of return method for evaluating capital investments?
22. How do capital investments affect profitability?
23. What is a postaudit? How is it useful in capital budgeting?

## EXERCISES

All applicable Exercises are available with McGraw-Hill  
**Connect Accounting.**

connect  
ACCOUNTING

### Exercise 16-1 Identifying cash inflows and outflows

LO 5

#### Required

Indicate which of the following items will result in cash inflows and which will result in cash outflows. The first one is shown as an example.

Item	Type of Cash Flow
a. Incremental revenue	Inflow
b. Initial investment	
c. Salvage values	
d. Recovery of working capital	
e. Incremental expenses	
f. Working capital commitments	
g. Cost savings	

**LO 1, 2****Exercise 16-2** *Determining the present value of a lump-sum future cash receipt*

Kade Gulliver turned 20 years old today. His grandfather established a trust fund that will pay Mr. Gulliver \$60,000 on his next birthday. However, Mr. Gulliver needs money today to start his college education. His father is willing to help and has agreed to give Mr. Gulliver the present value of the future cash inflow, assuming a 10 percent rate of return.

**Required**

- Use a present value table to determine the amount of cash that Mr. Gulliver's father should give him.
- Use an algebraic formula to prove that the present value of the trust fund (the amount of cash computed in Requirement *a*) is equal to its \$60,000 future value.

**LO 1, 2****Exercise 16-3** *Determining the present value of a lump-sum future cash receipt*

Qunitana Pena expects to receive a \$500,000 cash benefit when she retires five years from today. Ms. Pena's employer has offered an early retirement incentive by agreeing to pay her \$300,000 today if she agrees to retire immediately. Ms. Pena desires to earn a rate of return of 12 percent.

**Required**

- Assuming that the retirement benefit is the only consideration in making the retirement decision, should Ms. Pena accept her employer's offer?
- Identify the factors that cause the present value of the retirement benefit to be less than \$500,000.

**LO 1, 2****Exercise 16-4** *Determining the present value of an annuity*

The dean of the School of Natural Science is trying to decide whether to purchase a copy machine to place in the lobby of the building. The machine would add to student convenience, but the dean feels compelled to earn an 8 percent return on the investment of funds. Estimates of cash inflows from copy machines that have been placed in other university buildings indicate that the copy machine would probably produce incremental cash inflows of approximately \$10,000 per year. The machine is expected to have a three-year useful life with a zero salvage value.

**Required**

- Use Present Value Table 1 in the chapter's Appendix to determine the maximum amount of cash the dean should be willing to pay for a copy machine.
- Use Present Value Table 2 in the chapter's Appendix to determine the maximum amount of cash the dean should be willing to pay for a copy machine.
- Explain the consistency or lack of consistency in the answers to Requirements *a* and *b*.

**LO 3****Exercise 16-5** *Determining net present value*

Lake Shuttle Inc. is considering investing in two new vans that are expected to generate combined cash inflows of \$20,000 per year. The vans' combined purchase price is \$65,000. The expected life and salvage value of each are four years and \$15,000, respectively. Lake Shuttle has an average cost of capital of 14 percent.

**Required**

- Calculate the net present value of the investment opportunity.
- Indicate whether the investment opportunity is expected to earn a return that is above or below the cost of capital and whether it should be accepted.

**LO 3****Exercise 16-6** *Determining net present value*

Ulger Vinson is seeking part-time employment while he attends school. He is considering purchasing technical equipment that will enable him to start a small training services company that will offer tutorial services over the Internet. Ulger expects demand for the service to grow rapidly in the first two years of operation as customers learn about the availability of the Internet assistance. Thereafter, he expects demand to stabilize. The following table presents the expected cash flows.

Year of Operation	Cash Inflow	Cash Outflow
2009	\$ 6,750	\$4,500
2010	9,750	6,000
2011	10,500	6,300
2012	10,500	6,300

In addition to these cash flows, Mr. Vinson expects to pay \$10,500 for the equipment. He also expects to pay \$1,800 for a major overhaul and updating of the equipment at the end of the second year of operation. The equipment is expected to have a \$750 salvage value and a four-year useful life. Mr. Vinson desires to earn a rate of return of 8 percent.

#### Required

(Round computations to the nearest whole penny.)

- Calculate the net present value of the investment opportunity.
- Indicate whether the investment opportunity is expected to earn a return that is above or below the desired rate of return and whether it should be accepted.

#### Exercise 16-7 Using present value index

LO 3

Thackeray Company has a choice of two investment alternatives. The present value of cash inflows and outflows for the first alternative is \$45,000 and \$42,000, respectively. The present value of cash inflows and outflows for the second alternative is \$110,000 and \$106,500, respectively.

#### Required

- Calculate the net present value of each investment opportunity.
- Calculate the present value index for each investment opportunity.
- Indicate which investment will produce the higher rate of return.

#### Exercise 16-8 Determining the internal rate of return

LO 4

Parrish Manufacturing Company has an opportunity to purchase some technologically advanced equipment that will reduce the company's cash outflow for operating expenses by \$960,000 per year. The cost of the equipment is \$4,639,897.92. Medina expects it to have a 10-year useful life and a zero salvage value. The company has established an investment opportunity hurdle rate of 15 percent and uses the straight-line method for depreciation.

#### Required

- Calculate the internal rate of return of the investment opportunity.
- Indicate whether the investment opportunity should be accepted.

#### Exercise 16-9 Using the internal rate of return to compare investment opportunities

LO 4

Perez and Soto (P&S) is a partnership that owns a small company. It is considering two alternative investment opportunities. The first investment opportunity will have a five-year useful life, will cost \$7,001.31, and will generate expected cash inflows of \$1,800 per year. The second investment is expected to have a useful life of three years, will cost \$4,662.85, and will generate expected cash inflows of \$1,875 per year. Assume that P&S has the funds available to accept only one of the opportunities.

#### Required

- Calculate the internal rate of return of each investment opportunity.
- Based on the internal rates of return, which opportunity should P&S select?
- Discuss other factors that P&S should consider in the investment decision.

#### Exercise 16-10 Determining the cash flow annuity with income tax considerations

LO 5

To open a new store, Barker Tire Company plans to invest \$480,000 in equipment expected to have a four-year useful life and no salvage value. Barker expects the new store to generate annual cash revenues of \$630,000 and to incur annual cash operating expenses of \$390,000. Barker's average income tax rate is 30 percent. The company uses straight-line depreciation.

**Required**

Determine the expected annual net cash inflow from operations for each of the first four years after Barker opens the new store.

**LO 5****Exercise 16-11 Evaluating discounted cash flow techniques**

Joanne Fletcher is angry with Baxter Long. He is behind schedule developing supporting material for tomorrow's capital budget committee meeting. When she approached him about his apparent lackadaisical attitude in general and his tardiness in particular, he responded, "I don't see why we do this stuff in the first place. It's all a bunch of estimates. Who knows what future cash flows will really be? I certainly don't. I've been doing this job for five years, and no one has ever checked to see if I even came close at these guesses. I've been waiting for marketing to provide the estimated cash inflows on the projects being considered tomorrow. But, if you want my report now, I'll have it in a couple of hours. I can make up the marketing data as well as they can."

**Required**

Does Mr. Long have a point? Is there something wrong with the company's capital budgeting system? Write a brief response explaining how to improve the investment evaluation system.

**LO 7****Exercise 16-12 Determining the payback period**

Blue Jet Airline Company is considering expanding its territory. The company has the opportunity to purchase one of two different used airplanes. The first airplane is expected to cost \$9,000,000; it will enable the company to increase its annual cash inflow by \$3,000,000 per year. The plane is expected to have a useful life of five years and no salvage value. The second plane costs \$18,000,000; it will enable the company to increase annual cash flow by \$4,500,000 per year. This plane has an eight-year useful life and a zero salvage value.

**Required**

- Determine the payback period for each investment alternative and identify the alternative Blue Jet should accept if the decision is based on the payback approach.
- Discuss the shortcomings of using the payback method to evaluate investment opportunities.

**LO 7****Exercise 16-13 Determining the payback period with uneven cash flows**

Renfro Company has an opportunity to purchase a forklift to use in its heavy equipment rental business. The forklift would be leased on an annual basis during its first two years of operation. Thereafter, it would be leased to the general public on demand. Shaw would sell it at the end of the fifth year of its useful life. The expected cash inflows and outflows follow.

Year	Nature of Item	Cash Inflow	Cash Outflow
2010	Purchase price		\$36,000
2010	Revenue	\$15,000	
2011	Revenue	15,000	
2012	Revenue	10,500	
2012	Major overhaul		4,500
2013	Revenue	9,000	
2014	Revenue	7,200	
2014	Salvage value	4,800	

**Required**

- Determine the payback period using the accumulated cash flows approach.
- Determine the payback period using the average cash flows approach.

**LO 8****Exercise 16-14 Determining the unadjusted rate of return**

Sanders Painting Company is considering whether to purchase a new spray paint machine that costs \$2,000. The machine is expected to save labor, increasing net income by \$300 per year. The effective life of the machine is 15 years according to the manufacturer's estimate.

### Required

- Determine the unadjusted rate of return based on the average cost of the investment.
- Discuss the shortcomings of using the unadjusted rate of return to evaluate investment opportunities.

### Exercise 16-15 *Computing the payback period and unadjusted rate of return for one investment opportunity*

LO 6, 8

Venture Rentals can purchase a van that costs \$30,000; it has an expected useful life of three years and no salvage value. Venture uses straight-line depreciation. Expected revenue is \$15,000 per year.

### Required

- Determine the payback period.
- Determine the unadjusted rate of return based on the average cost of the investment.

## PROBLEMS

All applicable Problems are available with McGraw-Hill Connect Accounting.

connect  
ACCOUNTING

### Problem 16-16 *Using present value techniques to evaluate alternative investment opportunities*

LO 3

Excel

ADK Delivery is a small company that transports business packages between San Francisco and Los Angeles. It operates a fleet of small vans that moves packages to and from a central depot within each city and uses a common carrier to deliver the packages between the depots in the two cities. ADK recently acquired approximately \$3 million of cash capital from its owners, and its president, Frank Hobb, is trying to identify the most profitable way to invest these funds.

Travis Lard, the company's operations manager, believes that the money should be used to expand the fleet of city vans at a cost of \$540,000. He argues that more vans would enable the company to expand its services into new markets, thereby increasing the revenue base. More specifically, he expects cash inflows to increase by \$210,000 per year. The additional vans are expected to have an average useful life of four years and a combined salvage value of \$75,000. Operating the vans will require additional working capital of \$30,000, which will be recovered at the end of the fourth year.

In contrast, Katy Osmond, the company's chief accountant, believes that the funds should be used to purchase large trucks to deliver the packages between the depots in the two cities. The conversion process would produce continuing improvement in operating savings with reductions in cash outflows as the following.

Year 1	Year 2	Year 3	Year 4
\$120,000	\$240,000	\$300,000	\$330,000

The large trucks are expected to cost \$600,000 and to have a four-year useful life and a \$60,000 salvage value. In addition to the purchase price of the trucks, up-front training costs are expected to amount to \$12,000. ADK Delivery's management has established a 16 percent desired rate of return.

### Required

- Determine the net present value of the two investment alternatives.
- Calculate the present value index for each alternative.
- Indicate which investment alternative you would recommend. Explain your choice.

### Problem 16-17 *Using the payback period and unadjusted rate of return to evaluate alternative investment opportunities*

LO 7, 8

Quentin Giordano owns a small retail ice cream parlor. He is considering expanding the business and has identified two attractive alternatives. One involves purchasing a machine that

### CHECK FIGURES

- NPV of the vans investment: \$75,608.57
- NPV index of the trucks investment: 1.126



**CHECK FIGURES**

- a. Payback period of the yogurt investment: 1.77 years  
Unadjusted rate of return of the cappuccino investment: 52.86%

**LO 3, 4****CHECK FIGURES**

- a. NPV of A: \$13,463.01  
b. Rate of return of B: 12%

**LO 3, 7****CHECK FIGURES**

- a. NPV of #1: \$41,047.49  
b. Payback period of #2: less than 2 years

would enable Mr. Giordano to offer frozen yogurt to customers. The machine would cost \$4,050 and has an expected useful life of three years with no salvage value. Additional annual cash revenues and cash operating expenses associated with selling yogurt are expected to be \$2,970 and \$450, respectively.

Alternatively, Mr. Giordano could purchase for \$5,040 the equipment necessary to serve cappuccino. That equipment has an expected useful life of four years and no salvage value. Additional annual cash revenues and cash operating expenses associated with selling cappuccino are expected to be \$4,140 and \$1,215, respectively.

Income before taxes earned by the ice cream parlor is taxed at an effective rate of 20 percent.

**Required**

- Determine the payback period and unadjusted rate of return (use average investment) for each alternative.
- Indicate which investment alternative you would recommend. Explain your choice.

**Problem 16-18 Using net present value and internal rate of return to evaluate investment opportunities**

Sophia Sweeny, the president of Sweeny Enterprises, is considering two investment opportunities. Because of limited resources, she will be able to invest in only one of them. Project A is to purchase a machine that will enable factory automation; the machine is expected to have a useful life of four years and no salvage value. Project B supports a training program that will improve the skills of employees operating the current equipment. Initial cash expenditures for Project A are \$300,000 and for Project B are \$120,000. The annual expected cash inflows are \$94,641 for Project A and \$39,507 for Project B. Both investments are expected to provide cash flow benefits for the next four years. Sweeny Enterprise's cost of capital is 8 percent.

**Required**

- Compute the net present value of each project. Which project should be adopted based on the net present value approach?
- Compute the approximate internal rate of return of each project. Which one should be adopted based on the internal rate of return approach?
- Compare the net present value approach with the internal rate of return approach. Which method is better in the given circumstances? Why?

**Problem 16-19 Using net present value and payback period to evaluate investment opportunities**

Parley Oram saved \$200,000 during the 25 years that he worked for a major corporation. Now he has retired at the age of 50 and has begun to draw a comfortable pension check every month. He wants to ensure the financial security of his retirement by investing his savings wisely and is currently considering two investment opportunities. Both investments require an initial payment of \$150,000. The following table presents the estimated cash inflows for the two alternatives.

	Year 1	Year 2	Year 3	Year 4
Opportunity #1	\$44,500	\$47,000	\$63,000	\$81,000
Opportunity #2	82,000	87,000	14,000	12,000

Mr. Oram decides to use his past average return on mutual fund investments as the discount rate; it is 8 percent.

**Required**

- Compute the net present value of each opportunity. Which should Mr. Oram adopt based on the net present value approach?
- Compute the payback period for each project. Which should Mr. Oram adopt based on the payback approach?
- Compare the net present value approach with the payback approach. Which method is better in the given circumstances?

**Problem 16-20** *Effects of straight-line versus accelerated depreciation on an investment decision*

LO 3, 7, 8



**CHECK FIGURES**

- a. NPV = \$53,858
- d. Payback period: 2.32 years

Mullen Electronics is considering investing in manufacturing equipment expected to cost \$138,000. The equipment has an estimated useful life of four years and a salvage value of \$18,000. It is expected to produce incremental cash revenues of \$72,000 per year. Mullen has an effective income tax rate of 30 percent and a desired rate of return of 12 percent.

**Required**

- a. Determine the net present value and the present value index of the investment, assuming that Mullen uses straight-line depreciation for financial and income tax reporting.
- b. Determine the net present value and the present value index of the investment, assuming that Mullen uses double-declining-balance depreciation for financial and income tax reporting.
- c. Why do the net present values computed in Requirements *a* and *b* differ?
- d. Determine the payback period and unadjusted rate of return (use average investment), assuming that Mullen uses straight-line depreciation.
- e. Determine the payback period and unadjusted rate of return (use average investment), assuming that Mullen uses double-declining-balance depreciation. (Note: Use average annual cash flow when computing the payback period and average annual income when determining the unadjusted rate of return.)
- f. Why are there no differences in the payback periods or unadjusted rates of return computed in Requirements *d* and *e*?

**Problem 16-21** *Applying the net present value approach with and without tax considerations*

LO 3



**CHECK FIGURE**

- a. \$(17,295.18)

Jethro Alma, the chief executive officer of Alma Corporation, has assembled his top advisers to evaluate an investment opportunity. The advisers expect the company to pay \$150,000 cash at the beginning of the investment and the cash inflow for each of the following four years to be the following.

Year 1	Year 2	Year 3	Year 4
\$31,500	\$36,000	\$45,000	\$69,000

Mr. Alma agrees with his advisers that the company should use the discount rate (required rate of return) of 12 percent to compute net present value to evaluate the viability of the proposed project.

**Required**

- a. Compute the net present value of the proposed project. Should Mr. Alma approve the project?
- b. Bertha Yalland, one of the advisers, is wary of the cash flow forecast and she points out that the advisers failed to consider that the depreciation on equipment used in this project will be tax deductible. The depreciation is expected to be \$30,000 per year for the four-year period. The company's income tax rate is 30 percent per year. Use this information to revise the company's expected cash flow from this project.
- c. Compute the net present value of the project based on the revised cash flow forecast. Should Mr. Alma approve the project?

**Problem 16-22** *Comparing internal rate of return with unadjusted rate of return*

LO 4, 8

**CHECK FIGURE**

- b. Internal rate of return: 12%

Tapper Auto Repair Inc. is evaluating a project to purchase equipment that will not only expand the company's capacity but also improve the quality of its repair services. The board of directors requires all capital investments to meet or exceed the minimum requirement of a 10 percent rate of return. However, the board has not clearly defined the rate of return. The president and controller are pondering two different rates of return: unadjusted rate of return and internal rate of return. The equipment, which costs \$300,000, has a life expectancy of five years. The increased net profit per year will be approximately \$21,000, and the increased cash inflow per year will be approximately \$83,100.

**Required**

- If it uses the unadjusted rate of return (use average investment) to evaluate this project, should the company invest in the equipment?
- If it uses the internal rate of return to evaluate this project, should the company invest in the equipment?
- Which method is better for this capital investment decision?

**LO 9****CHECK FIGURE**

b. NPV: \$(654,174)

**Problem 16-23 Postaudit evaluation**

Kent Beech is reviewing his company's investment in a cement plant. The company paid \$15,000,000 five years ago to acquire the plant. Now top management is considering an opportunity to sell it. The president wants to know whether the plant has met original expectations before he decides its fate. The company's discount rate for present value computations is 8 percent. Expected and actual cash flows follow.

	Year 1	Year 2	Year 3	Year 4	Year 5
Expected	\$3,300,000	\$4,920,000	\$4,560,000	\$4,980,000	\$4,200,000
Actual	2,700,000	3,060,000	4,920,000	3,900,000	3,600,000

**Required**

- Compute the net present value of the expected cash flows as of the beginning of the investment.
- Compute the net present value of the actual cash flows as of the beginning of the investment.
- What do you conclude from this postaudit?

**ANALYZE, THINK, COMMUNICATE****ATC 16-1 Business Application Case Home remodeling decision**

Linda and George Doggett want to replace the windows in the older house they purchased recently. The company they have talked to about doing the work claims that new windows will reduce the couple's heating and cooling costs by around 30 percent. The Doggetts have heard from real estate agents that they will get back 70 percent of the cost of the new windows when they sell their house. The new windows will cost \$25,000.

The heating and cooling costs for the Doggetts' house average around \$4,200 per year, and they expect to stay in this house for 15 years. To pay for the windows they would have to withdraw the money from a mutual fund that has earned an average annual return of 4 percent over the past few years.

**Required**

- From a financial planning perspective alone, determine whether or not the Doggetts should purchase the replacement windows. Show supporting computations.
- (Requirement *b* can be solved only with Excel, or similar software, or with a financial calculator.) Linda and George are not sure their mutual fund will continue to earn 4 percent annually over the next 15 years; therefore, they want to know the minimum return their fund would need to earn to make the new windows financially acceptable. Compute the internal rate of return for the replacement windows.
- Identify some of the nonfinancial factors the couple may wish to consider in addition to the financial aspects of the decision above.

**ATC 16-2 Group Assignment Net present value**

Espada Real Estate Investment Company (EREIC) purchases new apartment complexes, establishes a stable group of residents, and then sells the complexes to apartment management companies. The average holding time is three years. EREIC is currently investigating two alternatives.



1. EREIC can purchase Harding Properties for \$4,500,000. The complex is expected to produce net cash inflows of \$360,000, \$502,500, and \$865,000 for the first, second, and third years of operation, respectively. The market value of the complex at the end of the third year is expected to be \$5,175,000.
  2. EREIC can purchase Summit Apartments for \$3,450,000. The complex is expected to produce net cash inflows of \$290,000, \$435,000, and \$600,000 for the first, second, and third years of operation, respectively. The market value of the complex at the end of the third year is expected to be \$4,050,000.
- EREIC has a desired rate of return of 12 percent.

### Required

- a. Divide the class into groups of four or five students per group and then divide the groups into two sections. Assign Task 1 to the first section and Task 2 to the second section.

### Group Tasks

- (1) Calculate the net present value and the present value index for Harding Properties.
- (2) Calculate the net present value and the present value index for Summit Apartments.
- b. Have a spokesperson from one group in the first section report the amounts calculated by the group. Make sure that all groups in the section have the same result. Repeat the process for the second section. Have the class as a whole select the investment opportunity that EREIC should accept given that the objective is to produce the higher rate of return.
- c. Assume that EREIC has \$4,500,000 to invest and that any funds not invested in real estate properties must be invested in a certificate of deposit earning a 5 percent return. Would this information alter the decision made in Requirement *b*?
- d. This requirement is independent of Requirement *c*. Assume there is a 10 percent chance that the Harding project will be annexed by the city of Hoover, which has an outstanding school district. The annexation would likely increase net cash flows by \$37,500 per year and would increase the market value at the end of year 3 by \$300,000. Would this information change the decision reached in Requirement *b*?

### ATC 16-3 Research Assignment *Capital Expenditures at the Archer Daniels Midland Company*

Obtain **Archer Daniels Midland Company's** (ADM) Form 10-K for the fiscal year ending on June 30, 2006. To obtain the Form 10-K you can use the EDGAR system following the instructions in Appendix A, or it can be found under the "Investor Relations" link on the company's website at [www.admworld.com/naen](http://www.admworld.com/naen). Read the following sections of the 10-K: "General Development of Business" under the "Item I. Business" section; Consolidated Statements of Cash Flows; Note 6—Debt and Financing Arrangements.



### Required

- a. What major plant expansions did ADM announce during 2006? How much does ADM estimate these expansions will cost?
- b. How much did ADM spend on new property, plant, and equipment in its 2006 fiscal year? How much did ADM spend on all forms of investments in 2006?
- c. Where did ADM get the cash used to make these investments?
- d. What interest rate did ADM agree to pay on its most recent long-term borrowings?

### ATC 16-4 Writing Assignment *Limitations of capital investment techniques*

Webb Publishing Company is evaluating two investment opportunities. One is to purchase an Internet company with the capacity to open new marketing channels through which Webb can sell its books. This opportunity offers a high potential for growth but involves significant risk. Indeed, losses are projected for the first three years of operation. The second opportunity is to purchase a printing company that would enable Webb to better control costs by printing its own books. The potential savings are clearly predictable but would make a significant change in the company's long-term profitability.



**Required**

Write a response discussing the usefulness of capital investment techniques (net present value, internal rate of return, payback, and unadjusted rate of return) in making a choice between these two alternative investment opportunities. Your response should discuss the strengths and weaknesses of capital budgeting techniques in general. Furthermore, it should include a comparison between techniques based on the time value of money versus those that are not.

**ATC 16-5 Ethical Dilemma Postaudit**

Gaines Company recently initiated a postaudit program. To motivate employees to take the program seriously, Gaines established a bonus program. Managers receive a bonus equal to 10 percent of the amount by which actual net present value exceeds the projected net present value. Victor Holt, manager of the North Western Division, had an investment proposal on his desk when the new system was implemented. The investment opportunity required a \$250,000 initial cash outflow and was expected to return cash inflows of \$90,000 per year for the next five years. Gaines' desired rate of return is 10 percent. Mr. Holt immediately reduced the estimated cash inflows to \$70,000 per year and recommended accepting the project.

**Required**

- a. Assume that actual cash inflows turn out to be \$91,000 per year. Determine the amount of Mr. Holt's bonus if the original computation of net present value were based on \$90,000 versus \$70,000.
- b. Is Mr. Holt's behavior in violation of any of the standards of ethical conduct in Exhibit 10.14 of Chapter 10?
- c. Speculate about the long-term effect the bonus plan is likely to have on the company.
- d. Recommend how to compensate managers in a way that discourages gamesmanship.

## APPENDIX A

# Accessing the EDGAR Database Through the Internet

Successful business managers need many different skills, including communication, interpersonal, computer, and analytical. Most business students become very aware of the data analysis skills used in accounting, but they may not be as aware of the importance of “data-finding” skills. There are many sources of accounting and financial data. The more sources you are able to use, the better.

One very important source of accounting information is the EDGAR database. Others are probably available at your school through the library or business school network. Your accounting instructor will be able to identify these for you and make suggestions regarding their use. By making the effort to learn to use electronic databases, you will enhance your abilities as a future manager and your marketability as a business graduate.

These instructions assume that you know how to access and use an Internet browser. Follow the instructions to retrieve data from the Securities and Exchange Commission’s EDGAR database. Be aware that the SEC may have changed its interface since this appendix was written. Accordingly, be prepared for slight differences between the following instructions and what appears on your computer screen. Take comfort in the fact that changes are normally designed to simplify user access. If you encounter a conflict between the following instructions and the instructions provided in the SEC interface, remember that the SEC interface is more current and should take precedence over the following instructions.

1. To connect to EDGAR, type in the following address: **<http://www.sec.gov/>**.
2. After the SEC home page appears, under the heading **Filings & Forms (EDGAR)**, click on **Search for Company Filings**.
3. From the screen that appears, click on **Companies & Other Filers**.
4. On the screen that appears, enter the name of the company whose file you wish to retrieve and click on the **Find Companies** button.
5. The following screen will present a list of companies that have the same, or similar, names to the one you entered. Identify the company you want and click on the CIK number beside it.
6. Enter the SEC form number that you want to retrieve in the window titled **Form Type** that appears in the upper right portion of the screen that appears. For example, if you want Form 10-K, which will usually be the case, enter **10-K**, and click on the **Retrieve Filings** button.
7. A list of the forms you requested will be presented, along with the date they were filed with the SEC. You may be given a choice of **[text]** or **[html]** file format. The **[text]** format will present one large file for the form you requested. The **[html]** format will probably present several separate files from which you must choose. These will be named Document 1 . . . , Document 2 . . . , etc. Usually, you should choose the file whose name ends in **10k.txt**. Form 10-K/A is an amended Form 10-K and it sometimes contains more timely information, but usually, the most recent Form 10-K will contain the information you need.
8. Once the 10-K has been retrieved, you can search it online or save it on your hard drive. If you want to save it, do so by using the **Save As** command from the pull-down menu at the top of the screen named **File**.
9. The financial statements are seldom located near the beginning of a company’s 10-K, so it is necessary to scroll down the file until you find them. Typically, they are located about one-half to three-fourths of the way through the report.



