

Garrison Noreen Brewer

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Managerial Accounting



Managerial Accounting

Sixteenth Edition

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Dedication

To our families and to our many colleagues who use this book.



MANAGERIAL ACCOUNTING, SIXTEENTH EDITION

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About the Authors



Ray H. Garrison is emeritus professor of accounting at Brigham Young University, Provo, Utah. He received his BS and MS degrees from Brigham Young University and his DBA degree from Indiana University.

As a certified public accountant, Professor Garrison has been involved in management consulting work with both national and regional accounting firms. He has published articles in *The Accounting Review*, *Management Accounting*, and other professional journals. Innovation in the classroom has earned Professor Garrison the Karl G. Maeser Distinguished Teaching Award from Brigham Young University.



Eric W. Noreen has taught at INSEAD in France and the Hong Kong Institute of Science and Technology and is emeritus professor of accounting at the University of Washington. Currently, he is the Accounting Circle Professor of Accounting, Fox School of Business, Temple University.

He received his BA degree from the University of Washington and MBA and PhD degrees from Stanford University. A Certified Management Accountant, he was awarded a Certificate of Distinguished Performance by the Institute of Certified Management Accountants.

Professor Noreen has served as associate editor of *The Accounting Review* and the *Journal of Accounting and Economics*. He has numerous articles in academic journals including: the *Journal of Accounting Research*; *The Accounting Review*; the *Journal of Accounting and Economics*; *Accounting Horizons*; *Accounting, Organizations and Society*; *Contemporary Accounting Research*; the *Journal of Management Accounting Research*; and the *Review of Accounting Studies*.

Professor Noreen has won a number of awards from students for his teaching.



Peter C. Brewer is a Lecturer in the Department of Accountancy at Wake Forest University. Prior to joining the faculty at Wake Forest, he was an accounting professor at Miami University for 19 years. He holds a BS degree in accounting from Penn State University, an MS degree in accounting from the University of Virginia, and a PhD from the University of Tennessee. He has published more than 40 articles in a variety of journals including: *Management Accounting Research*; the

Journal of Information Systems; *Cost Management*; *Strategic Finance*; the *Journal of Accountancy*; *Issues in Accounting Education*; and the *Journal of Business Logistics*.

Professor Brewer has served on the editorial boards of the *Journal of Accounting