## APPENDIX B

# Annual Report for The Topps Company, Inc.

This appendix contains a portion of the Form 10-K for the Topps Company that was filed with the Securities and Exchange Commission on May 10, 2006. The document included in this appendix is Topps' annual report, which was included *as a part* of its complete Form 10-K for the company's 2006 fiscal year.

**This document is included for illustrative purposes, and it is intended to be used for educational purposes only.** It should not be used for making investment decisions. Topps Company's complete Form 10-K may be obtained from the SEC's EDGAR website, using the procedures explained in Appendix A. The Form 10-K may also be found on the company's website at [www.topps.com](http://www.topps.com).

### UNITED STATES SECURITIES AND EXCHANGE COMMISSION Washington, D.C. 20549

### FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended February 25, 2006

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from \_\_\_\_\_ to \_\_\_\_\_

Commission file number 0-15817

## THE TOPPS COMPANY, INC.

(Exact name of registrant as specified in its charter)

Delaware  
(State or other jurisdiction of  
incorporation or organization)

11-2849283  
(I.R.S. Employer  
Identification No.)

One Whitehall Street, New York, NY  
(Address of principal executive offices)

10004  
(Zip Code)

(212) 376-0300  
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:  
Not Applicable

Securities registered pursuant to Section 12(g) of the Act:  
Common Stock par value \$.01  
(Title of class)

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒  
Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this form 10-K or any amendment of this Form 10-K. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer or a non-accelerated filer. See definition of "accelerated filer" and "large accelerated filer" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☐ Accelerated filer ☒ Non-accelerated filer ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

The aggregate market value of Common Stock held by non-affiliates as of the last business day of the most recently completed fiscal second quarter was approximately \$384,077,750.

The number of outstanding shares of Common Stock as of May 4, 2006 was 39,380,471.

Exhibit 13

Dear Stockholders,

Fiscal 2006 was a busy year for Topps as we made measurable progress on a number of key initiatives aimed at streamlining the business, strengthening our management team and fostering a culture of accountability to drive stockholder value. Although our financial results for the year were below expectations, we enter fiscal 2007 a stronger company, with a clear plan and confidence in our prospects for a more profitable year.

In February 2005, the board authorized the company to pursue, with the assistance of Lehman Brothers, a sale of the candy business believing such a step might provide value for the stockholders, in light of recent industry transactions at attractive multiples.

While the sale process evolved during the first half of fiscal '06, we held off restructuring the organization and implementing certain strategic initiatives, anticipating a successful transaction. That failed to occur, however, and the sale process was ultimately terminated in September 2005.

Since then, the nature and pace of activities, in line with recommendations stemming from a strategic study conducted by independent consultants, has been substantial. Here is a sampling of effected changes:

**FISCAL 2006**

**Restructured The Business To Drive Operating Profitability:** We restructured the business to focus on operating profit net of direct overhead rather than contributed margin at our two business units, Confectionery and Entertainment. Beginning in the first quarter of fiscal 2007, financial reporting will reflect this change and lead to more transparency, improved cost management and greater accountability. Now, 80% of our employees report to someone with direct P&L responsibility for a business unit as opposed to 20% before the change.

**Created New Culture of Accountability:** We redesigned the Company's incentive bonus plan to focus heavily on business unit results and track personal performance against specific, measurable goals identified at the outset of the fiscal year. Our new structure increases the visibility of performance by business unit down to its operating profit net of direct overhead, thus enhancing each individual's accountability.

**Reduced Direct and Indirect Costs:** With a tight focus on managing costs, we implemented an 8% reduction in U.S. headquarters headcount for annualized savings, net of strategic hires, of \$2.5 million. We also reduced indirect costs during the year by freezing the pension plan, modifying our retiree medical plan and reducing certain non-medical insurance, litigation and consulting expenses which will generate an additional \$2 million in savings for fiscal 2007.

**Strengthened Leadership to Support New Initiatives:** We made a number of key hires in a few important areas to support our current strategic initiatives. These include:

- Bazooka brand re-launch
- Improved sales through the hobby channel
- Sports marketing to kids
- New product development for candy
- Confectionery marketing and sales in Europe

**Improved Efficiency:** We progressed major systems upgrades and expect phase one of an enterprise resource planning (ERP) system to be operational this summer. The ERP system will link key areas of the business electronically and provide improved control of our purchasing, order entry, customer service, credit and shipping functions. In addition, we are now operational on a new comprehensive trade spending system to help manage this important business cost.

**Achieved Structural Marketing Changes to Benefit Each of our Business Units:**

In Entertainment, we successfully negotiated important changes in our agreements with sports card licensors that are already paying dividends. In Confectionery, we relocated Bazooka manufacturing to reduce costs and have re-launched the brand, complete with reformulated product, new packaging, line extensions and marketing programs.

**FISCAL 2007**

**ENTERTAINMENT**

We believe that progress made in fiscal '06 sets the stage for growth in fiscal '07 and beyond. We will focus on key priorities to create long term value for our stockholders, employees and distribution partners in fiscal 2007.

On the sports card side, having engineered an important change in the licensing structure of the category, our priorities include capturing additional market share and revenue, engaging more kids to collect our sports products and reducing costs.

With respect to market share, as one of the two licensees marketing Major League baseball cards (last year there were four), Topps will now offer 50% of all baseball card products. We intend to increase our category leadership position by garnering more than our "fair share" of dollars spent. For your information, the football card market witnessed a reduction in licensees from four to three last year and we increased both volume and share.

To generate further success, we have set up a specialized group within our sports department dedicated to developing new products at the medium and high price points for serious collectors. The first two products developed by this team, Topps "Triple Threads" and "Co-Signers Baseball" are both enjoying positive initial trade reception. Moreover, early sales of popularly priced Topps Baseball Series 1 already show considerable improvement over fiscal year 2006.

Among efforts to reconnect with kids, we have entered into agreements with video game publisher, 2KSports and the magazine, Sports Illustrated for Kids, both of which should help promote our products in these kids-focused sports venues. For instance, this year Topps Series 1 Baseball contains cards with special codes by which gamers can apply enhanced powers playing the 2K6 video game. In addition, SI for Kids and Topps have developed a Kids Card Club which is now featured monthly in the magazine and on SIKids.com.

We have also implemented marketing programs at virtually every Major League Baseball ballpark this summer, a first for Topps. Whether through our sponsorship of starting lineups where Topps cards will be featured all season long on in-stadium "Jumbotron" or special card give-aways, Topps will be on the field, so to speak, not just in the stores. Moreover, we will be part of a \$2 million plus industry TV campaign beginning in May, dedicated to showing kids how much fun card collecting truly can be.

Internationally, we intend to devote special efforts to the World Cup this year. We have created a number of World Cup-related collectible products that we will launch in targeted markets. Also, we have extended and expanded our English Premier League Football (Soccer) rights, which we believe will yield good results.

Turning to gaming, the market has been soft according to industry sources and we forecast a difficult year for WizKids. Under today's conditions, we believe there is a flight to quality and that the more critical mass one can sustain the better. Accordingly, for the time being we will focus more on our core properties and continue to be extra selective regarding new product introductions such as Horror Clix, planned for launch in the second half of fiscal '07.

Our Entertainment publishing unit will continue to focus on growing franchises and exploiting third party licenses as opportunities are perceived. The Company's own intellectual properties, Wacky Packages and Garbage Pail Kids, enjoy ongoing acceptance in the U.S. marketplace. Series 3 Wacky Packs are heading for a TV advertising test and sampling in select metro markets during the Spring. Later, the product will be packaged with bubble gum qualifying Wackys to appear on candy counters.

On the cost side, we are taking steps to manage operating expenses and grow margins in both the Entertainment and Confectionery businesses. These measures, combined with a planned reduction of obsolescence and returns as a percentage of sales, are expected to result in a further savings of over \$2 million in fiscal 2007.

In sports cards, for instance, our initial focus is on pre-press costs which we anticipate reducing by at least 10% beginning in August. In Confectionery, we will apply the new Synectics trade funds management system and use a consultant to help identify means of reducing both operational complexity and costs at facilities manufacturing our confectionery products in Asia. We will also conduct internal reviews to reduce product component costs on a variety of SKU's.

## **CONFECTIONERY**

The Confectionery business unit in fiscal 2007 is executing a number of strategic initiatives including:

- The re-launch of "new" Bazooka in the US
- Refreshing existing brands, and
- Introducing new products at home and abroad, an activity vital to long term growth.

Having relocated our manufacturing operation, Bazooka products will be more competitively priced and offered in a variety of formats and sku's.

Many activities are associated with product refreshment. Among them, our Baby Bottle Pop brand continues to show growth, most recently driven by a line extension called 2 ·D ·Max. Promotional programs with Nickelodeon and new advertising will be used in support of these initiatives. We will also introduce an addition to the Push Pop family this fall. Overseas, we are in our sixth year successfully marketing container candies featuring Pokemon characters.

On the new products front, we have added resources to this important activity and adopted the theme "Fewer, Bigger, Better." Through this process, we are developing a rather revolutionary new candy product for release in January 2007. Called "Vertigo," the product is aimed at tweens and teens, a different consumer segment than our traditional target, and we are excited about it.

## **CONCLUSION**

In totality, the number of concrete activities underway to build stockholder value is unprecedented in our Company's history. Together with fellow employees throughout the Company, our senior leadership team is confident that we have the people, products and vision to see them through.

On behalf of the organization, we thank our stockholders, consumers, fans, collectors, licensors and suppliers for their loyal support.

Officers of the Topps Company, Inc.  
(Signatures)

*With profound sorrow, we record the passing of our esteemed board member and friend Stanley Tulchin. His vision, warmth and dedication will be well remembered by us all.*

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## Financial Highlights

	Fiscal Year Ended		
	February 25, 2006	February 26, 2005 (a)	February 28, 2004 (a)
	(in thousands of dollars, except share data)		
Net sales	\$ 293,838	\$ 294,231	\$ 294,917
Net income from continuing operations	3,946	11,268	13,628
Loss from discontinued operations — net of tax	(2,707)	(353)	(744)
Net income	1,239	10,915	12,884
Cash (used in) provided by operations	(6,543)	22,930	11,954
Working capital	127,713	139,910	134,099
Stockholders' equity	204,636	219,168	211,340
Per share items:			
Diluted net income — from continuing operations	\$ 0.10	\$ 0.27	\$ 0.33
Diluted net income — after discontinued operations	\$ 0.03	\$ 0.26	\$ 0.31
Cash dividend paid	\$ 0.16	\$ 0.16	\$ 0.12
Weighted average diluted shares outstanding	41,163,000	41,327,000	41,515,000

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(a) As restated, see Note 2 to Notes to Consolidated Financial Statements

## **MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS**

This section provides an analysis of the Company's operating results, cash flow, critical accounting policies, and other matters. It includes or incorporates "forward-looking statements" as that term is defined by the U.S. federal securities laws. In particular, statements using words such as "may", "should", "intend", "estimate", "anticipate", "believe", "predict", "potential", or words of similar import generally involve forward-looking statements. We based these forward-looking statements on our current expectations and projections about future events, and, therefore, these statements are subject to numerous risks and uncertainties. Accordingly, actual results may differ materially from those expressed or implied by the forward-looking statements. We caution readers not to place undue reliance on these forward-looking statements, which speak only as of the date of this report.

The following Management's Discussion and Analysis ("MD&A") gives effect to the restatement discussed in Note 2 to the Consolidated Financial Statements.

### **CONSOLIDATED NET SALES**

The Company has two reportable business segments, Confectionery and Entertainment. The following table sets forth, for the periods indicated, net sales by business segment:

	Fiscal Year Ended		
	February 25, 2006	February 26, 2005	February 28, 2004
	(in thousands of dollars)		
Confectionery	\$144,261	\$143,762	\$147,188
Entertainment	149,577	150,469	147,729
Total	\$293,838	\$294,231	\$294,917

### **Fiscal 2006 versus 2005\***

In fiscal 2006, the Company's consolidated net sales decreased 0.1% to \$293.8 million from \$294.2 million in fiscal 2005. Weaker foreign currencies versus the prior year reduced fiscal 2006 sales by approximately \$600,000. Excluding the impact of stronger foreign currencies, net sales increased by 0.1%.

Worldwide net sales of the Confectionery segment, which includes Ring Pop, Push Pop, Baby Bottle Pop, Juicy Drop Pop and Bazooka brand bubble gum, increased 0.3% to \$144.3 million in 2006 from \$143.8 million in 2005. Foreign exchange had virtually no impact on full year confectionery sales comparisons. Confectionery products accounted for 49% of the Company's net sales in each of 2006 and 2005.

In the U.S., fiscal 2006 confectionery sales reflected distribution gains and strong retail sales of Juicy Drop Pop, now in its third year. In addition, sales of Baby Bottle Pop increased, driven by a successful new media campaign and initial shipments of 2DMax, a new line extension, which will be officially launched in fiscal 2007.

Confectionery sales in overseas markets were influenced by the introduction of Mega Mouth Candy Spray and continued growth of Pokemon candy products, offset by lower year-on-year performance of core brands in select markets, principally the U.K. and Italy. International sales represented 28% of total confectionery sales in fiscal 2006 versus 31% in 2005.

\* Unless otherwise indicated, all date references to 2006, 2005 and 2004 refer to the fiscal years ended February 25, 2006, February 26, 2005 and February 28, 2004, respectively.

Going forward, the Company intends to execute a number of strategic initiatives both in the U.S. and abroad aimed at improving the sales and operating profit of the Confectionery segment. Major initiatives include further establishing Topps as a leader in youth-oriented candy products, building the top line through the relaunch of Bazooka, a focus on innovation and the implementation of a disciplined new product process to fuel future growth, enhanced retail distribution and a renewed emphasis on system-wide cost reduction.

Net sales of the Entertainment segment, which includes cards, sticker album collections, Internet activities and strategy games, decreased 0.6% in fiscal 2006 to \$149.6 million. Weaker foreign currencies versus the prior year served to reduce fiscal 2006 sales by \$0.7 million. Entertainment products represented 51% of the Company's net sales in each of 2006 and 2005.

During the year, the Company reached an agreement on new terms with Major League Baseball and the Players' Association which addressed the industry's product proliferation issues. The deal reduces the number of industry participants from four to two, places a cap on the number of products in the marketplace and requires increased marketing commitments from industry participants targeted at bringing youth back into the market. The combined impact of a positive football season, and to a lesser extent, the new baseball agreement which took effect in January, drove year-over-year increases in sales of sports card products.

Net sales of non-sports products also increased during 2006, a function of successfully marketing products featuring WWE, Star Wars, Pokemon and Wacky Packages. These legacy licenses are a testament to the Company's ability to generate strong publishing sales even in periods of relative licensing inactivity.

Sales of European sports products were below fiscal 2005 levels which was in part a reflection of the absence of products associated with the European Football Championship, which occurs once every four years. In addition, sales of both the Premier League collection in the U.K. and Calcio in Italy were lower than in fiscal 2005. In fiscal 2007, the Company will be marketing products featuring the World Cup, another soccer tournament held every four years.

Finally, sales from WizKids, a developer and marketer of strategy games acquired in July 2003, increased on the strength of a new internally-created category, constructible strategy games, and specifically Pirates products. However, weakness in the gaming industry is expected to put pressure on 2007 sales, at least through the first half, causing the Company to place greater focus on core properties and be more selective in new offerings.

#### **Fiscal 2005 versus 2004**

In fiscal 2005, the Company's consolidated net sales decreased 0.2% to \$294.2 million from \$294.9 million in fiscal 2004. Stronger foreign currencies versus the prior year added \$6.6 million to fiscal 2005 sales. Excluding the impact of stronger foreign currencies, net sales decreased 2.5%.

Worldwide net sales of the Confectionery segment decreased 2.3% to \$143.8 million in 2005 from \$147.2 million in 2004. Stronger foreign currencies provided a \$2.7 million benefit to fiscal 2005 sales. Confectionery products accounted for 49% of the Company's net sales in 2005 and 50% in 2004.

Fiscal 2005 U.S. confectionery sales were impacted in part by industry trends such as consumer nutritional concerns and retail consolidation, particularly in the first nine months of the year. Incremental sales of chewy candy products and strong gains on Juicy Drop Pop contributed favorably to results. For the full year, declines in U.S. confectionery sales of 2.8% were in line with trends in the non-chocolate industry.

Net sales of international confectionery products were also down comparatively in fiscal 2005 due to strong 2004 performance of both Push Pop Flip N'Dip in Japan and Yu-Gi-Oh! candy products in Europe. International sales represented 31% of total confectionery sales in each of fiscal 2005 and fiscal 2004.

Net sales of the Entertainment segment increased 1.9% in fiscal 2005 to \$150.5 million. Stronger foreign currencies provided a \$3.9 million benefit to fiscal 2005 sales. Entertainment products represented 51% of the Company's net sales in 2005 and 50% in fiscal 2004.

Within the Entertainment segment, sales from WizKids increased \$6 million to \$22 million, reflecting a full year of ownership in fiscal 2005 versus a partial year in fiscal 2004. In late fiscal 2005, WizKids created a new product category, constructible strategy games, and launched two new products, Pirates and Football Flix. In addition, sales of European sports products increased in fiscal 2005, reflecting the inclusion of products featuring the European Football Championship held once every four years.

Net sales of U.S. sports products were below the prior year, a function of the absence of a NHL hockey season and continued industry softness in general. The Company believes that this downtrend is due largely to the proliferation of card and memorabilia products and significantly higher price points.

As anticipated, sales of Internet products were below year ago levels in fiscal 2005 as the Company reduced advertising support and explored new directions for this venture. As a result, Internet operations were virtually breakeven in fiscal 2005 versus a loss of almost \$3 million in fiscal 2004.

Finally, fiscal 2005 sales of non-sports publishing products were impacted by the absence of strong licenses, particularly in the fourth quarter. However, during the year, WWE, Barbie, Pokemon and Yu-Gi-Oh! were solid contributors in Europe and Garbage Pail Kids performed well in the U.S.

## **RESULTS OF OPERATIONS**

	Fiscal Year Ended					
	February 25, 2006		February 26, 2005		February 28, 2004	
Net sales	\$293,838	100.0%	\$294,231	100.0%	\$294,917	100.0%
Cost of sales	198,054	67.4%	189,200	64.3%	191,213	64.8%
Gross profit	95,784	32.6%	105,031	35.7%	103,704	35.2%
Sales, general and administrative expenses	98,096	33.4%	92,350	31.4%	87,527	29.7%
(Loss) income from operations	(2,312)	(0.8%)	12,681	4.3%	16,177	5.5%

### **Fiscal 2006 versus 2005**

Fiscal 2006 consolidated gross profit as a percentage of net sales was 32.6% versus 35.7% in 2005. Margins this year were negatively impacted by increases in returns provisions, reported as a net against gross sales. Higher returns resulted from a softer Italian entertainment market and WizKid's expansion into new products and markets. Increased royalty costs driven by the higher mix of royalty-bearing U.S. sports sales and an increase in the effective royalty rate on Premier League products due to lower sales, also put pressure on gross profit margins.

Selling, general & administrative expenses ("SG&A") increased as a percentage of net sales to 33.4% in 2006 from 31.4% in 2005. SG&A dollar spending increased to \$98.1 million in 2006 from \$92.4 million. The primary cause of higher 2006 SG&A is one-time costs associated with the implementation of strategic initiatives totaling \$4.2 million. These include severance and pension costs of \$3.7 million related to a corporate restructuring, \$0.3 million in costs to move Bazooka production to a less expensive manufacturer and a one-time expense of \$0.2 million related to the freeze of our pension plan. Additionally, higher 2006 overhead costs reflect the impact of inflation on salaries and health care costs as well as consulting fees incurred in relation to systems implementation, Sarbanes-Oxley and strategic planning initiatives. Fiscal 2006 overhead cost comparisons benefited from a \$1.8 million WizKids' legal settlement net of legal fees and the absence of a \$1.9 million fine paid to the European Commission in 2005.

Also within SG&A, full year advertising and marketing expenses of \$26.8 million were \$3.5 million above 2005 due to the reinstatement of historical levels of spending for the U.S. confectionery business, advertising support for WizKids' new product format and media for Wacky Packages in the U.S.

Net interest income increased slightly to \$2.9 million in fiscal 2006 from \$2.7 million in fiscal 2005, reflecting rising interest rates.

In fiscal 2006, the Company had a tax benefit versus an effective tax rate of 26.8% in fiscal 2005. The tax benefit was a function of a low earnings base combined with the reversal of tax reserves as a result of a successful IRS tax audit and the Company's tax planning initiatives.

The Company sold thePit.com Internet operations to a third party in January 2006. Accordingly, financial results for this operation have been reclassified and are reported as Loss from discontinued operations – net of tax. In fiscal 2006, this loss, including the asset write-off, totaled \$2.7 million.

Net income in fiscal 2006 was \$1.2 million, or \$0.03 per diluted share, versus \$10.9 million, or \$0.26 per diluted share in 2005.

#### **Fiscal 2005 versus 2004**

Financial results for thePit.com Internet operations have been reclassified to the Discontinued Operations line. See Note 7 – Discontinued Operations – thePit.com.

Fiscal 2005 consolidated gross profit as a percentage of net sales was 35.7%, up from 35.2% in 2004. Fiscal 2005 margins were favorably impacted by lower obsolescence costs following abnormally high write-offs at WizKids and the domestic confectionery and European publishing businesses in fiscal 2004. Improved gross profit margins also reflected lower tooling and mold costs on WizKids and European confectionery products. Partially offsetting these improvements were higher autograph and relic costs on U.S. sports cards and an increase in effective royalties associated with England Premier League products.

Selling, general & administrative expenses increased as a percentage of net sales to 31.4% in 2005 from 29.7% in the prior year. SG&A dollar spending increased to \$92.4 million in 2005 from \$87.5 million. A \$1.9 million fine paid to the European Commission and the full year of WizKids ownership versus a partial year in 2004, were the primary reasons for the dollar increase. Additionally, higher professional fees, in particular legal, Sarbanes-Oxley and consulting-related expenses, impacted fiscal 2005 SG&A. The Company estimates fees paid to third parties related to Sarbanes-Oxley Section 404 compliance were approximately \$1.1 million in 2005.

Within SG&A, full year advertising and marketing expenses of \$23.3 million were \$0.5 million below 2004 due to reduced spending on U.S. confectionery and Internet products, partially offset by increased marketing activity overseas. U.S. confectionery advertising exceeded historical levels in the fourth quarter.

Net interest income increased slightly to \$2.7 million in fiscal 2005 from \$2.4 million in fiscal 2004, reflecting rising interest rates and higher average investment balances.

The fiscal 2005 effective tax rate was 26.8% versus 26.7% in fiscal 2004.

Net income in fiscal 2005 was \$10.9 million, or \$0.26 per diluted share, versus \$12.9 million, or \$0.31 per diluted share in 2004. Excluding the impact of the non-tax deductible European Commission fine, fiscal 2005 net income was \$12.8 million, or \$0.31 per diluted share.

## Quarterly Comparisons

Management believes that quarter-to-quarter comparisons of sales and operating results are affected by a number of factors. The Company's sales of Confectionery products are generally stronger in the first two fiscal quarters of the year. However, sales can be significantly impacted by the introduction of new products and line extensions as well as by advertising and consumer and trade support programs.

In the Entertainment segment, sales of U.S. sports card products are sold throughout the year, spanning the three major sports seasons in which the Company currently participates, i.e. baseball, football, and basketball. The new baseball agreement condensed the period during which baseball products are sold causing certain products previously sold in the third quarter to be pushed to the fourth quarter of fiscal 2006. Topps Europe's sales generally of sports sticker album products are driven largely by shipments of Premier League Soccer products, with much of the sales activity occurring in the fourth fiscal quarter. Sales of non-sports cards, sticker albums and games tend to be impacted by the timing of product introductions and the property on which they are based, often peaking with the release of a movie or the rise in popularity of a particular licensed property.

The net result of the above factors is that quarterly results vary. See Note 22 of Notes to Consolidated Financial Statements.

## Inflation

In the opinion of management, inflation has not had a material effect on the operations or financial results of the Company.

## Liquidity and Capital Resources

Management believes that the Company has adequate means to meet its liquidity and capital resource needs over the foreseeable future as a result of the combination of cash on hand, anticipated cash from operations and credit line availability.

The Company entered into a credit agreement with Chase Manhattan Bank on September 14, 2004. The agreement provides for a \$30.0 million unsecured facility to cover revolver and letter of credit needs and expires on September 13, 2007. With the exception of \$0.6 million reserved for letters of credit, the \$30.0 million credit line was available as of February 25, 2006. (See Note 11 – Long-Term Debt.)

The Company has presented its portfolio of auction rate securities as short-term investments. Year-over-year changes in the amounts of these securities are being shown under investing activities on the Consolidated Statement of Cash Flows.

As of February 25, 2006, the Company had \$28.2 million in cash and cash equivalents and an additional \$53.3 million in short-term investments, for a total of \$81.4 million.

During fiscal 2006, the Company's net decrease in cash and cash equivalents was \$8.3 million versus a decrease of \$20.5 million in 2005. The net decrease in cash and cash equivalents and short-term investments combined was \$25.0 million in fiscal 2006, versus an increase of \$12.6 million in fiscal 2005.

Net cash used by operating activities in 2006 was \$6.5 million versus cash generated by operating activities of \$22.9 million in 2005. The fiscal 2006 cash use was primarily a function of the low level of net earnings as well as an increase in working capital resulting from a reduction in income taxes payable, higher inventories reflecting the acquisition of sports autographs and a build up of stock prior to a shift in Bazooka production and an increase in receivables driven by the strong sales and timing of U.S. sports card shipments.



Cash generated by investing activities in 2006 of \$13.8 million largely reflects the net sale of \$16.7 million of short-term investments. The Company also spent \$2.9 million in capital expenditures, primarily for computer hardware and software related to the implementation of a the first phase of an ERP system, as well as for other IT-related investments in the U.S. and Europe. Fiscal 2007 capital spending is projected to be approximately \$4 million, driven by investments in Ring Pop production equipment and computer software and hardware. Capital spending will be funded out of cash flow from operating activities.

Cash used in financing activities in 2006 of \$12.5 million reflects \$6.0 million of treasury stock purchases net of options exercised plus \$6.5 million in dividend payments, versus \$2.3 million in treasury stock purchases net of options exercised and \$6.5 million in dividend payments in 2005. The increase in treasury stock purchases in 2006 is a result of the Company's 10b5-1 program, initiated mid-year, which provides for a minimum purchase of 500,000 shares a quarter, assuming the share price remains below a certain threshold.

Finally, the \$3.1 million unfavorable effect of exchange rate changes on cash and cash equivalents, which is due to the impact of weaker currencies on foreign subsidiaries' cash balances when translated into U.S. dollars, was \$4.1 million worse than in 2005. This change reflects a weakening of European currencies against the U.S. dollar in fiscal 2006, versus a strengthening in fiscal 2005.

In October 2001, the Company's Board of Directors authorized the repurchase of up to 5 million shares of Company common stock. During fiscal 2005, the Company purchased 444,400 shares at an average price of \$9.25 per share. During the first half of fiscal 2006, the Company did not purchase any shares due to a strategic business review being performed by investment banking and consulting firms. In September 2005, the Company entered into a written trading plan that complies with Rule 10b5-1 under the Securities Exchange Act of 1934, as amended, which provides for the purchase of 500,000 shares for each of the next four quarters starting in the third quarter of fiscal 2006 at the prevailing market price, per share, subject to certain conditions. In addition, the Board of Directors increased the outstanding share authorization by 3,390,700 shares to 5 million shares. As of February 25, 2006, the Company had purchased 1,027,899 shares under this amended authorization, leaving 3,972,101 shares available for future purchases. See Note 15 - Capital Stock. The Company anticipates purchasing additional shares in the future to complete the authorization.

### **Contractual Obligations**

Future minimum payments under existing key contractual obligations are as follows: (in thousands)

	<u>Total</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>Thereafter</u>
Future payments under non-cancelable leases	\$ 10,600	\$ 2,579	\$ 2,247	\$ 2,128	\$ 1,826	\$ 1,284	\$ 536
Purchase obligations	16,797	11,011	2,151	952	700	700	1,283
Future payments under royalty contracts	<u>81,642</u>	<u>23,362</u>	<u>20,167</u>	<u>19,793</u>	<u>18,320</u>	<u>—</u>	<u>—</u>
Total	<u>\$109,039</u>	<u>\$36,952</u>	<u>\$24,565</u>	<u>\$22,873</u>	<u>\$20,846</u>	<u>\$1,984</u>	<u>\$ 1,819</u>

The Company anticipates making a payment of approximately \$1.5 – 2.5 million in fiscal 2007 for the funding of its qualified pension plans.

### **Critical Accounting Policies**

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires Topps management to make estimates and judgments that affect the reported amounts of revenue, expenses, assets, liabilities and the disclosure of contingent assets and liabilities. Actual results may differ from these estimates under different assumptions or conditions.

Note 1 to the Company's consolidated financial statements "Summary of Significant Accounting Policies" summarizes its significant accounting policies. Following is a summary of the critical policies and methods used.

**Revenue Recognition:** Revenue related to sales of the Company's products is generally recognized when products are shipped, the title and risk of loss has passed to the customer, the sales price is fixed or determinable and collectibility is reasonably assured. Sales made on a returnable basis are recorded net of a provision for estimated returns. These estimates are revised, as necessary, to reflect actual experience and market conditions.

**Returns Provisions:** In determining the provision for returns, the Company performs an in-depth review of wholesale and retail inventory levels, trends in product sell-through by sales channel, and other factors. The provision for returns was \$29.8 million in 2006, \$22.0 million in 2005 and \$17.4 million in 2004, which equates to 10.2%, 7.5% and 5.9% of net sales, respectively. The recent increase in returns provisions is largely the result of a softer Italian entertainment market in fiscal 2006, unusually high returns of products associated with the European Football championship in fiscal 2005 and WizKids' expansion into new products and markets. An increase or decrease in the provision for returns by 1% of sales would decrease or increase operating income by approximately \$3.0 million.

**Goodwill and Intangible Assets:** Management evaluates the recoverability of finite-lived intangible assets under the provisions of Statement of Financial Accounting Standards No. 144 *Accounting for the Impairment or Disposal of Long-lived Assets* ("SFAS 144") based on projected undiscounted cash flows. The recoverability of goodwill is evaluated in accordance with SFAS No. 142 *Goodwill and Other Intangible Assets* ("SFAS 142") and is based on a comparison of the fair value of a reporting unit with its carrying amount. Both the market approach (use of multiples from comparable companies) and the income approach (present value of future income streams) are used in determining the fair value of a reporting unit. The Company performs its annual test of impairment of goodwill as of the first day of its fourth quarter.

**Intangible Assets:** Intangible assets include trademarks and the value of sports, entertainment and proprietary product rights. Amortization is by the straight-line method over estimated lives of up to fifteen years. Management evaluates the recoverability of finite-lived intangible assets under the provisions of Statement of Financial Accounting Standards No. 144 *Accounting for the Impairment or Disposal of Long-lived Assets* ("SFAS 144") based on the projected undiscounted cash flows attributable to the individual assets, among other methods.

**Accruals for Obsolete Inventory:** The Company's accrual for obsolete inventory reflects the cost of items in inventory not anticipated to be sold or anticipated to be sold at less than cost. This accrual may be deemed necessary as a result of discontinued items and packaging or a reduction in forecasted sales. The provision for obsolete inventory was \$5.4 million in fiscal 2006, \$4.9 million in fiscal 2005 and \$7.5 million in fiscal 2004, which equates to 1.8%, 1.7% and 2.5% of net sales, respectively. An increase or decrease in the provision for obsolescence by 1% of sales would decrease or increase operating income by approximately \$3.0 million.

**Income Taxes:** Deferred tax assets and liabilities represent the tax effects of temporary book-tax differences which will become payable or refundable in future periods. The Company has accrued tax reserves for probable exposures and, as a result, any assessments resulting from current tax audits should not have a material adverse effect on the Company's consolidated net income.

#### **Disclosures About Market Risk**

There is no material risk to financial results due to market risk. The Company's exposure to market risk is largely related to the impact of mark-to-market changes in foreign currency rates on forward contracts. As of February 25, 2006, the Company had \$21.0 million in forward contracts which were entered into for the purpose of reducing the impact of changes in foreign currency rates associated with firm and forecasted receipts and disbursements.

The Company's primary exchange rate exposure is with the Euro against the British pound, the Japanese yen and the U.S. dollar. At maturity, the proceeds or outlays from the foreign exchange contracts offset a corresponding additional or reduced outlay in the underlying currency. The recognition of mark-to-market gains and losses on these contracts accelerates the gains and losses that would otherwise be recognized when the contracts mature and generally does not result in an incremental impact on earnings or cash flows. The Company has no long-term debt and does not engage in any commodity-related derivative transactions.

### **New Accounting Pronouncements**

In 2004, the Financial Accounting Standards Board ("FASB") issued FASB Statement No. 151, *Inventory Costs*, to clarify the accounting for abnormal amounts of idle facility expense, freight, handling costs, and wasted material (spoilage). This statement is effective for annual periods beginning after June 15, 2005 and requires that those items be recognized as current period charges regardless of whether they meet the criterion of "so abnormal" as defined by Accounting Research Bulletin No. 43. The provisions of this Statement are effective for inventory costs incurred during fiscal years beginning after June 15, 2005. The Company will adopt this Statement on February 26, 2006 and expects that the adoption will not have a material effect on the Company's consolidated financial statements.

In 2004, the FASB issued Statement No. 123 (revised 2004), *Share-Based Payments* ("SFAS 123R"). This Statement requires that the cost resulting from all share-based payment transactions be recognized in the financial statements and establishes fair value as the measurement objective in accounting for all share-based payment arrangements. The Company will adopt SFAS 123R using the modified prospective basis on February 26, 2006. The adoption of this Statement is expected to result in compensation expense of approximately \$200,000 in fiscal 2007 (unaudited) related to unvested options outstanding at February 25, 2006. The estimate of future stock-based compensation expense is affected by the Company's stock price, the number of stock-based awards that may be granted in fiscal 2007, fluctuation in the Company's valuation assumptions and the related tax effect.

In 2004, the FASB issued FSP No. 109-2, *Accounting and Disclosure Guidance for the Foreign Earnings Repatriation Provision with the American Job Creation Act of 2004*. FSP No. 109-2 provides guidance for reporting and disclosing certain foreign earnings that are repatriated, as defined by the Act, which was signed into law on October 22, 2004. The Act would have allowed the Company to deduct 85% of certain qualifying foreign earnings available for repatriation to the United States during the fiscal years ended 2005 and 2006. The Company evaluated the potential impact of repatriating earnings and decided not to do so under the provisions of the Act.

In 2004, the FASB issued SFAS No. 153, *Exchanges of Non-monetary Assets*, which eliminates the exception for non-monetary exchanges of similar productive assets and replaces it with a general exception for exchanges of non-monetary assets that do not have commercial substance. SFAS No. 153 will be effective for non-monetary asset exchanges occurring in fiscal periods beginning after June 15, 2005. The Company is currently evaluating the impact of adopting this standard in its future financial statements.

In 2005, FASB Interpretation No. 47, *Accounting for Conditional Asset Retirement Obligations*, an interpretation of FASB Statement No. 143, *Accounting for Asset Retirement Obligations* required that an entity recognize the fair value of a liability for a conditional asset retirement obligation in the period in which it is incurred if a reasonable estimate of fair value can be made. An asset retirement obligation would be reasonably estimable if (a) it is evident that the fair value of the obligation is embodied in the acquisition price of the asset, (b) an active market exists for the transfer of the obligation, or (c) sufficient information exists to apply to an expected present value technique. FASB Interpretation No. 47 became effective for companies with fiscal years ending after December 15, 2005. The adoption of this statement did not have an impact on the Company's consolidated financial statements.

The Topps Company, Inc. and Subsidiaries  
Consolidated Statements of Operations  
(in thousands of dollars, except per share and share data)

	Fiscal Year Ended		
	February 25, 2006	February 26, 2005 (As restated, see Note 2)	February 28, 2004 (As restated, see Note 2)
Net sales	\$ 293,838	\$ 294,231	\$ 294,917
Cost of sales	198,054	189,200	191,213
Gross profit on sales	95,784	105,031	103,704
Selling, general and administrative expenses	98,096	92,350	87,527
(Loss) income from operations	(2,312)	12,681	16,177
Interest income, net	2,912	2,706	2,426
Income before benefit (provision) for income taxes	600	15,387	18,603
Benefit (provision) for income taxes	3,346	(4,119)	(4,975)
Net income from continuing operations	3,946	11,268	13,628
Loss from discontinued operations — net of tax	2,707	353	744
Net income	<u>\$ 1,239</u>	<u>\$ 10,915</u>	<u>\$ 12,884</u>
Basic net income per share:			
- From continuing operations	\$ 0.10	\$ 0.28	\$ 0.34
- From discontinued operations	\$ (0.07)	\$ (0.01)	\$ (0.02)
Basic net income per share	<u>\$ 0.03</u>	<u>\$ 0.27</u>	<u>\$ 0.32</u>
Diluted net income per share:			
- From continuing operations	\$ 0.10	\$ 0.27	\$ 0.33
- From discontinued operations	(0.07)	(0.01)	(0.02)
Diluted net income per share	<u>\$ 0.03</u>	<u>\$ 0.26</u>	<u>\$ 0.31</u>
Weighted average shares outstanding			
- basic	40,349,000	40,471,000	40,604,000
- diluted	41,163,000	41,327,000	41,515,000

See Notes to Consolidated Financial Statements

The Topps Company, Inc. and Subsidiaries  
Consolidated Balance Sheets  
(in thousands of dollars, except per share and share data)

	February 25, 2006	February 26, 2005 (As restated, see Note 2)
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	\$ 28,174	\$ 36,442
Short-term investments	53,269	69,955
Accounts receivable, net	31,180	27,851
Inventories	36,781	32,936
Income tax receivable	1,407	338
Deferred tax assets	5,687	5,380
Prepaid expenses and other current assets	11,134	14,541
Total current assets	167,632	187,443
Property, plant and equipment, net	11,028	11,968
Goodwill	63,405	67,566
Intangible assets, net	6,424	8,544
Deferred tax assets	6,334	3,022
Other assets	13,815	11,847
Total assets	<u>\$268,638</u>	<u>\$ 290,390</u>
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
Current liabilities:		
Accounts payable	\$ 11,263	\$ 12,658
Accrued expenses and other liabilities	25,345	27,485
Income taxes payable	3,311	7,390
Total current liabilities	39,919	47,533
Accrued pension obligation	24,083	23,689
Total liabilities	64,002	71,222
Stockholders' equity:		
Preferred stock, par value \$.01 per share authorized 10,000,000 shares, none issued	—	—
Common stock, par value \$.01 per share, authorized 100,000,000 shares; issued 49,244,000 shares as of February 25, 2006 and February 26, 2005	492	492
Additional paid-in capital	28,644	28,293
Treasury stock, 9,539,000 shares and 8,790,000 shares as of February 25, 2006 and February 26, 2005, respectively	(91,376)	(85,060)
Retained earnings	269,954	275,205
Minimum pension liability adjustment	(5,551)	(5,824)
Cumulative foreign currency adjustment	2,473	6,062
Total stockholders' equity	204,636	219,168
Total liabilities and stockholders' equity	<u>\$268,638</u>	<u>\$ 290,390</u>

See Notes to Consolidated Financial Statements

The Topps Company, Inc. and Subsidiaries  
Consolidated Statements of Cash Flows  
(in thousands of dollars)

	Fiscal Year Ended		
	February 25, 2006	February 26, 2005 (As restated, see Note 2)	February 28, 2004 (As restated, see Note 2)
Cash flows (used in) provided by operating activities:			
Net income from continuing operations	\$ 3,946	\$ 11,268	\$ 13,628
Adjustments to reconcile net income to cash flows:			
Depreciation and amortization	5,829	5,833	5,768
Deferred taxes	(3,749)	2,261	1,523
Net effect of changes in:			
Accounts receivable	(3,335)	2,258	(2,538)
Inventories	(4,086)	84	501
Income tax receivable/payable	(5,153)	585	(2,256)
Prepaid expense and other current assets	3,376	(2,847)	(1,048)
Payables and other current liabilities	(3,068)	2,329	(7,083)
All other	445	781	3,737
Cash (used in) provided by operating activities – continuing operations	(5,795)	22,552	12,232
Cash (used in) provided by operating activities – discontinued operations	(748)	378	(278)
Cash (used in) provided by operating activities – total	(6,543)	22,930	11,954
Cash flows from investing activities:			
Purchase of business	—	—	(28,650)
Purchase of short-term investments	(291,567)	(155,487)	(49,953)
Sale of short-term investments	308,253	122,410	41,650
Purchases of property, plant and equipment	(2,885)	(2,625)	(2,720)
Cash provided by (used in) investing activities – continuing operations	13,801	(35,702)	(39,673)
Cash provided by (used in) investing activities – discontinued operations	—	(9)	(122)
Cash provided by (used in) investing activities – total	13,801	(35,711)	(39,795)
Cash flows from financing activities:			
Dividends paid	(6,490)	(6,477)	(4,868)
Exercise of stock options	1,831	1,814	1,770
Purchase of treasury stock	(7,796)	(4,123)	(2,781)
Cash used in financing activities – continuing operations	(12,455)	(8,786)	(5,879)
Effect of exchange rate changes on cash and cash equivalents	(3,071)	1,050	4,995
Net decrease in cash and cash equivalents	(8,268)	(20,517)	(28,725)
Cash and cash equivalents at beginning of year	36,442	56,959	85,684
Cash and cash equivalents at end of year	<u>\$ 28,174</u>	<u>\$ 36,442</u>	<u>\$ 56,959</u>



	Fiscal Year Ended		
	February 25, 2006	February 26, 2005 (As restated, see Note 2)	February 28, 2004 (As restated, see Note 2)
Supplemental disclosures of cash flow information:			
Interest paid	\$ 107	\$ 258	\$ 322
Income taxes paid	<u>\$ 2,082</u>	<u>\$ 3,883</u>	<u>\$ 6,398</u>

See Notes to Consolidated Financial Statements

The Topps Company, Inc. and Subsidiaries  
Consolidated Statements of Stockholders' Equity and Comprehensive Income  
(in thousands of dollars)

	Total	Common Stock	Additional Paid-in Capital	Treasury Stock	Retained Earnings	Accumulated Other Comprehensive (Loss) Income
Balance at March 1, 2003 as originally reported	\$196,768	\$ 492	\$ 27,344	\$(80,791)	\$262,877	\$ (13,154)
Effect of restatement (see Note 2)	(126)				(126)	
Stockholders' equity as of March 1, 2003 (As restated, see Note 2)	<u>196,642</u>	<u>492</u>	<u>27,344</u>	<u>(80,791)</u>	<u>262,751</u>	<u>(13,154)</u>
Net income (As restated, see Note 2)	12,884	—	—	—	12,884	—
Translation adjustment	6,823	—	—	—	—	6,823
Minimum pension liability, net of tax	870	—	—	—	—	870
Total comprehensive income (As restated, see Note 2)	20,577	—	—	—	12,884	7,693
Cash dividends	(4,868)	—	—	—	(4,868)	—
Purchase of treasury stock	(2,781)	—	—	(2,781)	—	—
Exercise of employee stock options	<u>1,770</u>	<u>—</u>	<u>485</u>	<u>1,285</u>	<u>—</u>	<u>—</u>
Stockholders' equity as of February 28, 2004 (As restated, see Note 2)	<u>211,340</u>	<u>492</u>	<u>27,829</u>	<u>(82,287)</u>	<u>270,767</u>	<u>(5,461)</u>
Net income (As restated, see Note 2)	10,915	—	—	—	10,915	—
Translation adjustment	1,864	—	—	—	—	1,864
Minimum pension liability, net of tax	3,835	—	—	—	—	3,835
Total comprehensive income (As restated, see Note 2)	16,614	—	—	—	10,915	5,699
Cash dividends	(6,477)	—	—	—	(6,477)	—
Purchase of treasury stock	(4,123)	—	—	(4,123)	—	—
Exercise of employee stock options	<u>1,814</u>	<u>—</u>	<u>464</u>	<u>1,350</u>	<u>—</u>	<u>—</u>
Stockholders' equity as of February 26, 2005 (As restated, see Note 2)	<u>219,168</u>	<u>492</u>	<u>28,293</u>	<u>(85,060)</u>	<u>275,205</u>	<u>238</u>
Net income	1,239	—	—	—	1,239	—
Translation adjustment	(3,589)	—	—	—	—	(3,589)
Minimum pension liability, net of tax	273	—	—	—	—	273
Total comprehensive income	(2,077)	—	—	—	1,239	(3,316)
Cash dividends	(6,490)	—	—	—	(6,490)	—
Purchase of treasury stock	(7,796)	—	—	(7,796)	—	—
Exercise of employee stock options	<u>1,831</u>	<u>—</u>	<u>351</u>	<u>1,480</u>	<u>—</u>	<u>—</u>
Stockholders' equity as of February 25, 2006	<u>\$204,636</u>	<u>\$ 492</u>	<u>\$ 28,644</u>	<u>\$(91,376)</u>	<u>\$269,954</u>	<u>\$ (3,078)</u>

See Notes to Consolidated Financial Statements

**NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES**

**Principles of Consolidation:** The consolidated financial statements include the accounts of The Topps Company, Inc. and its subsidiaries (the “Company”). All intercompany items and transactions have been eliminated in consolidation.

The Company and its subsidiaries operate and report financial results on a fiscal year of 52 or 53 weeks which ends on the Saturday closest to the end of February. Fiscal 2004, fiscal 2005 and fiscal 2006 were all comprised of 52 weeks.

**Foreign Currency Translation:** The financial statements of subsidiaries outside the United States, except those subsidiaries located in highly inflationary economies or where costs are primarily U.S. dollar-based, are generally measured using the local currency as the functional currency. Assets and liabilities of these subsidiaries are translated at the rates of exchange as of the balance sheet date, with the resultant translation adjustments included in accumulated other comprehensive income. Income and expense items are translated at the average exchange rate for the month. Gains and losses from foreign currency transactions of these subsidiaries are included in net income. The Company has no foreign subsidiaries operating in highly inflationary economies or where inventory costs are U.S. dollar-based for which the financial statements are measured using the U.S. dollar as the functional currency.

**Derivative Financial Instruments:** From time to time, the Company enters into contracts that are intended and effective as hedges of foreign currency risks associated with the anticipated purchase of confectionery inventories from foreign suppliers. It also enters into contracts in order to hedge risks associated with the collection of receivables from certain foreign countries. The Company does not hold or issue derivative financial instruments for trading purposes.

**Cash Equivalents:** The Company considers investments in highly liquid debt instruments with a maturity of three months or less to be cash equivalents.

**Short-term investments:** Investments in auction rate instruments as well as bank certificates of deposit and other debt investments with maturities in excess of three months and subject to an early withdrawal penalty are reported as short-term investments.

**Inventories:** Inventories are stated at lower of cost or market. Cost is determined on the first-in, first-out basis.

**Property, Plant and Equipment (“PP&E”):** PP&E is stated at cost. Depreciation is computed using the straight-line method based on estimated useful lives of twenty-five years for buildings, three to twelve years for machinery, equipment and software, and the remaining lease period for leasehold improvements. Expenditures for new property, plant or equipment that substantially extend the useful life of an asset are capitalized. Ordinary repair and maintenance costs are expensed as incurred. In accordance with Statement of Financial Accounting Standards (“SFAS”) No. 144, *Accounting for the Impairment or Disposal of Long-Lived Assets* (“SFAS 144”), the Company periodically evaluates the carrying value of its PP&E for circumstances which may indicate impairment.

**Goodwill and Intangible Assets:** Management evaluates the recoverability of finite-lived intangible assets under the provisions of SFAS 144 based on projected undiscounted cash flows. The recoverability of goodwill is evaluated in accordance with SFAS No. 142 *Goodwill and Other Intangible Assets* (“SFAS 142”) and is based on a comparison of the fair value of a reporting unit with its carrying amount. Both the market approach (use of multiples from comparable companies) and the income approach (present value of future income streams) are used in determining the fair value of a reporting unit. The Company performs its annual test of impairment of goodwill as of the first day of its fourth quarter.

**Revenue Recognition:** The Company recognizes revenue when the following criteria are met: the products are shipped, the title and risk of loss has passed to the customer, the sales price is fixed or determinable and collectibility is reasonably assured. Sales made on a returnable basis are recorded net of a provision for estimated returns. These estimates are revised, as necessary, to reflect actual experience and market conditions. In fiscal 2006, approximately 68% of the

Company's sales were made on a returnable basis, and the returns expense for the years ended February 25, 2006, February 26, 2005 and February 28, 2004 were \$29.8 million, \$22.0 million and \$17.4 million, respectively.

**Estimates:** The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates which affect the reporting of assets and liabilities as of the dates of the financial statements and revenues and expenses during the reporting period. These estimates primarily relate to the provision for sales returns, allowance for doubtful accounts and inventory obsolescence. In each case, prior to booking an accounting entry, the Company does an in-depth review of available information including wholesale and retail inventory levels and product sell-through in the case of returns, receivables aging and account credit-worthiness for the allowance for doubtful accounts and component and finished goods inventory levels and product sell-through for obsolescence. Actual results could differ from these estimates.

**Income Taxes:** The Company provides for deferred income taxes resulting from temporary differences between the valuation of assets and liabilities in the financial statements and the carrying amounts for tax purposes. Such differences are measured using the tax rates and laws in effect for the years in which the differences are expected to reverse.

**Employee Stock Options:** The Company accounts for stock-based employee compensation based on the intrinsic value of stock options granted in accordance with the provisions of APB 25, *Accounting for Stock Issued to Employees*. The pro forma effect, had the Company accounted for stock-based employee compensation based on the fair value of stock options granted in accordance with SFAS 123, *Accounting for Stock-Based Compensation*, is shown below:

	As Reported	Stock-based Employee Compensation	Pro forma
	(In thousands of dollars, except share data)		
<b>2006</b>			
Net income	\$ 1,239	\$ (312)	\$ 927
Earnings per share			
Basic	\$ 0.03		\$ 0.02
Diluted	\$ 0.03		\$ 0.02
<b>2005</b>			
Net income	\$10,915	\$ (1,054)	\$ 9,861
Earnings per share			
Basic	\$ 0.27		\$ 0.24
Diluted	\$ 0.26		\$ 0.24
<b>2004</b>			
Net income	\$12,884	\$ (1,247)	\$11,637
Earnings per share			
Basic	\$ 0.32		\$ 0.29
Diluted	\$ 0.31		\$ 0.28

Options typically vest within a three-year period. In determining the preceding pro forma amounts under SFAS 123, the fair value of each option grant is estimated as of the date of grant using the Black-Scholes option pricing model. Following are the key assumptions: \$0.16 per share dividend on fiscal 2006, 2005 and 2004 options; risk free interest rate, estimated volatility and expected life as follows: fiscal 2006 options — 4.4%, 29% and 5.8 years, respectively; 2005 options — 4.4%, 32% and 5.8 years, respectively; fiscal 2004 options — 4.4%, 38% and 6.5 years, respectively. Changes in assumptions used could have a material effect upon the pro-forma results.

**Advertising and Marketing Expenses:** Advertising and marketing expenses (which encompass media spending, customer promotions and research) included in selling, general and administrative expenses amounted to \$26,772,000 in fiscal 2006, \$23,253,000 in fiscal 2005 and \$23,820,000 in fiscal 2004. Advertising and marketing expenses are recognized as incurred. Costs relating to future periods are classified as prepaid.

**Reclassifications:** Certain items in the prior years' financial statements have been reclassified to conform with current year's presentation.

**Research and Development Expenses:** Research and development costs are included in selling, general and administrative expenses and are recognized as incurred.

### **New Accounting Pronouncements**

In 2004, the Financial Accounting Standards Board ("FASB") issued FASB Statement No. 151, *Inventory Costs*, to clarify the accounting for abnormal amounts of idle facility expense, freight, handling costs, and wasted material (spoilage). This statement is effective for annual periods beginning after June 15, 2005 and requires that those items be recognized as current period charges regardless of whether they meet the criterion of "so abnormal" as defined by Accounting Research Bulletin No. 43. The provisions of this Statement are effective for inventory costs incurred during fiscal years beginning after June 15, 2005. The Company will adopt this Statement on February 26, 2006 and expects that the adoption will not have a material effect on the Company's consolidated financial statements.

In 2004, the FASB issued Statement No. 123 (revised 2004), *Share-Based Payments* ("SFAS 123R"). This Statement requires that the cost resulting from all share-based payment transactions be recognized in the financial statements and establishes fair value as the measurement objective in accounting for all share-based payment arrangements. The Company will adopt SFAS 123R using the modified prospective basis on February 26, 2006. The adoption of this Statement is expected to result in compensation expense of approximately \$200,000 in fiscal 2007 (unaudited) related to unvested options outstanding at February 25, 2006. The estimate of future stock-based compensation expense is affected by the Company's stock price, the number of stock-based awards that may be granted in fiscal 2007, fluctuation in the Company's valuation assumptions and the related tax effect.

In 2004, the FASB issued FSP No. 109-2, *Accounting and Disclosure Guidance for the Foreign Earnings Repatriation Provision with the American Job Creation Act of 2004*. FSP No. 109-2 provides guidance for reporting and disclosing certain foreign earnings that are repatriated, as defined by the Act, which was signed into law on October 22, 2004. The Act would have allowed the Company to deduct 85% of certain qualifying foreign earnings available for repatriation to the United States during the fiscal years ended 2005 and 2006. The Company evaluated the potential impact of repatriating earnings and decided not to do so under the provisions of the Act.

In 2004, the FASB issued SFAS No. 153, *Exchanges of Non-monetary Assets*, which eliminates the exception for non-monetary exchanges of similar productive assets and replaces it with a general exception for exchanges of non-monetary assets that do not have commercial substance. SFAS No. 153 will be effective for non-monetary asset exchanges occurring in fiscal periods beginning after June 15, 2005. The Company is currently evaluating the impact of adopting this standard in its future financial statements.

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## **NOTE 2 – RESTATEMENT OF CONSOLIDATED FINANCIAL STATEMENTS**

Subsequent to the issuance of the consolidated financial statements for the year ended February 26, 2005, the Company determined (i) that upon performing a full property, plant and equipment analysis and implementation of a new fixed asset tracking system various assets that had been abandoned, sold or impaired, were still being depreciated at their original cost values, as well as that errors had been made in the calculation related to the depreciation of certain assets, and (ii) that there were errors in the prior years' state tax provision raised by the Company while preparing its 2006 tax provision primarily related to a deferred state tax over-accrual in 2004 that was not properly reversed in 2005. As a result, the Company has restated the accompanying fiscal 2005 and 2004 consolidated financial statements.

The impact of the restatement on the Company's beginning retained earnings as of March 1, 2003 was a reduction of \$126,000.



The significant impacts of the restatement on the consolidated financial statements are as follows (in thousands, except per share amounts):

	As of February 26, 2005	
	As Previously Reported	As Restated
	(In thousands)	
Consolidated Balance Sheet:		
Deferred tax assets	\$ 3,616	\$ 5,380
Total current assets	185,679	187,443
Property, plant and equipment, net	12,553	11,968
Deferred tax assets	4,222	3,022
Total assets	290,411	290,390
Retained earnings	275,226	275,205
Total stockholders' equity	\$ 219,189	\$ 219,168

	Fiscal Year Ended February 26, 2005			
		Effect of		
	As Previously Reported	Discontinued Operations (1)	Restatement	As Restated
	(In thousands, except per share amounts)			
Consolidated Statement of Operations:				
Selling, general and administrative expenses	\$ 93,237	(735)	(152)	\$ 92,350
Income from operations	11,967	562	152	12,681
Income before provision for income taxes	14,673	562	152	15,387
Provision for income taxes	3,674	209	236	4,119
Net income	10,999	—	(84)	10,915
Net income per share — basic	0.27	—	—	0.27
Net income per share — diluted	\$ 0.27	—	(0.01)	\$ 0.26

	Fiscal Year Ended February 28, 2004			
		Effect of		
	As Previously Reported	Discontinued Operations (1)	Restatement	As Restated
		(In thousands, except per share amounts)		
Selling, general and administrative expenses	\$ 89,302	(1,454)	(321)	\$ 87,527
Income from operations	14,595	1,261	321	16,177
Income before provision for income taxes	17,021	1,261	321	18,603
Provision for income taxes	4,326	517	132	4,975
Net income	12,695	—	189	12,884
Net income per share — basic	0.31	—	0.01	0.32
Net income per share — diluted	\$ 0.31	—	—	\$ 0.31

(1) See Note 7 for a complete discussion of the discontinued operation.

The restatement did not impact the total amounts presented in the consolidated statements of cash flows for net cash (used in) provided by operating activities, net cash provided by (used in) investing activities or net cash provided by financing activities, although it did impact certain components of cash flows from operating activities.

### NOTE 3 – EARNINGS PER SHARE

Earnings per share (“EPS”) is computed in accordance with SFAS No. 128 “*Earnings Per Share*”. Basic EPS is computed using weighted average shares outstanding. Diluted EPS is computed using weighted average shares outstanding plus additional shares issued as if in-the-money options were exercised (utilizing the treasury stock method).

The following table represents the computation of weighted average diluted shares outstanding:

	Fiscal Year Ended		
	February 25, 2006	February 26, 2005	February 28, 2004
Weighted average shares outstanding:			
Basic	40,349,000	40,471,000	40,604,000
Dilutive stock options	814,000	856,000	911,000
Diluted	<u>41,163,000</u>	<u>41,327,000</u>	<u>41,515,000</u>

In the above calculation, the impact of out-of-the-money options, (i.e. where the exercise price exceeds current market price) was not included as their inclusion would have had an antidilutive effect. These incremental shares totaled approximately 1,198,000 in 2006, 824,000 in 2005 and 1,070,000 in 2004.

### NOTE 4 – ACCOUNTS RECEIVABLE

	February 25, 2006	February 26, 2005
	(in thousands of dollars)	
Gross receivables	\$ 55,244	\$ 51,265
Reserve for estimated returns	(21,181)	(20,824)
Other reserves	(2,883)	(2,590)
Net receivables	<u>\$ 31,180</u>	<u>\$ 27,851</u>

Other reserves consist of allowances for discounts, doubtful accounts and customer deductions for marketing promotion programs.

**NOTE 5 — INVENTORIES**

	February 25, 2006	February 26, 2005
	(in thousands of dollars)	
Raw materials	\$10,123	\$ 7,468
Work in process	4,623	3,703
Finished product	22,035	21,765
Total inventory	<u>\$36,781</u>	<u>\$32,936</u>

**NOTE 6 — PROPERTY, PLANT AND EQUIPMENT, NET**

	February 25, 2006	February 26, 2005
	(in thousands of dollars)	
Land	\$ 42	\$ 42
Buildings and improvements	2,606	2,722
Machinery, equipment and software	27,782	28,384
Total PP&E	30,430	31,148
Accumulated depreciation	(19,402)	(19,180)
Net PP&E	<u>\$ 11,028</u>	<u>\$ 11,968</u>

**NOTE 7 – DISCONTINUED OPERATIONS — thePit.com**

In August 2001, the Company acquired all the outstanding common stock of thePit.com, Inc., which operated a sports card exchange, for a net cash purchase price of \$5.7 million. The acquisition was accounted for using the purchase method of accounting and resulted in recognizing \$0.8 million in intangible assets and \$4.1 million in goodwill. The Company included this subsidiary in the Entertainment segment of its business. The Company was unable to operate the subsidiary profitably and in January 2006 sold the subsidiary for \$360,000, with scheduled payments to be made over four years.

Per Statement of Accounting Standards No. 144 *Accounting for the Impairment of Long-Lived Assets*, the net book value of the assets of thePit.com, Inc., which consisted primarily of the \$4.1 million goodwill from the acquisition as well as smaller amounts of inventory and unamortized intangibles, was written down \$2,432,000 net of tax to \$360,000, which is the fair value of the assets based on the expected proceeds from the sale of the subsidiary.

The \$2,432,000 write-down of the assets to fair value and, additionally, the \$275,000 loss from operations net of tax of thePit.com, Inc. for fiscal 2006, which total \$2,707,000, are being reported as Loss from discontinued operations – net of tax on a separate line on the Consolidated Statements of Operations.

Revenue for thePit.com for fiscal 2006, 2005, and 2004 was \$987,000, \$1,634,000 and \$2,421,000, respectively, and pre-tax loss for thePit.com for fiscal 2006, 2005 and 2004 was \$295,000, \$468,000 and \$1,167,000, respectively. The purchaser has paid the Company \$30,000 of the \$360,000 sales price as of February 25, 2006. The remaining \$330,000 is reported in Prepaid expenses and other current assets and Other assets on the Consolidated Balance Sheet as of February 25, 2006. The Company has restated its Consolidated Statements of Cash Flows for the years ended February 26, 2005 and February 28, 2004 to reflect this discontinued operation.

## NOTE 8 – GOODWILL AND INTANGIBLE ASSETS

Goodwill and Intangible Assets represent amounts paid for the purchase of businesses in excess of the fair value of the acquired assets. Intangible assets consist principally of licenses and contracts, intellectual property, and software; amortization is by the straight-line method over estimated lives of up to fifteen years. Goodwill represents the purchase price less the fair value of acquired assets and less the appraised value of the intangible assets. Goodwill is not amortized.

Licenses and contracts consist primarily of licensing rights to produce sticker albums featuring Premier League soccer players obtained as a part of the Merlin Publishing Group acquisition in July 1995. Intellectual property refers to rights including trademarks and copyrights related to branded products obtained as part of the July 2003 acquisition of Wizkids, LLC. Software and other consists of proprietary software developed by thePit.com for fiscal 2005. In connection with the disposal of thePit.com during fiscal 2006 (see Note 7), \$0.1 million of intangible assets and \$4.2 million of goodwill were written off in the third quarter of fiscal 2006.

Intangible assets consisted of the following as of February 25, 2006 and February 26, 2005:

	February 25, 2006		
	Gross Carrying Value	Accumulated Amortization	Net
	(in thousands of dollars)		
Licenses and contracts	\$ 21,569	\$ (18,611)	\$2,958
Intellectual property	18,784	(15,318)	3,466
Software and other	2,482	(2,482)	—
Total intangibles	\$ 42,835	\$ (36,411)	\$6,424

	February 26, 2005		
	Gross Carrying Value	Accumulated Amortization	Net
	(in thousands of dollars)		
Licenses and contracts	\$ 21,569	\$ (17,942)	\$3,627
Intellectual property	18,784	(14,284)	4,500
Software and other	2,953	(2,811)	142
FAS 132 pension	275	—	275
Total intangibles	\$ 43,581	\$ (35,037)	\$8,544

Useful lives of the Company's intangible assets have been established based on the intended use of such assets and their estimated period of future benefit, which are reviewed periodically. Useful lives are as follows:

Category	Useful Life	Weighted Average Remaining Useful Life
Licenses and contracts	15 years	4.4 years
Intellectual property	6 years	3.4 years

The weighted average remaining useful life for the Company's intangible assets in aggregate is 3.8 years. Over the next five years the Company expects the annual amortization of intangible assets to be as follows:

Fiscal Year	Amount (in thousands)
2007	\$ 1,703
2008	\$ 1,703
2009	\$ 1,703
2010	\$ 1,036
2011	\$ 279

Following the write-down of the goodwill associated with thePit.com, Inc., reported goodwill was reduced from \$67,566,000 as of February 26, 2005 to \$63,405,000 as of February 25, 2006. Goodwill is broken out by business segment as follows:

	February 25, 2006	February 26, 2005
	(amounts in thousands)	
Confectionery	\$ 7,699	\$ 7,699
Entertainment	55,706	59,867
Total goodwill	<u>\$63,405</u>	<u>\$67,566</u>

Intangible assets and goodwill for the reporting units are tested for impairment on an annual basis and between annual tests in certain circumstances. The impairment test is conducted at the reporting unit level by comparing the reporting unit's carrying amount, including intangible assets and goodwill, to the fair value of the reporting unit. If the carrying amount of the reporting unit exceeds its fair value, a second step is performed to measure the amount of impairment, if any. Further, in the event that the carrying amount of the Company as a whole is greater than its market capitalization, there is a potential that some or all of its intangible assets and goodwill would be considered impaired. There can be no assurances given that future impairment tests of goodwill will not result in an impairment.

## NOTE 9 — DEPRECIATION AND AMORTIZATION

	Fiscal Year Ended		
	February 25, 2006	February 26, 2005	February 28, 2004
	(in thousands of dollars)		
Depreciation expense	\$ 3,542	\$ 3,375	\$ 3,312
Amortization of:			
Intangible assets	1,703	1,797	1,881
Compensation & other	500	570	452
Deferred financing fees	84	91	123
Total depreciation and amortization	<u>\$ 5,829</u>	<u>\$ 5,833</u>	<u>\$ 5,768</u>

## NOTE 10 — ACCRUED EXPENSES AND OTHER LIABILITIES

	Fiscal Year Ended	
	February 25, 2006	February 26, 2005
	(in thousands of dollars)	
Royalties	\$ 6,864	\$ 5,400
Advertising and marketing expenses	3,659	5,079
Employee compensation	2,938	4,031
Deferred revenue	828	1,555
Inventory in transit	1,647	1,363
Deferred rent expense	1,031	1,123
Other	8,378	8,934
Total accrued expenses and other liabilities	<u>\$25,345</u>	<u>\$27,485</u>

## NOTE 11 — LONG-TERM DEBT

On September 14, 2004, the Company entered into a new credit agreement with JPMorgan Chase Bank. The agreement provides for a \$30.0 million unsecured facility to cover revolver and letter of credit needs and expires on September 13, 2007. Interest rates are variable and a function of market rates and the Company's EBITDA. The credit agreement contains restrictions and prohibitions of a nature generally found in loan agreements of this type and requires the Company, among other things, to comply with certain financial covenants, limits the Company's ability to sell or acquire assets or borrow additional money and places certain restrictions on the purchase of Company shares and the payment of dividends. The Company cannot pay dividends and purchase the Company's shares where the total cash outlay exceeds \$30 million in three consecutive quarters or \$50 million over the term of the credit agreement.



The credit agreement may be terminated by the Company at any point over the three-year term (provided the Company repays all outstanding amounts thereunder) without penalty. With the exception of \$0.6 million currently reserved for letters of credit, the \$30.0 million credit line was available as of February 25, 2006.

## NOTE 12 — INCOME TAXES

The Company provides for deferred income taxes resulting from temporary differences between the valuation of assets and liabilities in the financial statements and the carrying amounts for tax purposes. Such differences are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse.

Total Benefit (provision) for income taxes for each year is as follows:

	Fiscal Year Ended		
	February 25, 2006	February 26, 2005	February 28, 2004
	(in thousands of dollars)		
Continuing operations	\$ 3,346	\$(4,119)	\$(4,975)
Discontinued operations	1,865	209	517
Total	\$ 5,211	\$(3,910)	\$(4,458)

U.S. and foreign continuing operations contributed to income (loss) before provision for income taxes as follows :

	Fiscal Year Ended		
	February 25, 2006	February 26, 2005	February 28, 2004
	(in thousands of dollars)		
United States	\$ (106)	\$12,364	\$ 9,163
Europe	1,325	4,049	10,941
Canada	(1,011)	(1,282)	(996)
Latin America	392	256	(505)
Total	\$ 600	\$15,387	\$18,603

Benefit (provision) for income taxes consists of:

	Fiscal Year Ended		
	February 25, 2006	February 26, 2005	February 28, 2004
	(in thousands of dollars)		
Current income tax benefit (provision):			
Federal	\$1,074	\$ 124	\$ 19
Foreign	501	(1,031)	(2,771)
State and local	(532)	(1,081)	(186)
Total current	\$1,043	\$(1,988)	\$(2,938)
Deferred income tax benefit (provision):			
Federal	\$1,737	\$(1,880)	\$(1,454)
Foreign	(101)	(41)	(373)
State and local	667	(210)	(210)
Total deferred	\$2,303	\$(2,131)	\$(2,037)
Total benefit (provision) for income taxes	\$3,346	\$(4,119)	\$(4,975)

The total benefit (provision) for income taxes from continuing operations is less than the amount computed by applying the statutory federal income tax rate to income before benefit (provision) for income taxes. This difference is largely due to the fiscal 2006 reversal of certain tax reserves related to tax audits resolved in the current year and the impact of lower tax rates in foreign countries as shown below:

	Fiscal Year Ended		
	February 25, 2006	February 26, 2005	February 28, 2004
	(in thousands of dollars)		
Computed expected tax provision	\$ (210)	\$ (5,385)	\$ (6,511)
Decrease (increase) in taxes resulting from:			
Effect of foreign operations	292	2,282	967
State and local taxes, net of federal tax effect	87	(917)	(308)
European Commission fine	—	(578)	—
Tax-exempt interest income	489	285	208
Reversal of reserve for tax exposure items	2,536	—	—
R & D tax credits	—	210	310
Meals and entertainment disallowance	(41)	(43)	(24)
Merchandise contributions	111	111	174
Medicare Part D prescription subsidy	84	—	—
Other items, net	(2)	(84)	209
Benefit (provision) for income taxes	\$ 3,346	\$ (4,119)	\$ (4,975)

U.S. income taxes have not been provided on undistributed earnings of foreign subsidiaries as the Company considers such earnings to be permanently reinvested in the businesses. As of February 25, 2006, the cumulative amount of unremitted earnings from foreign subsidiaries that is expected to be permanently reinvested was approximately \$21 million. These undistributed foreign earnings could become subject to U.S. income tax if remitted, or deemed remitted, as a dividend. Management has determined that the U.S. income tax liability on these unremitted earnings should not be material, although it is dependent on circumstances existing at the time of the remittance.

The Company is currently under audit by New York State, Pennsylvania, and Ontario, Canada. Taxing authorities periodically challenge positions taken by the Company on its tax returns. On the basis of present information, it is the opinion of the Company's management that the Company has appropriately accrued tax reserves for probable exposures and, as a result, any assessments resulting from current tax audits should not have a materially adverse effect on the Company's consolidated financial statements. To the extent the Company were to prevail in matters for which accrued tax reserves have been established or be required to pay amounts in excess of such reserves, the Company's consolidated financial statements in a given period could be materially impacted. During fiscal 2006, the Company completed certain taxing authority audits which resulted in the reversal of \$2.5 million of tax reserves.

The components of current deferred income tax assets and liabilities are as follows:

	February 25, 2006	February 26, 2005
	(in thousands of dollars)	
Deferred income tax assets:		
Pension	\$ 1,137	\$ 4,047
Inventory	3,192	3,034
Postretirement benefits	3,395	1,969
Foreign tax credits	2,533	1,399
Estimated losses on sales returns	2,578	2,442
Rent	423	463
Other	277	581
Capital loss	1,632	—
Total deferred income tax assets	\$15,167	\$13,935
Deferred income tax liabilities:		
Depreciation	(2,853)	(3,042)
Package design	—	(1,204)
Prepaid expenses	(293)	(1,287)
Total deferred income tax liabilities	(3,146)	(5,533)
Net deferred	\$12,021	\$ 8,402

Prior to fiscal 2005, the Company had not recorded a deferred income tax asset relating to its minimum pension obligation (which is included within accumulated other comprehensive income). As of February 25, 2006, the deferred income tax asset relating to the minimum pension obligation is \$3.8 million. At the end of fiscal 2005, the deferred income tax asset relating to the minimum pension obligation was \$4.0 million. Amounts relating to prior periods were not considered material.

The deferred tax assets and liabilities reflected in the previous table are included on the Company's balance sheets as net current deferred tax assets of \$5.7 million and \$5.4 million in fiscal 2006 and fiscal 2005, respectively, and as net long term deferred tax assets of \$6.3 million and \$3.0 million in fiscal 2006 and fiscal 2005, respectively.

As of February 25, 2006, the Company had foreign tax credits of approximately \$2.5 million available for use that will expire beginning in fiscal 2009 through fiscal 2016. The Company also had a capital loss of approximately \$4.0 million that will expire in fiscal 2011.

#### NOTE 13 — EMPLOYEE BENEFIT PLANS

The Company maintains qualified and non-qualified defined benefit pensions in the U.S. and Ireland as well as a postretirement healthcare plan in the U.S. for all eligible non-union personnel (the "Plans"). The Company also contributes to a multi-employer defined pension plan for its union employees. The Company's policy is to fund the domestic plans in accordance with the limits defined by the Employee Retirement Income Security Act of 1971 and U.S. income tax regulations. The Ireland plan is funded in accordance with local regulations.

In addition, the Company sponsors a defined contribution plan, which qualifies under Sections 401(a) and 401(k) of the Internal Revenue Code (the "401(k) Plan"). While all non-union employees are eligible to participate in the 401(k) Plan, participation is optional.

Effective April 1, 2006, the Company froze all future benefit accruals under its U.S. qualified defined pension plan and initiated an employer match on 401(k) contributions. In addition, beginning in fiscal 2007, the Company will make non-elective transitional 401(k) contributions with respect to certain employees. As a result of these changes, the Company anticipates a reduction in the amount and volatility of its pension expense and cash contributions. Neither the employee contributions nor matching contributions are invested in the Company's securities.

The Company's investment strategy with respect to its defined benefit plans is to achieve positive return, after adjusting for inflation, and to maximize the long-term total return within prudent levels of risk through a combination of income and capital appreciation. Risk to capital is minimized through the diversification of investments across and within various asset categories. The Company intends to fund its defined benefit plan obligations with the need for future contributions based on changes in the value of plan assets and movements in interest rates. The Company contributed a total of \$3.7 million in funding to its pension plans in fiscal 2006 and estimates fiscal 2007 contributions at approximately \$1.5 – \$2.5 million.

The asset allocation for the Company's U.S. qualified pension plan at the end of 2006 and 2005 and the projection for 2007 are as follows:

Asset Category	Percentage of Plan Assets		
	2007	2006	2005
Equity Securities	62%	65%	54%
Debt Securities	38%	35%	40%
Cash	—%	—%	6%

The fair value of plan assets for these plans is \$30,260,000 and \$29,751,000 as of February 25, 2006 and February 26, 2005, respectively. The expected long-term rate of return on these plan assets was 8.0% in both fiscal 2006 and fiscal 2005. The expected long-term rate of return is estimated using a variety of factors including long-term historical returns, the targeted allocation of plan assets and expectations regarding future market returns for both equity and debt securities. The measurement date for all Topps plans is February 25, 2006.

The following tables summarize benefit costs, benefit obligations, plan assets and the funded status of the Company's U.S. and Ireland pension plans and U.S. postretirement healthcare benefit plan:

	Pension		Postretirement Healthcare	
	February 25, 2006	February 26, 2005	February 25, 2006	February 26, 2005
(in thousands of dollars)				
Change In Benefit Obligation				
Benefit obligation at beginning of year	\$ 45,191	\$ 39,709	\$ 10,569	\$ 10,755
Service cost	1,703	1,419	394	305
Interest cost	2,516	2,414	615	568
Benefits paid	(1,779)	(1,462)	(674)	(619)
Actuarial (gains) / losses	1,627	2,786	1,143	(440)
Participants' contributions	28	19	—	—
Foreign currency impact	(574)	306	—	—
Plan amendments	386	—	(1,729)	—
Curtailments	(4,639)	—	—	—
Settlements	(3,520)	—	—	—
Special termination benefits	573	—	309	—
Benefit obligation at end of year	<u>\$ 41,512</u>	<u>\$ 45,191</u>	<u>\$ 10,627</u>	<u>\$ 10,569</u>
Change in Plan Assets				
Fair value of plan assets at beginning of year	\$ 29,751	\$ 25,551	\$ —	\$ —
Actual return on plan assets	2,571	1,722	—	—
Employer contributions	3,718	3,666	674	619
Benefits paid	(5,299)	(1,462)	(674)	(619)
Participants' contributions	28	19	—	—
Foreign currency impact	(509)	255	—	—
Fair value of plan assets at end of year	<u>\$ 30,260</u>	<u>\$ 29,751</u>	<u>\$ —</u>	<u>\$ —</u>

Below are the assumptions for the pension and postretirement healthcare plans as of the end of the fiscal year:

	Pension Plan		Postretirement Healthcare Plan	
	2006	2005	2006	2005
Discount rate	5.7%	5.6%	5.7%	5.6%
Rate of compensation increase	N/A	4.0%	N/A	N/A
Healthcare cost trend on covered charges	N/A	N/A	10.0%, grading to 5.0% in 2011	10.0%, grading to 5.0% in 2010

The discount rate and rate of compensation increase for the Ireland Pension Plan are 4.5% and 3.25%, respectively at year end 2006 and at year end 2005.

	Pension		Postretirement Healthcare	
	February 25, 2006	February 26, 2005	February 25, 2006	February 26, 2005
	(in thousands of dollars)			
<b>Funded status</b>				
Funded status at year end	\$(11,253)	\$(15,440)	\$(10,628)	\$(10,568)
Unrecognized actuarial losses	9,058	14,599	2,824	1,789
Unamortized prior service cost	360	276	(1,728)	—
Unrecognized initial transition obligation / (asset)	(611)	(744)	1,701	1,900
Accrued benefit cost	<u>\$ (2,446)</u>	<u>\$ (1,309)</u>	<u>\$ (7,831)</u>	<u>\$ (6,879)</u>

The total accumulated benefit obligation for all pension plans was \$40,747,000 at the end of fiscal 2006 and \$40,592,000 at the end of fiscal 2005.

Amounts recognized in the consolidated balance sheets are as follows:

	Pension		Postretirement Healthcare	
	February 25, 2006	February 26, 2005	February 25, 2006	February 26, 2005
	(in thousands of dollars)			
Prepaid benefit cost	\$ 4,602	\$ 5,353	\$ —	\$ —
Accrued benefit liability	(16,252)	(16,808)	(7,831)	(6,879)
Intangible asset	—	275	—	—
Accumulated other comprehensive income	9,204	9,871	—	—
Net amount recognized in the consolidated balance sheets	<u>\$ (2,446)</u>	<u>\$ (1,309)</u>	<u>\$(7,831)</u>	<u>\$(6,879)</u>

At the end of fiscal 2006 and 2005, the projected benefit obligation, the accumulated benefit obligation and the fair value of pension assets for pension plans with a projected benefit obligation in excess of plan assets and for pension plans with an accumulated benefit obligation in excess of plan assets were as follows:

	Projected Benefit Obligation Exceeds the Fair Value of Plan Assets		Accumulated Benefit Obligation Exceeds the Fair Value of Plan Assets	
	February 25, 2006	February 26, 2005	February 25, 2006	February 26, 2005
	(in thousands of dollars)			
Projected benefit obligation	\$36,761	\$45,191	\$36,761	\$40,081
Accumulated benefit obligation	36,761	40,591	36,761	36,429
Fair value of plan assets	\$24,943	\$29,751	\$24,943	\$24,851



The postretirement medical plan has no assets, and the premiums are paid on an on-going basis. The accumulated postretirement benefit obligation at the end of fiscal 2006 and 2005 was \$10,627,000 and \$10,568,000, respectively.

The weighted-average assumptions used to calculate net periodic benefit costs are as follows:

	U.S. Pension Plan			Postretirement Healthcare Plan		
	2006	2005	2004	2006	2005	2004
Discount rate	5.6%	6.0%	6.3%	5.6%	6.0%	6.3%
Expected return on plan assets	8.0%	8.0%	8.0%	N/A	N/A	N/A
Rate of compensation increase	4.0%	4.0%	4.5%	N/A	N/A	N/A
Healthcare cost trend on covered charges	N/A	N/A	N/A	10.0%, decreasing to 5.0% in 2010	10.0%, decreasing to 5.0% in 2009	10.0%, decreasing to 5.0% in 2008

The discount rate and rate of compensation increase for the Ireland Pension Plan are 4.5% and 3.3% respectively for 2006, 5.3% and 3.3%, respectively, for 2005 and 5.5% and 3.8%, respectively, for 2004. The expected return on assets for the Ireland Pension Plan was 6.75% for 2006, 7.25% for 2005, and 7.25% for 2004.

The components of net periodic benefit costs are as follows:

	Pension Fiscal Years Ended			Postretirement Healthcare Fiscal Years Ended		
	February 25, 2006	February 26, 2005	February 28, 2004	February 25, 2006	February 26, 2005	February 28, 2004
	(in thousands of dollars)					
Service cost	\$ 1,703	\$ 1,419	\$ 1,384	\$ 394	\$ 304	\$ 283
Interest cost	2,516	2,414	2,390	615	568	602
Expected return on plan assets	(2,239)	(2,096)	(1,451)	—	—	—
Amortization of:						
Initial transition obligation (asset)	(62)	(59)	(51)	199	199	199
Prior service cost	81	132	131	—	—	—
Actuarial losses	1,011	808	1,117	109	—	47
Curtailments, settlements, and special termination benefits	1,842	—	—	309	—	336
Net periodic benefit cost	<u>\$ 4,852</u>	<u>\$ 2,618</u>	<u>\$ 3,520</u>	<u>\$1,626</u>	<u>\$1,071</u>	<u>\$1,467</u>

Prior service cost changes are amortized on a straight-line basis over the average remaining service period for employees active on the date of an amendment. Gains and losses are amortized on a straight-line basis over the average remaining service period of employees active on the valuation date.

Expected employer contributions are between \$1,500,000 and \$2,500,000 for both the qualified plan and the Ireland plan during the fiscal year ending March 3, 2007.

Expected benefit payments are as follows:

Fiscal year ending	Pension	Postretirement	Federal Subsidy
2007	\$ 2,491,000	\$ 688,000	\$ 83,000
2008	\$ 2,960,000	\$ 749,000	\$ 89,000
2009	\$ 3,366,000	\$ 820,000	\$ 96,000
2010	\$ 3,192,000	\$ 885,000	\$102,000
2011	\$ 2,917,000	\$ 931,000	\$108,000
2012-2016	\$14,179,000	\$4,499,000	\$524,000

The above table includes benefits expected to be paid from Company assets.

Assumed health care cost trend rates have a significant effect on the amounts reported for health care plans. A one percentage point change in assumed health care cost trend rates would have the following effect:

	One Percentage Point	
	Increase	Decrease
	(in thousands of dollars)	
On total service and interest cost component	\$ 163	\$ (133)
On postretirement benefit obligation	\$1,251	\$ (1,059)

#### NOTE 14 — STOCK OPTION PLAN

The Company has Stock Option Plans that provide for the granting of non-qualified stock options, incentive stock options and stock appreciation rights (SARs) to employees, non-employee directors and consultants within the meaning of Section 422A of the Internal Revenue Code. Options are granted with an exercise price equal to the closing market price of the stock on the grant date, generally vest within three years and expire ten years after the grant date.

The following table summarizes information about the Stock Option Plans.

Stock Options	February 25, 2006		February 26, 2005		February 28, 2004	
	Shares	Wtd. Avg. Exercise Price	Shares	Wtd. Avg. Exercise Price	Shares	Wtd. Avg. Exercise Price
Outstanding at beginning of year	3,762,919	\$7.22	3,800,407	\$6.90	3,756,977	\$6.73
Granted	60,000	\$7.74	262,000	\$9.34	890,000	\$8.52
Exercised	(261,886)	\$5.06	(270,550)	\$4.55	(234,680)	\$4.85
Forfeited	(146,823)	\$9.34	(28,938)	\$9.50	(611,890)	\$9.01
Outstanding at end of year	3,414,210	\$7.30	3,762,919	\$7.22	3,800,407	\$6.90
Options exercisable at end of year	2,956,624	\$7.08	2,973,416	\$6.80	2,973,323	\$6.44
Weighted average fair value of options granted during the year	\$ 2.25		\$ 2.99		\$ 2.70	

In 2006, of the 146,823 stock options forfeited, 130,498 were unvested options which were lost when employees were terminated from the Company. The remaining 16,325 “forfeited” options were the result of the expiration of options in the normal course. In 2005, the shares forfeited represent those cancelled due to termination of employment; none expired during the year. In 2004, of the 611,890 stock options forfeited, 90,390 were unvested options which were lost when employees were terminated from the Company. The remaining 521,500 “forfeited” options were the result of the expiration of options in the normal course.

Summarized information about stock options outstanding and exercisable at February 25, 2006 is as follows:

Exercise — Price Range	Options Outstanding			Options Exercisable	
	Outstanding as of February 25, 2006	Weighted Average Remaining Contractual Life	Weighted Average Exercise Price	Exercisable as of February 25, 2006	Weighted Average Exercise Price
\$1.76-\$3.53	673,150	1.9	\$ 2.64	673,150	\$ 2.64
\$3.54-\$5.29	416,250	3.0	\$ 4.45	416,250	\$ 4.45
\$5.30-\$7.05	96,500	3.3	\$ 6.96	96,500	\$ 6.96
\$7.06-\$8.81	1,029,583	6.9	\$ 8.27	746,665	\$ 8.24
\$8.82-\$10.57	973,977	6.1	\$ 9.84	799,309	\$ 9.94
\$10.58-\$12.34	224,750	4.9	\$11.23	224,750	\$11.23
	3,414,210	5.0	\$ 7.30	2,956,624	\$ 7.08

#### NOTE 15 — CAPITAL STOCK

In October 1999, the Company’s Board of Directors authorized the repurchase of up to 5 million shares of the Company’s common stock. In October 2001, the Company completed purchases against this authorization and the Company’s Board of Directors authorized the repurchase of up to another 5 million shares of the Company’s common stock. During fiscal 2004, the Company repurchased 318,800 shares at an average price of \$8.69 per share. During fiscal 2005, the Company purchased 444,400 shares at an average price of \$9.25 per share.

During the first six months of fiscal 2006, the Company did not purchase any shares due to a strategic business review being performed by investment banking and consulting firms. In September 2005, the Company entered into a written trading plan that complies with Rule 10b5-1 under the Securities and Exchange Act of 1934, as amended, which provides for the purchase of up to 500,000 shares for each of the next four quarters starting in the third quarter of fiscal 2006 at the prevailing market price, per share, subject to certain conditions. In addition, the Board of Directors increased the outstanding share authorization by 3,390,700 shares to 5 million shares. As of February 25, 2006, the Company had purchased 1,027,899 shares under this amended authorization, leaving 3,972,101 shares available for future purchases.

#### NOTE 16 — DIVIDENDS

On June 26, 2003, the Board of Directors of the Company initiated a regular quarterly cash dividend of \$0.04 per share. Four quarterly payments totaling \$0.16 per share or \$6.5 million were made in fiscal 2006 and 2005, and in 2004, three quarterly payments totaling \$0.12 per share, or \$4.9 million, were made.

#### NOTE 17 – LEGAL PROCEEDINGS

In November 2000, the Commission of the European Communities (the “Commission”) began an investigation into whether Topps Europe’s past distribution arrangements for the sale of Pokemon products complied with European law (the “EU investigation”). On June 17, 2003, the Commission filed a Statement of Objections against The Topps Company, Inc. and its European subsidiaries, therein coming to a preliminary conclusion that these entities infringed Article 81 of the EC

treaty during 2000 by preventing parallel trade between member states of the European Union. A hearing in front of the European Commission Tribunal took place on October 23, 2003, and on May 27, 2004, the Commission found The Topps Company, Inc. and its European subsidiaries jointly and severally liable for infringement of Article 81(1) of the EC treaty. The Commission imposed a total fine of 1.6 million euros (\$1.9 million) which was recorded as an expense and paid during fiscal 2005.

In another matter, on November 19, 2001 Media Technologies, Inc. sued the Company and nine other manufacturers of trading cards (the “Defendants”) in the Federal District Court for the Central District of California for their sales of all types of “relic” cards that contain an authentic piece of equipment, i.e., a piece of sporting equipment or jersey. Plaintiffs alleged infringement of U.S. Patent Nos. 5,803,501 and 6,142,532. On May 23, 2005 the Company entered into a settlement agreement in which it paid Media Technologies, Inc. a sum of \$2,000,000 which is being amortized over the term of the contract. Media Technologies Inc. agreed to dismiss all claims against the Company and to issue a license to the Company to distribute relic cards for seven years. The Company further agreed that under certain conditions which may arise in the future, it would make additional payments to Media Technologies, Inc. as part of the ongoing license.

In another matter, in September of 1999, the Company filed a lawsuit against Cadbury Stani S.A.I.C. (“Stani”), a corporation organized and existing under the laws of Argentina, in federal court in the Southern District of New York. The case centers on the licensing relationship the parties had since 1957 in which the Company had granted Stani the exclusive right to manufacture and distribute gum using the Bazooka brand and related formulas and technologies in Argentina, Bolivia, Chile, Paraguay and Uruguay. In particular, at issue is a 1980 Licensing Agreement (the “Agreement”) between the parties and a 1985 Amendment to that Agreement. In its September 17, 2003 Fourth Amended complaint, the Company alleges that Stani continued to use the Company’s proprietary and specialized knowledge and experience, and its trade secrets, regarding the production of gum after the Agreement’s expiration in April 1996, that it unlawfully disclosed this information to Cadbury Schweppes PLC (“Schweppes”) which purchased Stani in 1993 and that it deliberately concealed its use and disclosure from the Company. The Company has filed claims for breach of contract, misappropriation of trade secrets and fraudulent inducement to enter into the 1985 Amendment. The Company is seeking to recover disgorgement of Stani’s profits, certain lost royalties and punitive damages, interest and costs. It is also seeking a permanent injunction against Stani’s future use and dissemination of the Company’s proprietary information and trade secrets. In the Fourth Amended Complaint, the Company demanded damages in excess of \$250 million. The Fourth Amended Complaint also initially contained claims against Schweppes, which the parties agreed to dismiss on February 4, 2003.

On December 17, 2003, Stani moved for partial summary judgment and to limit the Company’s possible damages. In its August 2, 2005 decision, the Court denied Stani’s summary judgment motion, in part, and ruled that (i) the Company’s claims were not barred by the statute of limitations; and (ii) disgorgement of profits and punitive damages are available remedies on the Company’s misappropriation of trade secrets claims. The Court granted Stani’s summary judgment motion, in part, and ruled that (i) disgorgement of profits and punitive damages are not available remedies on the Company’s breach of contract and fraudulent inducement claims; and (ii) Stani was not estopped from claiming the 1985 Amendment altered the 1980 Agreement.

On February 9, 2006, the Court adjourned the trial which had been scheduled for March 13, 2006 and ruled it would consider a new motion by Stani for partial summary judgment which argues that the Agreement permitted Stani to use the Company’s information and trade secrets after the Agreement’s expiration in 1996. Oral argument was held on March 15, 2006 and the parties await a decision. If the Company ultimately prevails in this litigation, it could have a material impact on the Company’s consolidated financial statements.

In another matter, on December 12, 2003, WizKids, Inc. (“Wizkids”) and Jordan Weisman filed a complaint in Washington state court for professional malpractice, breach of fiduciary duty and disgorgement of fees against the law firm Michael, Best & Friedrich, LLP (“MB&F”), and Timothy Kelley, one of its partners, based on their submission of a PCT patent application for WizKids’ combat dial that alleged to have prejudiced WizKids’ United States patent rights by failing to designate the United States as one of the member states for subsequent conversion to a national application. In a

settlement reached on October 31, 2005, defendants agreed to pay Wizkids \$2,950,000. The Company received the \$2,950,000 (\$1,833,000 net of legal fees) in the third quarter of fiscal 2006 and has recorded it as a reduction to SG&A.

The Company is a party in several other civil actions which are routine and incidental to its business. In management's opinion, after consultation with legal counsel, these other actions will not have a material adverse effect on the Company's financial condition or results of operations.

#### **NOTE 18 — SEGMENT AND GEOGRAPHIC INFORMATION**

Following is the breakdown of industry segments as required by SFAS 131, *Disclosures About Segments of an Enterprise and Related Information*. The Company has two reportable business segments: Confectionery and Entertainment.

The Confectionery segment consists of a variety of candy products including Ring Pop, Push Pop, Baby Bottle Pop, Juicy Drop Pop, the Bazooka bubble gum line and, from time to time, confectionery products based on licensed characters, such as Pokémon and Yu-Gi-Oh!

The Entertainment segment primarily consists of cards and sticker album products featuring sports and non-sports subjects. Trading cards feature players from Major League Baseball, the National Basketball Association, the National Football League as well as characters from popular films, television shows and other entertainment properties. Sticker album products feature players from the English Premier League and characters from entertainment properties such as Pokémon and Yu-Gi-Oh! This segment also includes products from WizKids, a designer and marketer of strategy games acquired in July 2003.

The Company's chief decision-maker regularly evaluates the performance of each segment based upon its contributed margin, which is profit after cost of goods, product development, advertising and promotional costs and obsolescence, but before general and administrative expenses and manufacturing overhead, depreciation and amortization, other income (expense), net interest and income taxes. Beginning in fiscal 2007, segment performance will be evaluated based on contributed margin after direct overhead.

The majority of the Company's assets are shared across both segments, and the Company's chief decision-maker does not evaluate the performance of each segment utilizing asset-based measures. Therefore, the Company does not include a breakdown of assets or depreciation and amortization by segment.

## BUSINESS SEGMENTS

	Fiscal Year Ended		
	February 25, 2006	February 26, 2005	February 28, 2004
	(in thousands of dollars)		
<b>NET SALES:</b>			
Candy	\$ 134,117	\$ 133,214	\$ 134,637
Gum	10,144	10,548	12,551
Total Confectionery	144,261	143,762	147,188
Sports	95,376	105,384	107,308
Non-sports	54,201	45,085	40,421
Total Entertainment	149,577	150,469	147,729
Total Net Sales	<u>\$ 293,838</u>	<u>\$ 294,231</u>	<u>\$ 294,917</u>
<b>CONTRIBUTED MARGIN:</b>			
Confectionery	\$ 43,842	\$ 46,781	\$ 45,734
Entertainment	34,983	44,950	42,355
Total Contributed margin	<u>\$ 78,825</u>	<u>\$ 91,731</u>	<u>\$ 88,089</u>
Reconciliation of contributed margin to income before (provision) for income taxes:			
Total contributed margin	\$ 78,825	\$ 91,731	\$ 88,089
Unallocated general and administrative expenses and manufacturing overhead	(76,383)	(73,217)	(66,237)
Depreciation and amortization	(4,754)	(5,833)	(5,675)
(Loss) income from operations	(2,312)	12,681	16,177
Interest income, net	2,912	2,706	2,426
Income before benefit (provision) for income taxes	<u>\$ 600</u>	<u>\$ 15,387</u>	<u>\$ 18,603</u>

Net sales to unaffiliated customers and (Loss) income from operations are based on the location of the ultimate customer. (Loss) income from operations is defined as contributed margin less unallocated general and administrative expenses and manufacturing overhead and depreciation and amortization. Certain foreign markets are in part supported from the U.S. and Europe; however, the full cost of this support has not been allocated to them. Identifiable assets are those assets located in each geographic area.

McLane Distribution Services, Inc. ("McLane") accounted for approximately 13% and 12% of consolidated net sales in fiscal 2006 and fiscal 2005, respectively. McLane purchases primarily confectionery products from the Company and distributes them to Wal-Mart, Sam's Club, Southland Corp., and convenience stores in the U.S. The loss of this customer could have a material adverse effect on the Company's results of operations and future plans. The sales to McLane are recorded in the Company's Confectionary segment.



## GEOGRAPHIC AREAS

	February 25, 2006	Fiscal Year Ended February 26, 2005 (in thousands of dollars)	February 28, 2004
<b>Net Sales:</b>			
United States	\$207,834	\$ 197,998	\$201,181
Europe	61,350	70,252	65,135
Canada, Latin America and Asia	24,654	25,981	28,601
Total Net Sales	<u>\$293,838</u>	<u>\$ 294,231</u>	<u>\$294,917</u>
<b>Income from Operations:</b>			
United States	\$ (5,336)	\$ 7,029	\$ 2,992
Europe	(843)	795	9,535
Canada, Latin America and Asia	3,867	4,857	3,650
Total (Loss) Income from Operations	<u>\$ (2,312)</u>	<u>\$ 12,681</u>	<u>\$ 16,177</u>
		As of February 25, 2006	As of February 26, 2005
<b>Identifiable Assets:</b>			
United States	\$ 217,495	\$ 236,974	
Europe	44,781	47,623	
Canada, Latin America and Asia	6,362	5,793	
Total Identifiable Assets	<u>\$ 268,638</u>	<u>\$ 290,390</u>	

## NOTE 19 – ACQUISITION OF WIZKIDS, LLC

On July 9, 2003, the Company acquired Wizkids, LLC (“WizKids”), a designer and marketer of collectible strategy games, for a cash purchase price of approximately \$28.4 million. The intent of the acquisition was to enhance and accelerate the expansion of the Company’s entertainment business. The acquisition was accounted for using the purchase method of accounting. The financial statements of WizKids have been consolidated into the financial statements of the Company subsequent to the date of acquisition. The allocation of the purchase price is reflected in the financial statements contained herein.

The total consideration paid by the Company to WizKids’ shareholders was comprised of \$29,500,000 in cash, net of a working capital adjustment of \$1,123,500. The purchase price also reflected a \$1,326,130 payment to a third party for associated licenses and legal, accounting, and investment banking fees of \$679,075. The purchase price was determined based on discounted cash flow projections, which reflected expected synergies with the Company. The purchase price includes a \$6.2 million allocation for intellectual property rights associated with the WizKids product line, which is being amortized over an estimated useful life of 6 years. There were no contingent payments with the purchase price.

Contemporaneous with the acquisition, the Company entered into an employment agreement with Jordan Weisman, the majority shareholder and founder of WizKids, for a forty-eight month period following the closing. As part of this employment agreement, \$2 million of the consideration paid to Mr. Weisman as a shareholder is being accounted for as deferred compensation and is being amortized over four years. If Mr. Weisman does not remain a WizKids employee for the full four years of the agreement, he will be required to pay the Company the unamortized balance of his deferred compensation. As an additional part of his employment agreement, Mr. Weisman is entitled to contingent payments during the forty-eight months subsequent to the closing equal to 2% of WizKids’ annual net revenue in excess of \$35 million, assuming that certain operating margin targets are met. In addition, Mr. Weisman was granted 165,000 options to acquire

the Company's common stock, which were granted at fair market value on the date of grant and vest over a four-year period.

The following table sets forth the components of the purchase price:

Total consideration	\$29,500,000
Less: Working capital adjustment	(1,123,500)
Deferred compensation agreement	(2,000,000)
Plus: Purchase of license	1,326,130
Transaction costs	679,075
Total purchase price	<u>\$28,381,705</u>

The following table provides the fair value of the acquired assets and liabilities assumed based upon WizKids' July 9, 2003 balance sheet:

Current assets	\$ 8,201,851
Property and equipment	564,743
Other assets	115,000
Liabilities assumed, current	<u>(5,426,072)</u>
Fair value of net assets acquired	3,455,522
Intangible assets	6,200,000
Goodwill	<u>18,726,183</u>
Total estimated fair value of net assets acquired and goodwill	<u>\$28,381,705</u>

The final purchase price differs slightly from the amount shown for Purchase of business in the Consolidated Statement of Cash Flows as of February 28, 2004 which reflects estimated transaction costs.

The goodwill of \$18.7 million is included in the Entertainment business segment and is deductible for tax purposes over a fifteen-year period.

The impact of including WizKids in the consolidated statements of operations on a pro forma basis as if the acquisition had occurred on March 3, 2002, is as follows:

	Fiscal Year Ended February 28, 2004 (restated) (amounts in thousands, except share data)
Net sales	\$310,726
Income from operations	14,374
Net income	\$ 11,773
Net income per share — basic	\$ 0.29
— diluted	\$ 0.28

**NOTE 20 — FAIR VALUE OF FINANCIAL INSTRUMENTS**

The carrying value of cash, accounts receivable, accounts payable and accrued liabilities approximates fair value due to their short-term nature.

The Company enters into foreign currency forward contracts to hedge its foreign currency exposure. As of February 25, 2006, the Company had outstanding foreign currency forward contracts, which will mature at various dates during fiscal 2007, in the amount of \$20,973,000, as compared to \$26,563,000 as of February 26, 2005. Over 62% of the contracts will mature within six months.

The fair value of these forward contracts is the amount the Company would receive or pay to terminate them. The approximate pre-tax benefit or cost to the Company to terminate these agreements as of February 25, 2006 and February 26, 2005 would have been \$363,000 and \$49,000 respectively. The Company may be exposed to credit losses in the event of non-performance by counterparties to these instruments. Management believes, however, the risk of incurring such losses is remote as the contracts are entered into with major financial institutions.

**NOTE 21 – OFF-BALANCE SHEET ARRANGEMENTS**

The Company does not have any off-balance sheet arrangements that have, or are reasonably likely to have, a current or future effect on our financial condition, changes in financial condition, revenue or expenses, results of operations, liquidity, capital expenditures or capital resources that is expected to be material.

**NOTE 22— QUARTERLY RESULTS OF OPERATIONS (Unaudited)**

(in thousands of dollars, except share data)

	Quarter Ended						
	May 28, 2005		August 27, 2005		November 26, 2005		February 25, 2006
	As Previously Reported (a)	As Restated (b)	As Previously Reported (a)	As Restated (b)	As Previously Reported (a)	As Restated (b)	As reported
Net sales	\$78,866	\$78,584	\$75,277	\$74,936	\$72,808	\$72,808	\$67,510
Gross profit on sales	27,674	27,644	28,420	28,376	21,306	21,306	18,458
Income (loss) from continuing operations	397	507	3,285	3,378	(1,300)	(1,300)	(4,897)
(Loss) gain from discontinued operations							
— net of tax	—	(65)	—	(53)	(3,691)	(3,691)	1,102
Net income (loss)	897	897	4,837	4,837	(3,662)	(3,662)	(833)
Basic net income (loss) per share							
- From continuing operations	\$ 0.02	\$ 0.02	\$ 0.12	\$ 0.12	\$ —	\$ —	\$ (0.05)
- After discontinued operations	\$ —	\$ 0.02	\$ —	\$ 0.12	\$ (0.09)	\$ (0.09)	\$ (0.02)
Diluted net income (loss) per share							
- From continuing operations	\$ 0.02	\$ 0.02	\$ 0.12	\$ 0.12	\$ —	\$ —	\$ (0.05)
- After discontinued operations	\$ —	\$ 0.02	\$ —	\$ 0.12	\$ (0.09)	\$ (0.09)	\$ (0.02)

	May 29, 2004		August 28, 2004		November 27, 2004		February 26, 2005	
	As Previously Reported (a)	As Restated (b)	As Previously Reported (a)	As Restated (b)	As Previously Reported (a)	As Restated (b)	As Previously Reported (a)	As Restated (b)
Net sales	\$ 88,089	\$ 87,592	\$ 68,781	\$ 68,405	\$ 70,278	\$ 70,278	\$ 68,345	\$ 67,956
Gross profit on sales	33,799	33,738	26,280	26,192	23,621	23,621	21,459	21,480
Income (loss) from continuing operations	5,639	5,804	4,812	4,964	3,367	3,405	(1,712)	(1,492)
(Loss) gain from discontinued operations—net of tax	—	(76)	—	(66)	(82)	(82)	—	(129)
Net income (loss)	4,102	4,125	3,655	3,677	2,791	2,814	451	299
Basic net income (loss) per share								
- From continuing operations	\$ 0.10	\$ 0.10	\$ 0.09	\$ 0.09	\$ 0.07	\$ 0.07	\$ 0.01	\$ 0.01
- After discontinued operations	\$ —	\$ 0.10	\$ —	\$ 0.09	\$ 0.07	\$ 0.07	\$ 0.01	\$ 0.01
Diluted net income (loss) per share								
- From continuing operations	\$ 0.10	\$ 0.10	\$ 0.09	\$ 0.09	\$ 0.07	\$ 0.07	\$ 0.01	\$ 0.01
- After discontinued operations	\$ —	\$ 0.10	\$ —	\$ 0.09	\$ 0.07	\$ 0.07	\$ 0.01	\$ 0.01

(a) As previously reported amounts have been reclassified to give effect to the discontinued operations as discussed in Note 7.

(b) See Note 2.

## NOTE 23- COMMITMENTS

Future minimum payments under non-cancelable leases are as follows: (in thousands)

Fiscal Year	Amount
2007	\$ 2,579
2008	2,247
2009	2,128
2010	1,826
2011	1,284
Thereafter	536
	<u>\$10,600</u>

The Company anticipates making payments of approximately \$1.5 – \$2.5 million in fiscal 2007 for the funding of its qualified pension plans.

Historically, lease expense under the Company's contracts was \$3,075,000 (2006), \$3,141,000 (2005) and \$2,752,000 (2004).

Historically, the total royalty expense under the Company's sports and entertainment licensing contracts was \$25,117,000 (2006), \$24,916,000 (2005), and \$23,912,000 (2004).

## NOTE 24- RESTRUCTURING CHARGE

On September 29, 2005, a restructuring program was announced which separates the Confectionery and Entertainment businesses to the extent practical and streamlines the organizational structure through headcount reductions. In connection with the headcount reductions, the Company incurred charges of approximately \$3.7 million; \$1.3 million for termination costs in each of the third and fourth quarters of fiscal 2006 and \$1.1 million for pension settlement costs. These charges are reflected in selling, general and administrative expenses in the Consolidated Statements of Operations for the year ended February 25, 2006. The table below reconciles the activity to the liability related to the restructuring from November 26, 2005 through February 25, 2006 (in thousands):

	November 26, 2005	Payments	Additions	February 25, 2006
Termination costs	\$ 1,100	\$(1,420)	\$ 1,300	\$ 980
Pension settlement	—	—	1,050	1,050
	<u>\$ 1,100</u>	<u>\$(1,420)</u>	<u>\$ 2,350</u>	<u>\$ 2,030</u>



**Management's Report on Internal Control Over Financial Reporting**

Management of The Topps Company, Inc. (the "Company") is responsible for establishing and maintaining adequate internal control over financial reporting. The Company's internal control over financial reporting is designed to provide reasonable assurance to the Company's management and to the Board of Directors regarding the preparation and presentation of financial statements in accordance with accounting principles generally accepted in the United States of America.

Internal control over financial reporting, no matter how well designed, has inherent limitations. Therefore, even those internal controls determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation.

Management assessed the effectiveness of the internal control over financial reporting as of February 25, 2006. In making this assessment, it used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control — Integrated Framework*. Based on this assessment and those criteria, we believe that, as of February 25, 2006, the Company's internal control over financial reporting was effective.

Deloitte & Touche LLP, the Company's independent registered public accounting firm, has issued an attestation report on management's assessment of the Company's internal control over financial reporting, and its report is included herein.

The Topps Company, Inc.  
New York, NY  
May 9, 2006

## REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of  
The Topps Company, Inc.

We have audited the accompanying consolidated balance sheets of The Topps Company, Inc. and its subsidiaries (the “Company”) as of February 25, 2006 and February 26, 2005, and the related consolidated statements of operations, stockholders’ equity and comprehensive income and cash flows for each of the three fiscal years in the period ended February 25, 2006. These consolidated financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, such consolidated financial statements present fairly, in all material respects, the financial position of the Company and its subsidiaries as of February 25, 2006 and February 26, 2005, and the results of their operations and their cash flows for each of the three fiscal years in the period ended February 25, 2006, in conformity with accounting principles generally accepted in the United States of America.

As discussed in Note 2 to the Consolidated Financial Statements, the accompanying consolidated financial statements for fiscal 2005 and 2004 have been restated.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the effectiveness of the Company’s internal control over financial reporting as of February 25, 2006, based on the criteria established in *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated May 9, 2006 expressed an unqualified opinion on management’s assessment of the effectiveness of the Company’s internal control over financial reporting and an unqualified opinion on the effectiveness of the Company’s internal control over financial reporting.

New York, New York  
May 9, 2006

**REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

To the Board of Directors and Stockholders of The Topps Company, Inc.:

We have audited management's assessment, included in the accompanying Management's Report on Internal Control Over Financial Reporting, that The Topps Company, Inc. and its subsidiaries (the "Company") maintained effective internal control over financial reporting as of February 25, 2006, based on criteria established in *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission. The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting. Our responsibility is to express an opinion on management's assessment and an opinion on the effectiveness of the Company's internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, evaluating management's assessment, testing and evaluating the design and operating effectiveness of internal control, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinions.

A company's internal control over financial reporting is a process designed by, or under the supervision of, the company's principal executive and principal financial officers, or persons performing similar functions, and effected by the company's board of directors, management, and other personnel to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of the inherent limitations of internal control over financial reporting, including the possibility of collusion or improper management override of controls, material misstatements due to error or fraud may not be prevented or detected on a timely basis. Also, projections of any evaluation of the effectiveness of the internal control over financial reporting to future periods are subject to the risk that the controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, management's assessment that the Company and its subsidiaries maintained effective internal control over financial reporting as of February 25, 2006, is fairly stated, in all material respects, based on the criteria established in *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of Treadway Commission. Also in our opinion, the Company and its subsidiaries maintained, in all material respects, effective internal control over financial reporting as of February 25, 2006, based on the criteria established in *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of Treadway Commission.

We have also audited, in accordance with the standards of the PCAOB, the Company's consolidated financial statements as of and for the year ended February 25, 2006 and our report dated May 9, 2006 expressed an unqualified opinion on those consolidated financial statements.

As discussed in Note 2 to the Consolidated Financial Statements, the accompanying Consolidated Financial Statements for fiscal 2005 and 2004 have been restated.

New York, New York  
May 9, 2006

### Market and Dividend Information

The Company's common stock is traded on the Nasdaq National Market under the symbol *TOPP*. The following table sets forth, for the periods indicated, the high and low stock price for the common stock as reported on the Nasdaq National Market as well as cash dividends per share paid by the Company. As of February 25, 2006, there were approximately 4,200 shareholders of record.

	Fiscal year ended February 25, 2006			Fiscal year ended February 26, 2005		
	Stock Price		Dividends Paid	Stock Price		Dividends Paid
	High	Low		High	Low	
First quarter	\$ 9.55	\$ 8.47	\$ 0.04	\$ 9.76	\$ 8.40	\$ 0.04
Second quarter	\$ 10.94	\$ 8.97	\$ 0.04	\$ 10.09	\$ 8.82	\$ 0.04
Third quarter	\$ 10.26	\$ 7.11	\$ 0.04	\$ 10.55	\$ 9.23	\$ 0.04
Fourth quarter	\$ 8.22	\$ 6.99	\$ 0.04	\$ 10.00	\$ 9.38	\$ 0.04

**Selected Consolidated Financial Data**

	2006	2005 (1)	2004 (1)	2003 (1)	2002 (1)
	(in thousands of dollars, except share data, unaudited)				
OPERATING DATA:					
Net sales	\$ 293,838	\$ 294,231	\$ 294,917	\$ 284,649	\$ 296,053
Gross profit on sales	95,784	105,031	103,704	101,684	113,717
Selling, general and administrative expenses	98,096	92,350	87,527	78,801	79,240
(Loss) income from operations	(2,312)	12,681	16,177	22,883	38,403
Interest income, net	2,912	2,706	2,426	2,515	4,892
Loss from discontinued operations — net of tax	(2,707)	(353)	(744)	(1,736)	(1,614)
Net income	\$ 1,239	\$ 10,915	\$ 12,884	\$ 16,936	\$ 28,462
Basic net income per share					
From continuing operations	\$ 0.10	\$ 0.28	\$ 0.34	\$ 0.45	\$ 0.70
From discontinued operations	(0.07)	(0.01)	(0.02)	(0.04)	(0.04)
Basic net income per share	\$ 0.03	\$ 0.27	\$ 0.32	\$ 0.41	\$ 0.66
Diluted net income per share					
From continuing operations	\$ 0.10	\$ 0.27	\$ 0.33	\$ 0.44	\$ 0.68
From discontinued operations	(0.07)	(0.01)	(0.02)	(0.04)	(0.04)
Diluted net income per share	\$ 0.03	\$ 0.26	\$ 0.31	\$ 0.40	\$ 0.64
Dividends per share	\$ 0.16	\$ 0.16	\$ 0.12	\$ —	\$ —
Wtd. avg. shares outstanding — basic	40,349,000	40,471,000	40,604,000	41,353,000	43,073,000
Wtd. avg. shares outstanding — diluted	41,163,000	41,327,000	41,515,000	42,065,000	44,276,000
BALANCE SHEET DATA:					
Cash and equivalents	\$ 28,174	\$ 36,442	\$ 56,959	\$ 85,684	\$ 98,007
Short-term investments	53,269	69,955	36,878	28,575	23,050
Working capital	127,713	139,910	134,099	142,416	137,504
Net property, plant and equipment	11,028	11,968	13,049	13,548	13,102
Total assets	268,638	290,390	275,526	262,875	257,561
Long-term debt	—	—	—	—	—
Stockholders' equity	\$ 204,636	\$ 219,168	\$ 211,340	\$ 196,642	\$ 193,665

(1) See description of restatement at Note 2 to the Consolidated Financial Statements.

## BOARD OF DIRECTORS

**Arthur T. Shorin\***

Chairman and Chief Executive Officer

**Allan A. Feder**

Independent Business Consultant

**Stephen D. Greenberg**

Managing Director  
Allen & Company, LLC

**Ann Kirschner**

President  
Comma International

**David Mauer**

Chief Executive Officer  
E&B Giftware, LLC

**Edward D. Miller\***

Former President and CEO  
AXA Financial, Inc.

**Jack H. Nusbaum**

Partner and Chairman  
Willkie Farr & Gallagher, LLP

**Richard Tarlow**

Chairman  
Roberts & Tarlow

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\*Nominated to stand for re-election to the Company's Board of Directors at the 2006 Annual Meeting of Stockholders.

## OFFICERS

**Arthur T. Shorin**

Chairman and Chief Executive Officer

**Scott Silverstein**

President and Chief Operating Officer

**John Budd**

Vice President – Confectionary Marketing

**John Buscaglia**

Vice President – Entertainment Sales

**Michael P. Clancy**

Vice President — International and  
Managing Director, Topps International Limited

**Ira Friedman**

Vice President – Publishing and  
New Product Development

**Warren Friss**

Vice President — General  
Manager Entertainment

**Catherine K. Jessup**

Vice President — Chief  
Financial Officer and Treasurer

**Michael K. Murray**

Vice President — Confectionery Sales



**William G. O'Connor**

Vice President — Administration

**Christopher Rodman**

Vice President – Topps Europe

**SUBSIDIARIES****Topps Argentina SRL**

Managing Director -  
Juan P. Georgalos

**Topps Europe Limited**

Managing Director -  
Christopher Rodman

**Topps Canada, Inc.**

General Manager -  
Paul Cherrie

**Topps Italia SRL**

Managing Director -  
Furio Cicogna

**Topps International Limited**

Managing Director -  
Michael P. Clancy

**WizKids, Inc.**

President -  
Jordan Weisman

**Topps UK Limited**

Managing Director -  
Martin Tilney

**Topps Finance, Inc.****Topps Enterprises, Inc.****CORPORATE INFORMATION****Annual Meeting**

Thursday, July 28, 2006  
10:30 A.M.  
JPMorgan Chase & Co.  
270 Park Avenue  
New York, NY 10022

**Investor Relations**

Brod & Schaffer, LLC  
230 Park Avenue, Suite 1831  
New York, NY 10169  
212-750-5800

**Corporate Counsel**

Willkie Farr & Gallagher,  
LLP  
787 Seventh Avenue  
New York, NY 10019

**Independent Auditors**

Deloitte & Touche LLP  
Two World Financial Center  
New York, NY 10281

**Registrar and Transfer Agent**

American Stock Transfer & Trust Company  
59 Maiden Lane  
New York, NY 10038  
877-777-0800 ext 6820

## APPENDIX C

# The Double-Entry Accounting System

## INTRODUCTION

To prepare financial statements, a company must have a system that captures the vast numbers of business transactions in which it engages each year. The most widely used system, **double-entry accounting**, is so effective it has been in use for hundreds of years! This Appendix explains the rules for recording transactions using double-entry accounting.

## DEBIT/CREDIT TERMINOLOGY

An account form known as a **T-account** is a good starting point for learning double-entry recording procedures. A T-account looks like the letter “T” drawn on a piece of paper. The account title is written across the top of the horizontal bar of the T. The left side of the vertical bar is the **debit** side, and the right side is the **credit** side. An account has been *debited* when an amount is written on the left side and *credited* when an amount is written on the right side. For any given account, the difference between the total debit and credit amounts is the **account balance**.

The rules for using debits and credits to record transactions in T-accounts are as follows.

Claims							
Assets		=	Liabilities		+	Equity	
Debit	Credit		Debit	Credit		Debit	Credit
+	−		−	+		−	+

Notice that a debit can represent an increase or a decrease. Likewise, a credit can represent an increase or a decrease. Whether a debit or credit is an increase or a decrease depends on the type of account (asset, liability, or stockholders' equity) in question. The rules of debits and credits are summarized as follows.

1. Debits increase asset accounts; credits decrease asset accounts.
2. Debits decrease liability and stockholders' equity accounts; credits increase liability and stockholders' equity accounts.

We now demonstrate the use of debits and credits in the double-entry accounting system.

## The General Journal

Businesses find it impractical to record every individual transaction directly into accounts. Imagine the number of cash transactions a grocery store has each day. To simplify recordkeeping, businesses rely on **source documents** such as cash register tapes as the basis for entering transaction data into the accounting system. Other source documents include invoices, time cards, check stubs, and deposit tickets.

Accountants further simplify recordkeeping by initially recording data from source documents into **journals**. Journals provide a chronological record of business transactions. *Transactions are recorded in journals before they are entered into ledger accounts.* Journals are therefore **books of original entry**. Companies may use different **special journals** to record specific types of recurring transactions. For example, a company may use one special journal to record sales on account, another to record purchases on account, a third to record cash receipts, and a fourth to record cash payments. Transactions that do not fall into any of these categories are recorded in the **general journal**. Although special journals can be useful, companies can keep records without them by recording all transactions in the general journal. For simplicity, this appendix illustrates a general journal only.

At a minimum, the general journal shows the dates, the account titles, and the amounts of each transaction. The date is recorded in the first column, followed by the title of the account to be debited. The title of the account to be credited is indented and written on the line directly below the account to be debited. The dollar amount of the transaction is recorded in the Debit and Credit columns. For example, providing services for \$1,000 cash on August 1 would be recorded in general journal format as follows:

Date	Account Title	Debit	Credit
Aug. 1	Cash	1,000	
	Service Revenue		1,000

## THE GENERAL LEDGER

The collection of all the accounts used by a particular business is called the **general ledger**. In a manual system, the ledger could be a book with pages for each account where entries are recorded by hand. In more sophisticated systems, the general ledger is maintained in electronic form. Data is entered into electronic ledgers using computer keyboards or scanners. Companies typically assign each ledger account a name and a number. A list of all ledger accounts and their account numbers is called the **chart of accounts**. As previously stated, accounting data are first recorded in journals. The data are then transferred to the ledger accounts through a process called **posting**. The posting process for the August 1, \$1,000 revenue transaction is shown below.

Date	Account Title	Debit	Credit
Aug. 1	Cash	1,000	
	Service Revenue		1,000

Case		Service Revenue	
Aug. 1	1,000	Aug. 1	1,000

## ILLUSTRATION OF RECORDING PROCEDURES

We use the following transactions data to illustrate the process of recording transactions into a general journal and then posting them into a general ledger. The transactions data

### EXHIBIT A.1

Event No.	Account Title	Debit	Credit
1	Cash	28,000	
	Common Stock		28,000
2	Supplies	1,100	
	Accounts Payable		1,100
3	Prepaid Rent	12,000	
	Cash		12,000
4	Accounts Receivable	23,000	
	Consulting Revenue		23,000
5	General Operating Expenses	16,000	
	Accounts Payable		16,000
6	Cash	20,000	
	Accounts Receivable		20,000
7	Accounts Payable	13,000	
	Cash		13,000
8	Dividends	1,000	
	Cash		1,000
9	Rent Expense	900	
	Supplies		900
10	Rent Expense	3,000	
	Prepaid Rent		3,000
11	Salaries Expense	1,200	
	Salaries Payable		1,200

applies to the Mestro Financial Services Company. The journal entries are shown in Exhibit A.1. The general ledger after posting is shown in Exhibit A.2.

1. Acquired \$28,000 cash by issuing common stock on January 1, 2009.
2. Purchased \$1,100 of supplies on account.
3. Paid \$12,000 cash in advance for a one-year lease on office space.
4. Earned \$23,000 of consulting revenue on account.
5. Incurred \$16,000 of general operating expenses on account.
6. Collected \$20,000 cash from receivables.
7. Paid \$13,000 cash on accounts payable.
8. Paid a \$1,000 cash dividend to stockholders.

### Information for Adjusting Entries

9. There was \$200 of supplies on hand at the end of the accounting period.
10. The one-year lease on the office space was effective beginning on October 1, 2009.
11. There was \$1,200 of accrued salaries at the end of 2009.

**EXHIBIT A.2****MESTRO FINANCIAL SERVICES COMPANY**

T-Accounts, 2009

<b>Assets</b>		=	<b>Liabilities</b>		+	<b>Equity</b>	
<b>Cash</b>			<b>Accounts Payable</b>			<b>Common Stock</b>	
1. 28,000	3. 12,000		7. 13,000	2. 1,100			1. 28,000
6. 20,000	7. 13,000			5. 16,000			Bal. 28,000
	8. 1,000			Bal. 4,100			
Bal. 22,000							
<b>Accounts Receivable</b>			<b>Salaries Payable</b>			<b>Dividends</b>	
4. 23,000	6. 20,000			11. 1,200		8. 1,000	
Bal. 3,000				Bal. 1,200			
<b>Supplies</b>						<b>Consulting Revenue</b>	
2. 1,100	9. 900						4. 23,000
Bal. 200							
<b>Prepaid Rent</b>						<b>General Operating Expenses</b>	
3. 12,000	10. 3,000					5. 16,000	
Bal. 9,000							
						<b>Salaries Expense</b>	
						11. 1,200	
						<b>Supplies Expense</b>	
						9. 900	
						<b>Rent Expense</b>	
						10. 3,000	

**Trial Balance**

To test accuracy, accountants regularly prepare an internal accounting schedule called a **trial balance**. A trial balance lists every ledger account and its balance. Debit balances are listed in one column and credit balances are listed in an adjacent column. The columns are totaled and the totals are compared. Exhibit A.3 displays the trial balance for Mestro Financial Services Company after the adjusting entries have been posted to the ledger.

If the debit total does not equal the credit total, the accountant knows to search for an error. Even if the totals are equal, however, there may be errors in the accounting records. For example, equal trial balance totals would not disclose errors like the following: failure to record transactions; misclassifications, such as debiting the wrong account; or incorrectly recording the amount of a transaction, such as recording a \$200 transaction as \$2,000. Equal debits and credits in a trial balance provide evidence rather than proof of accuracy.

**Financial Statements**

Supplemented with details from the Cash and Common Stock ledger accounts, the trial balance (Exhibit A.3) provides the information to prepare the financial statements shown in Exhibit A.4.

### EXHIBIT A.3

<b>MESTRO FINANCIAL SERVICES COMPANY</b>		
Trial Balance December 31, 2009		
<b>Account Titles</b>	<b>Debit</b>	<b>Credit</b>
Cash	\$22,000	
Accounts receivable	3,000	
Supplies	200	
Prepaid rent	9,000	
Accounts payable		\$ 4,100
Salaries payable		1,200
Common stock		28,000
Dividends	1,000	
Consulting revenue		23,000
General operating expenses	16,000	
Salaries expense	1,200	
Supplies expense	900	
Rent expense	3,000	
<b>Totals</b>	<b><u>\$56,300</u></b>	<b><u>\$56,300</u></b>

### EXHIBIT A.4

<b>MESTRO FINANCIAL SERVICES COMPANY</b>		
Financial Statements For 2009		
Income Statement For the Year Ended December 31, 2009		
Consulting revenue		\$23,000
Expenses		
General operating expenses	\$16,000	
Salaries expense	1,200	
Supplies expense	900	
Rent expense	<u>3,000</u>	
Total expenses		<u>(21,100)</u>
Net income		<u>\$ 1,900</u>
Statement of Changes in Stockholders' Equity For the Year Ended December 31, 2009		
Beginning common stock	\$ 0	
Plus: Common stock issued	<u>28,000</u>	
Ending common stock		\$28,000
Beginning retained earnings	0	
Plus: Net income	1,900	
Less: Dividends	<u>(1,000)</u>	
Ending retained earnings		<u>900</u>
Total stockholders' equity		<u>\$28,900</u>
<i>continued</i>		



Balance Sheet As of December 31, 2009		
Assets		
Cash	\$22,000	
Accounts receivable	3,000	
Supplies	200	
Prepaid rent	<u>9,000</u>	
Total assets		<u>\$34,200</u>
Liabilities		
Accounts payable	\$ 4,100	
Salaries payable	<u>1,200</u>	
Total liabilities		\$ 5,300
Stockholders' equity		
Common stock	28,000	
Retained earnings	<u>900</u>	
Total stockholders' equity		<u>28,900</u>
Total liabilities and stockholders' equity		<u>\$34,200</u>

Statement of Cash Flows For the Year Ended December 31, 2009		
Cash flows from operating activities		
Inflow from customers	\$20,000	
Outflow for expenses	<u>(25,000)</u>	
Net cash flow for operating activities		\$ (5,000)
Cash flows from investing activities		
		0
Cash flows from financing activities		
Inflow from issue of common stock	28,000	
Outflow for dividends	<u>(1,000)</u>	
Net cash flow from financing activities		<u>27,000</u>
Net change in cash		22,000
Plus: Beginning cash balance		<u>0</u>
Ending cash balance		<u>\$22,000</u>

## KEY TERMS

Account balance 651	Debit 651	General ledger 652	Special journals 652
Books of original entry 652	Double-entry	Journals 652	T-account 651
Chart of accounts 652	accounting 651	Posting 652	Trial balance 654
Credit 651	General journal 652	Source documents 651	

## EXERCISES

### Appendix 1-1 Debit/credit terminology

#### Required

For each of the following independent events, identify the account that would be debited and the account that would be credited. The accounts for the first event are identified as an example.

Event	Account Debited	Account Credited
a	Cash	Common Stock

- a. Received cash by issuing common stock.
- b. Received cash for services to be performed in the future.
- c. Provided services on account.
- d. Paid accounts payable.
- e. Paid cash in advance for one year's rent.
- f. Paid cash for operating expenses.
- g. Paid salaries payable.
- h. Purchased supplies on account.
- i. Paid cash dividends to the stockholders.
- j. Recognized revenue for services completed; previously collected the cash in Event b.
- k. Received cash in payment of accounts receivable.
- l. Paid salaries expense.
- m. Recognized expense for prepaid rent that had been used up by the end of the accounting period.

### **Appendix 1-2** *Recording transactions in general journal and T-accounts*

The following events apply to Pearson Service Co. for 2009, its first year of operation.

- 1. Received cash of \$50,000 from the issue of common stock.
- 2. Performed \$90,000 worth of services on account.
- 3. Paid \$64,000 cash for salaries expense.
- 4. Purchased supplies for \$12,000 on account.
- 5. Collected \$78,000 of accounts receivable.
- 6. Paid \$8,500 of the accounts payable.
- 7. Paid a \$5,000 dividend to the stockholders.
- 8. Had \$1,500 of supplies on hand at the end of the period.

#### **Required**

- a. Record these events in general journal form.
- b. Post the entries to T-accounts and determine the ending balance in each account.
- c. Determine the amount of total assets at the end of 2009.
- d. Determine the amount of net income for 2009.

### **Appendix 1-3** *Recording events in the general journal, posting to T-accounts, and preparing a trial balance*

The following events apply to Complete Business Service in 2010, its first year of operations.

- 1. Received \$30,000 cash from the issue of common stock.
- 2. Earned \$25,000 of service revenue on account.
- 3. Incurred \$10,000 of operating expenses on account.
- 4. Received \$20,000 cash for performing services.
- 5. Paid \$8,000 cash to purchase land.
- 6. Collected \$22,000 of cash from accounts receivable.
- 7. Received a \$6,000 cash advance for services to be provided in the future.
- 8. Purchased \$900 of supplies on account.
- 9. Made a \$7,500 payment on accounts payable.
- 10. Paid a \$5,000 cash dividend to the stockholders.
- 11. Recognized \$500 of supplies expense.
- 12. Recognized \$5,000 of revenue for services provided to the customer in Event 7.

**Required**

- a. Record the events in the general journal.
- b. Post the events to T-accounts and determine the ending account balances.
- c. Test the equality of the debit and credit balances of the T-accounts by preparing a trial balance.

**Appendix 1-4** *One complete accounting cycle*

The following events apply to Paradise Vacations' first year of operations.

1. Acquired \$20,000 cash from the issue of common stock on January 1, 2009.
2. Purchased \$800 of supplies on account.
3. Paid \$4,200 cash in advance for a one-year lease on office space.
4. Earned \$28,000 of revenue on account.
5. Incurred \$12,500 of other operating expenses on account.
6. Collected \$24,000 cash from accounts receivable.
7. Paid \$9,000 cash on accounts payable.
8. Paid a \$3,000 cash dividend to the stockholders.

**Information for Adjusting Entries**

9. There was \$150 of supplies on hand at the end of the accounting period.
10. The lease on the office space covered a one-year period beginning November 1.
11. There was \$3,600 of accrued salaries at the end of the period.

**Required**

- a. Record these transactions in general journal form.
- b. Post the transaction data from the journal to ledger T-accounts.
- c. Prepare a trial balance.
- d. Prepare an income statement, statement of changes in stockholders' equity, a balance sheet, and a statement of cash flows.

## GLOSSARY

**absolute amounts** Dollar totals reported in accounts on financial reports that can be misleading because they make no reference to the relative size of the company being analyzed. *p. 325*

**accelerated depreciation methods** Depreciation methods that recognize depreciation expense more rapidly in the early stages of an asset's life than in the later stages of its life. *p. 216*

**account balance** Difference between total debits and total credits in an account. *p. 651*

**accounting** Service-based profession that provides reliable and relevant financial information useful in making decisions. *p. 2*

**accounting controls** Procedures designed to safeguard assets and to ensure accuracy and reliability of the accounting records and reports. *p. 140*

**accounting equation** Expression of the relationship between the assets and the claims on those assets. *p. 8*

**accounting event** Economic occurrence that causes changes in an enterprise's assets, liabilities, or equity. *p. 9*

**accounting period** Span of time covered by the financial statements, normally one year, but may be a quarter, a month or some other time span. *p. 16*

**account receivable** Expected future cash receipt arising from permitting a customer to *buy now and pay later*; typically a relatively small balance due within a short time period. *pp. 44, 70*

**accounts** Records used for classifying and summarizing transaction data; subclassifications of financial statement elements. *p. 7*

**accounts receivable turnover ratio** Financial ratio that measures how fast accounts receivable are turned into cash; computed by dividing sales by accounts receivable. *pp. 186, 331*

**accrual** Recognition of events before exchanging cash. *p. 44*

**accrual accounting** Accounting system that recognizes expenses or revenues when they occur regardless of when cash is exchanged. *p. 43*

**accrued expenses** Expenses that are recognized before cash is paid. An example is accrued salaries expense. *p. 46*

**accrued interest** Interest revenue or expense that is recognized before cash has been exchanged. *p. 181*

**accumulated conversion factors** Factors used to convert a series of future cash inflows into their present value equivalent and that are applicable to cash inflows of equal amounts spread over equal interval time periods and that can be determined by computing the sum of the individual single factors used for each period. *p. 567*

**accumulated depreciation** Contra asset account that indicates the sum of all depreciation expense recognized for an asset since the date of acquisition. *p. 214*

**acid-test ratio** (quick ratio) Measure of immediate debt-paying ability; calculated by dividing very liquid assets (cash, receivables, and marketable securities) by current liabilities. *p. 330*

**activities** The actions taken by an organization to accomplish its mission. *p. 379*

**activity base** Factor that causes changes in variable cost; is usually some measure of volume when used to define cost behavior. *p. 406*

**activity-based management (ABM)** Management of the activities of an organization to add the greatest value by developing products that satisfy the needs of that organization's customers. *p. 379*

**adjusting entry** Entry that updates account balances prior to preparing financial statements. *pp. 46, 182*

**administrative controls** Procedures designed to evaluate performance and the degree of compliance with a firm's policies and public laws. *p. 140*

**aging of accounts receivable** Classifying each account receivable by the number of days it has been outstanding. The aging schedule is used to develop an estimate of the amount of the allowance for doubtful accounts. *p. 179*

**AICPA (American Institute of Certified Public Accountants)**

National association that serves the educational and professional interests of members of the public accounting profession; membership is voluntary. *p. 64*

**allocation** Process of dividing a total cost into parts and apportioning the parts among the relevant cost objects. *p. 434*

**allocation base** Cost driver used as the basis for the allocation process. *p. 435*

**allocation rate** Factor used to allocate or assign costs to a cost object; determined by taking the total cost to be allocated and dividing it by the appropriate cost driver. *p. 435*

**allowance for doubtful accounts** Contra asset account that contains an amount equal to the accounts receivable that are expected to be uncollectible. *p. 172*

**allowance method of accounting for uncollectible accounts**

Method of accounting for bad debts in which bad debts are estimated and expensed in the same period in which the corresponding sales are recognized. The receivables are reported in the financial statements at net realizable value (the amount expected to be collected in cash). *p. 172*

**amortization** Method of systematically allocating the costs of intangible assets to expense over their useful lives; also term for converting the discount on a note or a bond to interest expense over a designated period. *pp. 210, 258*

**amortizing** See *amortization*.

**annual report** Document in which an organization provides information to stockholders, usually on an annual basis. *p. 21*

**annuity** Series of equal payments made over a specified number of periods. *p. 567*

**appropriated retained earnings** Retained earnings restricted by the board of directors for a specific purpose (e.g., to repay debt or for future expansion); although a part of total retained earnings, not available for distribution as dividends. *p. 301*

**articles of incorporation** Items on an application filed with a state agency for the formation of a corporation; contains such information as the corporation's name, its purpose, its location, its expected life, provisions for its capital stock, and a list of the members of its board of directors. *p. 288*

**articulation** Characteristic of financial statements that means they are interrelated. For example, the amount of net income reported on the income statement is added to beginning retained earnings as a component in calculating the ending retained earnings balance reported on the statement of changes in stockholders' equity. *p. 14*

**asset exchange transaction** A transaction that decreases one asset while increasing another asset so that total assets do not change; for example, the purchase of land with cash. *pp. 11, 14*

**assets** Economic resources used by a business to produce revenue. *p. 7*

**asset source transaction** Transaction that increases an asset and a claim on assets; three types of asset source transactions are acquisitions from owners (equity), borrowings from creditors (liabilities), or earnings from operations (revenues). *pp. 10, 44*

**asset turnover ratio** The amount of net income divided by average total assets. *p. 336*

**asset use transaction** Transaction that decreases an asset and a claim on assets; the three types are distributions (transfers to owners), liability payments (to creditors), or expenses (used to operate the business). *pp. 11, 45*

**authority manual** A document that outlines the chain of command for authority and responsibility. The authority manual provides guidelines for specific positions such as personnel officer as well as general authority such as all vice presidents are authorized to spend up to a designated limit. *p. 141*

**authorized stock** Number of shares that the corporation is approved by the state to issue. *p. 294*

**average cost** The total cost of making products divided by the total number of products made. *p. 367*

**average number of days to collect accounts receivable** Length of the average collection period for accounts receivable; computed by dividing 365 by the accounts receivable turnover ratio. *pp. 186, 332*

**average number of days to sell inventory** Financial ratio that measures the average number of days that inventory stays in stock before being sold. *pp. 151, 332*

**avoidable costs** Future costs that can be avoided by taking a specified course of action. To be avoidable in a decision-making context, costs must differ among the alternatives. For example, if the cost of material used to make two different products is the same for both products, that cost could not be avoided by choosing to produce one product over the other. Therefore, the material's cost would not be an avoidable cost. *p. 467*

**balanced score card** A management evaluation tool that includes financial and nonfinancial measures. *p. 545*

**balance sheet** Statement that lists the assets of a business and the corresponding claims (liabilities and equity) on those assets. *p. 17*

**bank reconciliation** Schedule that identifies and explains differences between the cash balance reported by the bank and the cash balance in the firm's accounting records. *p. 145*

**bank statement** Statement issued by a bank (usually monthly) that denotes all activity in the bank account for that period. *p. 145*

**bank statement credit memo** Memorandum that describes an increase in the account balance. *p. 145*

**bank statement debit memo** Memorandum that describes a decrease in the account balance. *p. 145*

**basket purchase** Acquisition of several assets in a single transaction with no specific cost attributed to each asset. *p. 211*

**batch-level costs** The costs associated with producing a batch of products. For example, the cost of setting up machinery to produce 1,000 products is a batch-level cost. The classification of batch-level costs is context sensitive. Postage for one product would be classified as a unit-level cost. In contrast, postage for a large number of products delivered in a single shipment would be classified as a batch-level cost. *p. 467*

**benchmarking** Identifying the best practices used by world-class competitors. *p. 379*

**best practices** Practices used by world-class companies. *p. 379*

**board of directors** Group of individuals elected by the stockholders of a corporation to oversee its operations. *p. 291*

**bond certificates** Debt securities used to obtain long-term financing in which a company borrows funds from a number of lenders, called *bondholders*; usually issued in denominations of \$1,000. *p. 261*

**bondholder** The party buying a bond (the lender or creditor). *p. 261*

**book of original entry** A journal in which transactions are first recorded. *p. 652*

**book value** Historical (original) cost of an asset minus the accumulated depreciation; alternatively, undepreciated amount to date. *p. 215*

**book value per share** Value of stock determined by dividing the total stockholders' equity by the number of shares of stock. *pp. 294, 338*

**break-even point** Point where total revenue equals total cost; can be expressed in units or sales dollars. *p. 407*

**budgeting** Form of planning that formalizes a company's goals and objectives in financial terms. *p. 498*

**capital budget** Budget that describes the company's plans regarding investments, new products, or lines of business for the coming year; is used as input to prepare many of the operating budgets and becomes a formal part of the master budget. *p. 502*

**capital budgeting** Financial planning activities that cover the intermediate range of time such as whether to buy or lease equipment, whether to purchase a particular investment, or whether to increase operating expenses to stimulate sales. *p. 500*

**capital expenditures** (on an existing asset) Substantial amounts of funds spent to improve an asset's quality or to extend its life. *p. 222*



**capital investments** Expenditures for the purchase of operational assets that involve a long-term commitment of funds that can be critically important to the company's ultimate success; normally recovered through the use of the assets. *p. 564*

**cash** Coins, currency, checks, balances in checking and certain savings accounts, money orders, bank drafts, certificates of deposit, and other items that are payable on demand. *p. 143*

**cash budget** A budget that focuses on cash receipts and payments that are expected to occur in the future. *p. 508*

**cash discount** Discount offered on merchandise sold to encourage prompt payment; offered by sellers of merchandise and represent sales discounts to the seller when they are used and purchase discounts to the purchaser of the merchandise. *p. 98*

**certified check** Check guaranteed by a bank to be drawn on an account having funds sufficient to pay the check. *p. 147*

**certified suppliers** Suppliers who have gained the confidence of the buyer by providing quality goods and services at desirable prices and usually in accordance with strict delivery specifications; frequently provide the buyer with preferred customer status in exchange for guaranteed purchase quantities and prompt payment schedules. *p. 472*

**chart of accounts** List of all ledger accounts and their corresponding account numbers. *p. 652*

**checks** Prenumbered forms, sometimes multicopy, with the name of the business issuing them preprinted on the face, indicating to whom they are paid, the amount of the payment, and the transaction date. *p. 145*

**claims** Owners' and creditors' interests in a business's assets. *p. 8*

**claims exchange transaction** Transaction that decreases one claim and increases another so that total claims do not change. For example, the accrual of interest expense is a claims exchange transaction; liabilities increase, and the recognition of the expense causes retained earnings to decrease. *p. 46*

**classified balance sheet** Balance sheet that distinguishes between current and noncurrent items. *p. 267*

**closely held corporation** Corporation whose stock is exchanged between a limited number of individuals. *p. 288*

**closing** See *closing the books*.

**closing the books** Process of transferring balances from temporary accounts (Revenue, Expense, and Dividends) to the permanent account (Retained Earnings). *p. 18*

**Code of Professional Conduct** A set of guidelines established by the American Institute of Certified Public Accountants (AICPA) to promote high ethical conduct among its membership. *p. 64*

**collateral** Assets pledged as security for a loan. *pp. 181, 266*

**common costs** Costs that are incurred to support more than one cost object but cannot be traced to any specific object. *p. 434*

**common size financial statements** Financial statements in which amounts are converted to percentages to allow a better comparison of period-to-period and company-to-company financial data since all information is placed on a common basis. *p. 108*

**common stock** Basic class of corporate stock that carries no preferences as to claims on assets or dividends; certificates that evidence ownership in a company. *pp. 9, 294*

**conservatism** A principle that guides accountants in uncertain circumstances to select the alternative that produces the lowest amount of net income. *p. 61*

**consistency** The generally accepted accounting principle that a company should, in most circumstances, continually use the same accounting method(s) so that its financial statements are comparable across time. *p. 139*

**contingent liability** A potential obligation, the amount of which depends on the outcome of future events. *p. 254*

**continuity** Concept that describes the fact that a corporation's life may extend well beyond the time at which any particular shareholder decides to retire or to sell his or her stock. *p. 290*

**continuous improvement** Total quality management (TQM) feature that refers to an ongoing process through which employees learn to eliminate waste, reduce response time, minimize defects, and simplify the design and delivery of products and services to customers. *p. 379*

**contra asset account** Account subtracted from another account with which it is associated; has the effect of reducing the asset account with which it is associated. *pp. 174, 214*

**contribution margin** Difference between a company's sales revenue and total variable cost; represents the amount available to cover fixed cost and thereafter to provide a profit. *p. 402*

**contribution margin per unit** The contribution margin per unit is equal to the sales price per unit minus the variable cost per unit. *p. 408*

**controllability concept** Evaluating managerial performance based only on revenue and costs under the manager's direct control. *p. 532*

**controllable costs** Costs that can be influenced by a particular manager's decisions and actions. *p. 434*

**copyright** Legal protection of writings, musical compositions, and other intellectual property for the exclusive use of the creator or persons assigned the right by the creator. *p. 225*

**corporation** Legal entity separate from its owners; formed when a group of individuals with a common purpose join together in an organization according to state laws. *p. 288*

**cost** Measure of resources used to acquire an asset or to produce revenue. *p. 52*

**cost accumulation** Process of determining the cost of a particular object by accumulating many individual costs into a single total cost. *p. 432*

**cost allocation** Process of dividing a total cost into parts and assigning the parts to relevant objects. *pp. 372, 433*

**cost behavior** How a cost reacts (goes up, down, or remains the same) relative to changes in some measure of activity (e.g., the behavior pattern of the cost of raw materials is to increase as the number of units of product made increases). *p. 398*

**cost center** Type of responsibility center which incurs costs but does not generate revenue. *p. 532*



**cost driver** Any factor, usually some measure of activity, that causes cost to be incurred, sometimes referred to as *activity base* or *allocation base*. Examples are labor hours, machine hours, or some other measure of activity whose change causes corresponding changes in the cost object. *p. 432*

**cost method of accounting for treasury stock** Method of accounting for treasury stock in which the purchase of treasury stock is recorded at its cost to the firm but does not consider the original issue price or par value. *p. 299*

**cost objects** Objects for which managers need to know the cost; can be products, processes, departments, services, activities, and so on. *pp. 430, 432*

**cost of capital** Return paid to investors and creditors for the use of their assets (capital); usually represents a company's minimum rate of return. *p. 565*

**cost of goods available for sale** Total costs paid to obtain goods and to make them ready for sale, including the cost of beginning inventory plus purchases and transportation-in costs, less purchase returns and allowances and purchase discounts. *p. 93*

**cost of goods sold** Total cost incurred for the goods sold during a specific accounting period. *p. 93*

**cost-plus pricing** Pricing strategy that sets the price at cost plus a markup equal to a percentage of the cost. *p. 366*

**cost pool** A collection of costs organized around a common cost driver. The cost pool as opposed to individual costs is allocated to cost objects using the common cost driver thereby promoting efficiency in the allocation process. *p. 445*

**cost tracing** Relating specific costs to the objects that cause their incurrence. *p. 433*

**credit** Entry that increases liability and equity accounts or decreases asset accounts. *p. 651*

**creditors** Individuals or institutions that have loaned goods or services to a business. *p. 7*

**cumulative dividends** Preferred dividends that accumulate from year to year until paid. *p. 295*

**current (short-term) assets** Assets that will be converted to cash or consumed within one year or an operating cycle, whichever is longer. *pp. 208, 266*

**current (short-term) liability** Obligation due within one year or an operating cycle, whichever is longer. *pp. 251, 267*

**current ratio** Measure of liquidity (short-term debt-paying ability); calculated by dividing current assets by current liabilities. *pp. 267, 330*

**date of record** Date that establishes who will receive the dividend payment: shareholders who actually own the stock on the record date will be paid the dividend even if the stock is sold before the dividend is paid. *p. 300*

**debit** Entry that increases asset accounts or decreases liability and equity accounts. *p. 651*

**debt to assets ratio** Financial ratio that measures a company's level of risk. *pp. 268, 333*

**debt to equity ratio** Financial ratio that compares creditor financing to owner financing, expressed as the dollar amount of liabilities for each dollar of stockholder's equity. *p. 333*

**decentralization** Practice of delegating authority and responsibility for the operation of business segments. *p. 532*

**declaration date** Date on which the board of directors actually declares a dividend. *p. 300*

**deferral** Recognition of revenue or expense in a period after the cash is exchanged. *p. 43*

**depletion** Method of systematically allocating the costs of natural resources to expense as the resources are removed from the land. *p. 210*

**deposits in transit** Deposits recorded in a depositor's books but not received and recorded by the bank. *p. 146*

**deposit ticket** Bank form that accompanies checks and cash deposited into a bank account; normally specifies the account number, name of the account, and a record of the checks and cash being deposited. *p. 144*

**depreciable cost** Original cost minus salvage value (of a long-term depreciable asset). *p. 212*

**depreciation** Decline in value of long-term tangible assets such as buildings, furniture, or equipment. It is systematically recognized by accountants as depreciation expense over the useful lives of the affected assets. *p. 210*

**depreciation expense** Portion of the original cost of a long-term tangible asset systematically allocated to an expense account in a given period. *p. 212*

**differential revenues** Future-oriented revenues that differ among the alternatives under consideration. *p. 467*

**direct cost** Cost that is easily traceable to a cost object and for which the sacrifice to trace is small in relation to the information benefits attained. *p. 433*

**direct labor** Wages paid to production workers whose efforts can be easily and conveniently traced to products. *p. 370*

**direct raw materials** Costs of raw materials used to make products that can be easily and conveniently traced to those products. *p. 369*

**dividend** Transfer of wealth from a business to its owners. *p. 12*

**dividends in arrears** Cumulative dividends on preferred stock that have not been paid; must be paid prior to paying dividends to common stockholders. *p. 295*

**dividend yield** Ratio for comparing stock dividends paid in relation to the market price; calculated as dividends per share divided by market price per share. *p. 339*

**double-declining-balance depreciation** Depreciation method that recognizes larger amounts of depreciation in the early stages of an asset's life and progressively smaller amounts as the asset ages. *p. 216*

**double-entry accounting (bookkeeping)** Method of keeping records that provides a system of checks and balances by recording transactions in a dual format. *p. 10*

**double taxation** Policy to tax corporate profits distributed to owners twice, once when the income is reported on the corporation's income tax return and again when the dividends are reported on the individual's return. *p. 289*

**downstream costs** Costs, such as delivery costs and sales commissions, incurred after the manufacturing process is complete. *p. 374*

**earnings** The difference between revenues and expenses. Same as net income or profit.

**earnings per share** Measure of the value of a share of common stock in terms of company earnings; calculated as net income available to common stockholders divided by the average number of outstanding common shares. *p. 338*

**elements** Primary components of financial statements including assets, liabilities, equity, contributions, revenue, expenses, distributions, and net income. *p. 6*

**entity** See *reporting entities*.

**entrenched management** Management that may have become ineffective but because of political implications may be difficult to remove. *p. 291*

**equation method** Cost-volume-profit analysis technique that uses the algebraic relationship among sales, variable costs, fixed costs, and desired net income before taxes to solve for required sales volume. *p. 407*

**equipment replacement decisions** Decisions regarding whether existing equipment should be replaced with newer equipment based on identification and comparison of the avoidable costs of the old and new equipment to determine which equipment is more profitable to operate. *p. 477*

**equity** Portion of assets remaining after the creditors' claims have been satisfied (i.e., Assets Liabilities Equity); also called *residual interest* or *net assets*. *p. 8*

**estimated useful life** Time for which an asset is expected to be used by a business. *p. 212*

**ex-dividend** Stock traded after the date of record but before the payment date; does not receive the benefit of the upcoming dividend. *p. 300*

**expenses** Economic sacrifices (decreases in assets or increase in liabilities) that are incurred in the process of generating revenue. *pp. 11, 49, 68*

**face value** Amount of the bond to be paid back (to the bondholders) at maturity. *p. 262*

**facility-level costs** Costs incurred on behalf of the whole company or a segment of the company; not related to any specific product, batch, or unit of production or service and unavoidable unless the entire company or segment is eliminated. *p. 468*

**favorable variance** Variance that occurs when actual costs are less than standard costs or when actual sales are higher than standard sales. *p. 535*

**fidelity bond** Insurance policy that a company buys to insure itself against loss due to employee dishonesty. *p. 141*

**financial accounting** Field of accounting designed to meet the information needs of external users of business information (creditors, investors, governmental agencies, financial analysts, etc.); its objective is to classify and record business events and transactions to facilitate the production of external financial reports (income statement, balance sheet, statement of cash flows, and statement of changes in equity). *p. 363*

**Financial Accounting Standards Board (FASB)** Privately funded organization with the primary authority for the establishment of accounting standards in the United States. *p. 5*

**financial statements** Primary means of communicating the financial information of an organization to the external users. The four general-purpose financial statements are the income statement, statement of changes in equity, balance sheet, and statement of cash flows. *p. 6*

**financing activities** Cash inflows and outflows from transactions with investors and creditors (except interest). These cash flows include cash receipts from the issue of stock, borrowing activities, and cash disbursements associated with dividends. *p. 17*

**finished goods inventory** Asset account used to accumulate the product costs (direct materials, direct labor, and overhead) associated with completed products that have not yet been sold. *p. 366*

**first-in, first-out (FIFO) cost flow method** Inventory cost flow method that treats the first items purchased as the first items sold for the purpose of computing cost of goods sold. *p. 134*

**fixed cost** Cost that in total remains constant when activity volume changes; varies per unit inversely with changes in the volume of activity. *p. 398*

**fixed cost volume variance** The difference between the budgeted fixed cost and the applied fixed cost. *p. 537*

**fixed interest rate** Interest rate (charge for the use of money) that does not change over the life of the loan. *p. 257*

**flexible budgets** Budgets that show expected revenues and costs at a variety of different activity levels. *p. 533*

**flexible budget variances** Differences between budgets based on standard amounts at the actual level of activity and actual results; caused by differences in standard and actual unit cost since the volume of activity is the same. *p. 538*

**FOB (free on board) destination** Term that designates the seller as the responsible party for freight costs (transportation-in costs). *p. 99*

**FOB (free on board) shipping point** Term that designates the buyer as the responsible party for freight costs (transportation-in costs). *p. 99*

**franchise** Exclusive right to sell products or perform services in certain geographic areas. *p. 226*

**full disclosure** The accounting principle that financial statements should include all information relevant to an entity's operations and financial condition. Full disclosure frequently requires adding footnotes to the financial statements. *p. 139*

**gains** Increases in assets or decreases in liabilities that result from peripheral or incidental transactions. *p. 102*

**general authority** Policies and procedures that apply across different levels of a company's management, such as everyone flies coach class. *p. 141*

**general journal** Journal in which all types of accounting transactions can be entered but which is commonly used to record adjusting and closing entries and unusual types of transactions.

**general ledger** Complete set of accounts used in accounting systems. *p. 13*

**generally accepted accounting principles (GAAP)** Rules and regulations that accountants agree to follow when preparing financial reports for public distribution. *p. 5*

**general, selling, and administrative costs** All costs not associated with obtaining or manufacturing a product; in practice are sometimes referred to as *period costs* because they are normally expensed in the period in which the economic sacrifice is incurred. *p. 371*

**general uncertainties** Uncertainties inherent in operating a business, such as competition and damage from storms. Unlike contingent liabilities, these uncertainties arise from future rather than past events. *p. 254*

**going concern assumption** Assumption that a company will continue to operate indefinitely, will pay its obligations and should therefore report those obligations at their full face value in the financial statements. *p. 250*

**goodwill** Added value of a successful business that is attributable to factors—reputation, location, and superior products—that enable the business to earn above-average profits; stated differently, the excess paid for an existing business over the appraised value of the net assets. *p. 226*

**gross margin (gross profit)** Difference between sales revenue and cost of goods sold; the amount a company makes from selling goods before subtracting operating expenses. *p. 93*

**gross margin percentage** Expression of gross margin as a percentage of sales computed by dividing gross margin by net sales; the amount of each dollar of sales that is profit before deducting any operating expenses. *p. 108*

**gross profit** See *gross margin*.

**historical cost concept** Actual price paid for an asset when it was purchased. *pp. 13, 211*

**horizontal analysis** Analysis technique that compares amounts of the same item over several time periods. *p. 325*

**horizontal statements model** Arrangement of a set of financial statements horizontally across a sheet of paper. *p. 19*

**income** Added value created in transforming resources into more desirable states. *p. 7*

**income statement** Statement that measures the difference between the asset increases and the asset decreases associated with running a business. This definition is expanded in subsequent chapters as additional relationships among the elements of the financial statements are introduced. *p. 14*

**incremental revenue** Additional cash inflows from operations generated by using an additional capital asset. *p. 571*

**indirect cost** Cost that cannot be easily traced to a cost object and for which the economic sacrifice to trace is not worth the informational benefits. *pp. 371, 433*

**information overload** Situation in which presentation of too much information confuses the user of the information. *p. 324*

**installment notes** Obligations that require regular payments of principal and interest over the life of the loan. *p. 258*

**intangible assets** Assets that may be represented by pieces of paper or contracts that appear tangible; however, the true value of an intangible asset lies in the rights and privileges extended to its owners. *p. 210*

**interest** Fee paid for the use of borrowed funds; also refers to revenue from debt securities. *pp. 7, 181*

**internal controls** A company's policies and procedures designed to reduce the opportunity for fraud and to provide reasonable assurance that its objectives will be accomplished. *pp. 67, 140*

**internal rate of return** Rate that will produce a present value of an investment's future cash inflows that equals cash outflows required to acquire the investment; alternatively, the rate that produces in a net present value of zero. *p. 570*

**inventory cost flow methods** Methods used to allocate the cost of goods available for sale between cost of goods sold and inventory. *p. 136*

**inventory holding costs** Costs associated with acquiring and retaining inventory including cost of storage space; lost, stolen, or damaged merchandise; insurance; personnel and management costs; and interest. *p. 375*

**inventory turnover** Ratio of cost of goods sold to inventory that indicates how many times a year the average inventory is sold (turned over). *pp. 151, 332*

**investing activities** One of the three categories of cash inflows and outflows shown on the statement of cash flows; includes cash received and spent by the business on productive assets and investments in the debt and equity of other companies. *p. 17*

**investment center** Type of responsibility center for which revenue, expense and capital investments can be measured. *p. 532*

**investors** Company or individual who gives assets or services in exchange for security certificates representing ownership interests. *p. 7*

**issued stock** Stock sold to the public. *p. 294*

**issuer** Individual or business that issues a note payable, bonds payable, or stock (the party receiving cash). See also *maker*. *pp. 252, 261*

**journals** Books of original entry in which accounting data are entered chronologically before posting to the ledger accounts. *p. 652*

**just in time (JIT)** Inventory flow system that minimizes the amount of inventory on hand by making inventory available for customer consumption on demand, therefore eliminating the need to store inventory. The system reduces explicit holding costs including financing, warehouse storage, supervision, theft, damage, and obsolescence. It also eliminates hidden opportunity costs such as lost revenue due to the lack of availability of inventory. *p. 375*

**last-in, first-out (LIFO) cost flow method** Inventory cost flow method that treats the last items purchased as the first items sold for the purpose of computing cost of goods sold. *p. 134*

**legal capital** Amount of assets that should be maintained as protection for creditors; the number of shares multiplied by the par value. *p. 293*

**liabilities** Obligations of a business to relinquish assets, provide services, or accept other obligations. *p. 8*

**limited liability** Concept that investors in a corporation may not be held personally liable for the actions of the corporation (the creditors cannot lay claim to the owners' personal assets as payment for the corporation's debts). *p. 290*

**limited liability companies (LLC)** Organizations offering many of the best features of corporations and partnerships and with many legal benefits of corporations (e.g., limited liability and centralized management) but permitted by the Internal Revenue Service to be taxed as a partnership, thereby avoiding double taxation of profits. *p. 290*

**line of credit** Preapproved credit arrangement with a lending institution in which a business can borrow money by simply writing a check up to the approved limit. *p. 261*

**liquidation** Process of dividing up the assets and returning them to the resource providers. Creditors normally receive first priority in business liquidations; in other words, assets are distributed to creditors first. After creditor claims have been satisfied, the remaining assets are distributed to the investors (owners) of the business. *p. 7*

**liquidity** Ability to convert assets to cash quickly and meet short-term obligations. *pp. 17, 183, 267*

**liquidity ratios** Measures of short-term debt-paying ability. *p. 329*

**long-term liabilities** Liabilities with maturity dates beyond one year or the company's operating cycle, whichever is longer; noncurrent liabilities. *p. 257*

**long-term operational assets** Assets used by a business to generate revenue; condition of being used distinguishes them from assets that are sold (inventory) and assets that are held (investments). *p. 208*

**losses** Decreases in assets or increases in liabilities that result from peripheral or incidental transactions. *p. 102*

**low-ball pricing** Pricing a product below competitors' price to lure customers away and then raising the price once customers depend on the supplier for the product. *p. 472*

**maker** The party issuing a note (the borrower). *p. 181*

**making the numbers** Expression that indicates marketing managers attained the planned master budget sales volume. *p. 536*

**management by exception** The philosophy of focusing management attention and resources only on those operations where performance deviates significantly from expectations. *p. 540*

**managerial accounting** Branch of accounting that provides information useful to internal decision makers and managers in operating an organization. *pp. 363*

**manufacturing business** Companies that make the goods they sell to customers. *p. 21*

**manufacturing overhead** Production costs that cannot be traced directly to products. *p. 372*

**margin** Component in the determination of the return on investment. Computed by dividing operating income by sales. *p. 542*

**margin of safety** Difference between break-even sales and budgeted sales expressed in units, dollars, or as a percentage; the amount by which actual sales can fall below budgeted sales before a loss is incurred. *p. 410*

**market value** The price at which securities sell in the secondary market; also called fair value. *p. 294*

**master budget** Composition of the numerous separate but interdependent departmental budgets that cover a wide range of operating and financial factors such as sales, production, manufacturing expenses, and administrative expenses. *p. 502*

**matching concept** Process of matching expenses with the revenues they produce; three ways to match expenses with revenues include matching expenses directly to revenues, matching expenses to the period in which they are incurred, and matching expenses systematically with revenues. *pp. 51, 182*

**materiality** Concept that recognizes practical limits in financial reporting by allowing flexible handling of matters not considered material; information is considered material if the decisions of a reasonable person would be influenced by its omission or misstatement; can be measured in absolute, percentage, quantitative, or qualitative terms. *p. 325*

**maturity date** The date a liability is due to be settled (the date the borrower is expected to repay a debt). *p. 181*

**merchandise business** Companies that buy and resell merchandise inventory. *p. 21*

**merchandise inventory** Supply of finished goods held for resale to customers. *p. 90*

**minimum rate of return** Minimum amount of profitability required to persuade a company to accept an investment opportunity; also known as *desired rate of return*, *required rate of return*, *hurdle rate*, *cutoff rate*, and *discount rate*. *p. 565*

**mixed costs (semivariable costs)** Costs composed of a mixture of fixed and variable components. *p. 405*

**multistep income statement** Income statement format that matches particular revenue items with related expense items and distinguishes between recurring operating activities and nonoperating items such as gains and losses. *p. 103*

**natural resources** Mineral deposits, oil and gas reserves, and reserves of timber, mines, and quarries are examples; sometimes called *wasting assets* because their value wastes away as the resources are removed. *p. 210*

**net income** Increase in net assets resulting from operating the business. *p. 16*

**net income percentage** Another term for *return on sales*. Refer to *return on sales* for the definition. *p. 108*

**net loss** Decrease in net assets resulting from operating the business. *p. 16*

**net margin** Profitability measurement that indicates the percentage of each sales dollar resulting in profit; calculated as net income divided by net sales. *p. 335*

**net present value** Evaluation technique that uses a desired rate of return to discount future cash flows back to their present value equivalents and then subtracts the cost of the investment from the present value equivalents to determine the net present value. A zero or positive net present value (present value of cash inflows equals or exceeds the present value of cash outflows) implies that the investment opportunity provides an acceptable rate of return. *p. 569*

**net realizable value** Face amount of receivables less an allowance for accounts whose collection is doubtful (amount actually expected to be collected). *p. 172*



**net sales** Sales less returns from customers and allowances or cash discounts given to customers. *p. 107*

**non-sufficient-funds (NSF) check** Customer's check deposited but returned by the bank on which it was drawn because the customer did not have enough funds in its account to pay the check. *p. 147*

**nonvalue-added activities** Tasks undertaken that do not contribute to a product's ability to satisfy customer needs. *p. 379*

**note payable** A liability that results from executing a legal document called a *promissory note* which describes the interest rate, maturity date, collateral, and so on. *p. 252*

**notes receivable** Notes that evidence rights to receive cash in the future from the maker of a *promissory note*; usually specify the maturity date, interest rate, and other credit terms. *p. 170*

**operating activities** Cash inflows and outflows associated with operating the business. These cash flows normally result from revenue and expense transactions including interest. *p. 17*

**operating budgets** Budgets prepared by different departments within a company that will become a part of the company's master budget; typically include a sales budget, an inventory purchases budget, a selling and administrative budget, and a cash budget. *p. 502*

**operating cycle** Time required to turn cash into inventory, inventory into receivables, and receivables back to cash. *pp. 187, 266*

**operating income (or loss)** Income statement subtotal representing the difference between operating revenues and operating expenses, but before recognizing gains and losses from peripheral activities which are added to or subtracted from operating income to determine net income or loss. *p. 103*

**operating leverage** Operating condition in which a percentage change in revenue produces a proportionately larger percentage change in net income; measured by dividing the contribution margin by net income. The higher the proportion of fixed cost to total costs, the greater the operating leverage. *p. 398*

**operations budgeting** Short-range planning activities such as the development and implementation of the master budget. *p. 500*

**opportunity** An element of the fraud triangle that recognizes weaknesses in internal controls that enable the occurrence of fraudulent or unethical behavior. *p. 67*

**opportunity cost** Cost of lost opportunities such as the failure to make sales due to an insufficient supply of inventory or the wage a working student forgoes to attend class. *pp. 376, 464*

**ordinary annuity** Annuity whose cash inflows occur at the end of each accounting period. *p. 568*

**outsourcing** The practice of buying goods and services from another company rather than producing them internally. *p. 471*

**outstanding checks** Checks deducted from the depositor's cash account balance but not yet presented to the bank for payment. *p. 146*

**outstanding stock** Stock owned by outside parties; normally the amount of stock issued less the amount of treasury stock. *p. 294*

**overhead** Costs associated with producing products that cannot be cost effectively traced to products including indirect costs such as indirect materials, indirect labor, utilities, rent, and depreciation. *p. 366*

**overhead costs** Indirect costs of doing business that cannot be directly traced to a product, department, or process, such as depreciation. *p. 433*

**paid-in capital in excess of par (or stated) value** Any amount received above the par or stated value of stock when stock is issued. *p. 296*

**participative budgeting** Budget technique that allows subordinates to participate with upper-level managers in setting budget objectives, thereby encouraging cooperation and support in the attainment of the company's goals. *p. 502*

**partnership agreement** Legal document that defines the responsibilities of each partner and describes the division of income and losses. *p. 288*

**partnerships** Business entities owned by at least two people who share talents, capital, and the risks of the business. *p. 288*

**par value** Arbitrary value assigned to stock by the board of directors. *p. 293*

**patent** Legal right granted by the U.S. Patent Office ensuring a company or an individual the exclusive right to a product or process. *p. 225*

**payback method** Technique that evaluates investment opportunities by determining the length of time necessary to recover the initial net investment through incremental revenue or cost savings; the shorter the period, the better the investment opportunity. *p. 578*

**payee** The party collecting cash. *p. 181*

**payment date** Date on which a dividend is actually paid. *p. 300*

**percentage analysis** Analysis of relationships between two different items to draw conclusions or make decisions. *p. 326*

**percent of receivables method** Estimating the amount of the allowance for doubtful accounts as a percentage of the outstanding receivables balance. The percentage is typically based on a combination of factors such as historical experience, economic conditions, and the company's credit policies. *p. 178*

**percent of revenue method** Estimating the amount of uncollectible accounts expense as a percentage of the revenue earned on account during the accounting period. The percentage is typically based on a combination of factors such as historical experience, economic conditions, and the company's credit policies. *p. 177*

**period costs** General, selling, and administrative costs that are expensed in the period in which the economic sacrifice is made. *pp. 93, 51, 371*

**periodic inventory system** Method of accounting for changes in the Inventory account only at the end of the accounting period. *p. 112*

**permanent accounts** Accounts that contain information transferred from one accounting period to the next. *p. 19*

**perpetual (continuous) budgeting** Continuous budgeting activity normally covering a 12-month time span by replacing

the current month's budget at the end of each month with a new budget; keeps management constantly involved in the budget process so that changing conditions are incorporated on a timely bases. *p. 500*

**perpetual inventory system** Method of accounting for inventories that increases the Inventory account each time merchandise is purchased and decreases it each time merchandise is sold. *p. 93*

**physical flow of goods** Physical movement of goods through the business; normally a FIFO flow so that the first goods purchased are the first goods delivered to customers, thereby reducing the likelihood of obsolete inventory. *p. 134*

**plant assets to long-term liabilities** Financial ratio that suggests how well a company manages its long-term debt. *p. 335*

**postaudit** Repeat calculation using the techniques originally employed to analyze an investment project; accomplished with the use of actual data available at the completion of the investment project so that the actual results can be compared with expected results based on estimated data at the beginning of the project. Its purpose is to provide feedback as to whether the expected results were actually accomplished in improving the accuracy of future analysis. *p. 581*

**posting** Process of copying information from journals to ledgers. *p. 652*

**predetermined overhead rate** Allocation rate calculated before actual costs or activity are known; determined by dividing the estimated overhead costs for the coming period by some measure of estimated total production activity for the period, such as the number of labor-hours or machine-hours. The base should relate rationally to overhead use. The rate is used throughout the accounting period to allocate overhead costs to work in process inventory based on actual production activity. *p. 445*

**preferred stock** Stock that receives some form of preferential treatment (usually as to dividends) over common stock; normally has no voting rights. *p. 295*

**prepaid items** Deferred expenses. An example is prepaid insurance. *p. 52*

**present value index** Present value of cash inflows divided by the present value of cash outflows. Higher index numbers indicate higher rates of return. *p. 574*

**present value table** Table that consists of a list of factors to use in converting future values into their present value equivalents; composed of columns that represent different return rates and rows that depict different periods of time. *p. 566*

**pressure** An element of the fraud triangle that recognizes conditions that motivate fraudulent or unethical behavior. *p. 67*

**price-earnings (P/E) ratio** Measurement used to compare the values of different stocks in terms of earnings; calculated as market price per share divided by earnings per share. *p. 338*

**principal** Amount of cash actually borrowed. *p. 181*

**procedures manual** Manual that sets forth the accounting procedures to be followed. *p. 141*

**product costing** Classification and accumulation of individual inputs (materials, labor, and overhead) for determining the cost of making a good or providing a service. *p. 366*

**product costs** All costs related to obtaining or manufacturing a product intended for sale to customers; are accumulated in inventory accounts and expensed as cost of goods sold at the point of sale. For a manufacturing company, product costs include direct materials, direct labor, and manufacturing overhead. *pp. 93, 366*

**productive assets** Assets used to operate the business; frequently called *long-term assets*. *p. 17*

**product-level costs** Costs incurred to support different kinds of products or services; can be avoided by the elimination of a product line or a type of service. *p. 468*

**profitability ratios** Measurements of a firm's ability to generate earnings. *p. 339*

**profit center** Type of responsibility center for which both revenues and costs can be identified. *p. 532*

**pro forma financial statements** Budgeted financial statements prepared from the information in the master budget. *p. 502*

**promissory note** A legal document representing a credit agreement between a lender and a borrower. The note specifies technical details such as the maker, payee, interest rate, maturity date, payment terms, and any collateral. *p. 180*

**property, plant, and equipment** Category of assets, sometimes called *plant assets*, used to produce products or to carry on the administrative and selling functions of a business; includes machinery and equipment, buildings, and land. *p. 210*

**purchase discount** Reduction in the gross price of merchandise extended under the condition that the purchaser pay cash for the merchandise within a stated time (usually within 10 days of the date of the sale). *p. 98*

**purchase returns and allowances** A reduction in the cost of purchases resulting from dissatisfaction with merchandise purchased. *p. 97*

**qualitative characteristics** Nonquantifiable features such as company reputation, welfare of employees, and customer satisfaction that can be affected by certain decisions. *p. 466*

**quantitative characteristics** Numbers in decision making subject to mathematical manipulation, such as the dollar amounts of revenues and expenses. *p. 466*

**quick ratio** See *acid-test ratio*. *p. 330*

**ratio analysis** See *percentage analysis*. *p. 328*

**rationalization** An element of the fraud triangle that recognizes a human tendency to justify fraudulent or unethical behavior. *p. 67*

**raw materials** Physical commodities (e.g., wood, metal, paint) used in the manufacturing process. *p. 369*

**realization** A term that usually refers to actually collecting cash. *p. 42*

**recognition** Reporting an accounting event in the financial statements. *p. 42*

**recovery of investment** Recovery of the funds used to acquire the original investment. *p. 580*

**reengineering** Business practices designed by companies to make production and delivery systems more competitive in world markets by eliminating or minimizing waste, errors, and costs. *p. 379*



**reinstate** Recording an account receivable previously written off back into the accounting records, generally when cash is collected long after the original due date. *p. 176*

**relative fair market value method** Method of assigning value to individual assets acquired in a basket purchase in which each asset is assigned a percentage of the total price paid for all assets. The percentage assigned equals the market value of a particular asset divided by the total of the market values of all assets acquired in the basket purchase. *p. 211*

**relevant costs** Future-oriented costs that differ between business alternatives; also known as *avoidable costs*. *p. 465*

**relevant information** Decision-making information about costs, costs savings, or revenues that have these features: (1) future-oriented information and (2) the information differs between the alternatives; decision-specific (information that is relevant in one decision may not be relevant in another decision). *p. 469*

**relevant range** Range of activity over which the definitions of fixed and variable costs are valid. *p. 405*

**reliability concept** Information is reliable if it can be independently verified. Reliable information is factual rather than subjective. *p. 13*

**reporting entities** Particular businesses or other organizations for which financial statements are prepared. *p. 6*

**residual income** Approach that evaluates managers on their ability to maximize the dollar value of earnings above some targeted level of earnings. *p. 543*

**responsibility accounting** Performance measure that evaluates managers based on how well they maximize the dollar value of earning above some target level of earnings. *p. 530*

**responsibility center** Point in an organization where the control over revenue or expense items is located. *p. 532*

**restrictive covenants** Special provisions specified in the loan contract that are designed to prohibit management from taking certain actions that place creditors at risk. *p. 266*

**retail companies** Companies that sell goods to consumers. *p. 90*

**retained earnings** Portion of stockholders' equity that includes all earnings retained in the business since inception (revenues minus expenses and distributions for all accounting periods). *p. 9*

**return on equity** Measure of the profitability of a firm based on earnings generated in relation to stockholders' equity; calculated as net income divided by stockholders' equity. *p. 337*

**return on investment** Measure of profitability based on the asset base of the firm. It is calculated as net income divided by average total assets. ROI is a product of net margin and asset turnover. *pp. 336, 540*

**return on sales** Percent of net income generated by each \$1 of sales; computed by dividing net income by net sales. *p. 108*

**revenue** The economic benefit (increase in assets or decrease in liabilities) gained by providing goods or services to customers. *pp. 11, 68*

**revenue expenditures** Costs incurred for repair or maintenance of long-term operational assets; recorded as expenses and subtracted from revenue in the accounting period in which incurred. *p. 222*

**salaries payable** Amounts of future cash payments owed to employees for services that have already been performed. *p. 46*

**sales discount** Cash discount extended by the seller of goods to encourage prompt payment. When the buyer of the goods takes advantage of the discount to pay less than the original selling price, the difference between the selling price and the cash collected is the sales discount. *p. 105*

**sales price variance** Difference between actual sales and expected sales based on the standard sales price per unit times the actual level of activity. *p. 538*

**sales return and allowances** A reduction in sales revenue resulting from dissatisfaction with merchandise sold. *p. 107*

**sales volume variance** Difference between sales based on a static budget (standard sales price times standard level of activity) and sales based on a flexible budget (standard sales price times actual level of activity). *p. 535*

**salvage value** Expected selling price of an asset at the end of its useful life. *p. 212*

**Sarbanes-Oxley Act of 2002** Federal law established to promote ethical behavior in corporate governance and fairness in financial reporting. Key provisions of the act include a requirement that a company's chief executive officer (CEO) and chief financial officer (CFO) must certify in writing that they have reviewed the financial reports being issued, and that the reports present fairly the company's financial status. An executive who falsely certifies the company's financial reports is subject to significant fines and imprisonment. The act also establishes the Public Company Accounting Oversight Board (PCAOB). This Board assumes the primary responsibility for developing and enforcing auditing standards for CPAs who audit SEC companies. The Sarbanes-Oxley Act also prohibits auditors from providing most types of nonaudit services to companies they audit. *p. 289*

**schedule of cost of goods sold** Schedule that reflects the computation of the amount of the cost of goods sold under the periodic inventory system; an internal report not shown in the formal financial statements. *p. 112*

**Securities Act of 1933 and Securities Exchange Act of 1934** Acts passed after the stock market crash of 1929 designed to regulate the issuance of stock and govern the stock exchanges; created the Securities and Exchange Commission (SEC), which has the authority to establish accounting policies for companies registered on the stock exchanges. *p. 289*

**Securities and Exchange Commission (SEC)** Government agency responsible for overseeing the accounting rules to be followed by companies required to be registered with it.

**segment** Component part of an organization that is designated as a reporting entity. *p. 473*

**selling and administrative costs** Costs that cannot be directly traced to products that are recognized as expenses in the period in which they are incurred. Examples include advertising expense and rent expense. *p. 93*

**separation of duties** Internal control feature of, whenever possible, assigning the functions of authorization, recording, and custody to different individuals. *p. 140*

**service business** Organizations such as accounting and legal firms, dry cleaners, and insurance companies that provide services to consumers. *p. 21*

**service charges** Fees charged by a bank for services performed or a penalty for the depositor's failing to maintain a specified minimum cash balance throughout the period. *p. 147*

**shrinkage** A term that reflects decreases in inventory for reasons other than sales to customers. *p. 104*

**signature card** Bank form that records the bank account number and the signatures of the people authorized to write checks on an account. *p. 144*

**single-payment (lump-sum)** A one-time receipt of cash which can be converted to its present value using a conversion factor. *p. 566*

**single-step income statement** Single comparison between total revenues and total expenses. *p. 103*

**sole proprietorships** Businesses (usually small) owned by one person. *p. 288*

**solvency** Ability of a business to pay liabilities in the long run. *p. 267*

**solvency ratios** Measures of a firm's long-term debt-paying ability. *p. 333*

**source documents** Documents such as a cash register tape, invoice, time card, or check stub that provide accounting information to be recorded in the accounting journals and ledgers. *p. 651*

**special journals** Journals designed to improve the efficiency of recording specific types of repetitive transactions. *p. 652*

**special order decisions** Decisions of whether to accept orders from nonregular customers who want to buy goods or services significantly below the normal selling price. If the order's relevant revenues exceed its avoidable costs, the order should be accepted. Qualitative features such as the order's effect on the existing customer base if accepted must also be considered. *p. 468*

**specific authorizations** Policies and procedures that apply to designated levels of management, such as the policy that the right to approve overtime pay may apply only to the plant manager. *p. 141*

**specific identification** Inventory method that allocates costs between cost of goods sold and ending inventory using the cost of the specific goods sold or retained in the business. *p. 134*

**spending variance** The difference between the actual fixed overhead costs and the budgeted fixed overhead costs. *p. 537*

**stakeholders** Parties interested in the operations of a business, including owners, lenders, employees, suppliers, customers, and government agencies. *p. 6*

**stated interest rate** Rate of interest specified in the bond contract that will be paid at specified intervals over the life of the bond. *p. 262*

**stated value** Arbitrary value assigned to stock by the board of directors. *p. 294*

**statement of cash flows** Statement that explains how a business obtained and used cash during an accounting period. *p. 17*

**statement of changes in stockholders' equity** Statement that summarizes the transactions occurring during the accounting period that affected the owners' equity. *p. 16*

**static budgets** Budgets such as the master budget based solely on the level of planned activity; remain constant even when volume of activity changes. *p. 533*

**stock certificate** Evidence of ownership interest issued when an investor contributes assets to a corporation; describes the rights and privileges that accompany ownership. *p. 288*

**stock dividend** Proportionate distribution of additional shares of the declaring corporation's stock. *p. 300*

**stockholders** Owners of a corporation. *pp. 9, 291*

**stockholders' equity** Stockholders' equity represents the portion of the assets that is owned by the stockholders. *p. 9*

**stock split** Proportionate increase in the number of outstanding shares; designed to reduce the market value of the stock and its par value. *p. 301*

**straight-line depreciation** Method of computing depreciation that allocates the cost of an asset to expense in equal amounts over its life. The formula for calculating straight line depreciation is  $[(\text{Cost} - \text{Salvage}) / \text{Useful Life}]$ . *p. 213*

**strategic planning** Planning activities associated with long-range decisions such as defining the scope of the business, determining which products to develop, deciding whether to discontinue a business segment, and determining which market niche would be most profitable. *p. 500*

**suboptimization** Situation in which managers act in their own self-interests even though the organization as a whole suffers. *p. 543*

**sunk costs** Costs that have been incurred in past transactions and therefore are not relevant for decision making. *p. 469*

**T-account** Simplified account form, named for its shape, with the account title placed at the top of a horizontal bar, debit entries listed on the left side of the vertical bar, and credit entries shown on the right side. *p. 651*

**tangible assets** Assets that can be touched, such as equipment, machinery, natural resources, and land. *p. 210*

**temporary accounts** Accounts used to collect information for a single accounting period (usually revenue, expense, and distribution accounts). *p. 18*

**times interest earned ratio** Ratio that computes how many times a company would be able to pay its interest by using the amount of earnings available to make interest payments; amount of earnings is net income before interest and income taxes. *p. 333*

**time value of money** Recognition that the present value of a promise to receive a dollar some time in the future is worth less than a dollar because of interest, risk, and inflation factors. For example, a person may be willing to pay \$0.90 today for the right to receive \$1.00 one year from today. *p. 564*

**total quality management (TQM)** Management philosophy that includes: (1) a continuous systematic problem-solving philosophy that engages personnel at all levels of the organization to eliminate waste, defects, and nonvalue-added activities; and (2) the effort to manage quality costs in a manner that leads to the highest level of customer satisfaction. *p. 379*

**trademark** Name or symbol that identifies a company or an individual product. *p. 224*

**transaction** Particular event that involves the transfer of something of value between two entities. *p. 9*

**transferability** Concept referring to the practice of dividing the ownership of corporations into small units that are represented by shares of stock, which permits the easy exchange of ownership interests. *p. 291*

**transportation-in (freight-in)** Cost of freight on goods purchased under terms FOB shipping point that is usually added to the cost of inventory and is a product cost. *p. 99*

**transportation-out (freight-out)** Freight cost for goods delivered to customers under terms FOB destination; a period cost expensed when it is incurred. *p. 99*

**treasury stock** Stock first issued to the public and then bought back by the corporation. *p. 294*

**trend analysis** Study of the performance of a business over a period of time. *p. 325*

**trial balance** List of ledger accounts and their balances that provides a check on the mathematical accuracy of the recording process. *p. 654*

**true cash balance** Actual balance of cash owned by a company at the close of business on the date of the bank statement. *p. 145*

**turnover** Component in the determination of the return on investment. Computed by dividing sales by operating assets. *p. 542*

**2/10, n/30** Expression meaning the seller will allow the purchaser a 2 percent discount off the gross invoice price if the purchaser pays cash for the merchandise within 10 days from the date of purchase. *p. 98*

**unadjusted bank balance** Ending cash balance reported by the bank as of the date of the bank statement. *p. 145*

**unadjusted book balance** Balance of the Cash account as of the date of the reconciliation before making any adjustments. *p. 145*

**unadjusted rate of return** Measure of profitability computed by dividing the average incremental increase in annual net income by the average cost of the original investment (original cost  $\div$  2). *p. 579*

**uncollectible accounts expense** Expense associated with uncollectible accounts receivable; the amount recognized may be estimated using the percent of revenue or the percent of receivables method, or actual losses may be recorded using the direct write-off method. *p. 173*

**unearned revenue** Revenue for which cash has been collected but the service has not yet been performed. *p. 53*

**unfavorable variance** Variance that occurs when actual costs exceed standard costs or when actual sales are less than standard sales. *p. 535*

**unit-level costs** Costs incurred each time a company makes a single product or performs a single service and that can be avoided by eliminating a unit of product or service. Likewise, unit-level costs increase with each additional product produced or service provided. *p. 467*

**units-of-production depreciation** Depreciation method based on a measure of production rather than a measure of time; for

example, an automobile may be depreciated based on the expected miles to be driven rather than on a specific number of years. *p. 219*

**upstream costs** Costs incurred before the manufacturing process begins, for example, research and development costs. *p. 373*

**value-added activity** Any unit of work that contributes to a product's ability to satisfy customer needs. *p. 379*

**value-added principle** The benefits attained (value added) from the process should exceed the cost of the process. *p. 365*

**value chain** Linked sequence of activities that create value for the customer. *p. 379*

**variable cost** Cost that in total changes in direct proportion to changes in volume of activity; remains constant per unit when volume of activity changes. *p. 396*

**variable cost volume variance** The difference between a variable cost calculated at the planned volume of activity and the same variable cost calculated at the actual volume of activity. *p. 545*

**variable interest rate** Interest rate that fluctuates (may change) from period to period over the life of the loan. *p. 257*

**variances** Differences between standard and actual amounts. *p. 535*

**vertical analysis** Analysis technique that compares items on financial statements to significant totals. *p. 328*

**vertical integration** Attainment of control over the entire spectrum of business activity from production to sales; as an example a grocery store that owns farms. *p. 472*

**vertical statements model** Arrangement of a full set of financial statements on a single page with account titles arranged from the top to the bottom of the page. *p. 61*

**warranties** Promises to correct deficiencies or dissatisfactions in quality, quantity, or performance of products or services sold. *p. 255*

**weighted-average cost flow method** Inventory cost flow method in which the cost allocated between inventory and cost of goods sold is based on the average cost per unit, which is determined by dividing total costs of goods available for sale during the accounting period by total units available for sale during the period. If the average is recomputed each time a purchase is made, the result is called a *moving average*. *p. 134*

**wholesale companies** Companies that sell goods to other businesses. *p. 90*

**withdrawals** Distributions to the owners of proprietorships and partnerships. *p. 292*

**working capital** Current assets minus current liabilities. *pp. 329, 571*

**working capital ratio** Another term for the current ratio; calculated by dividing current assets by current liabilities. *p. 330*

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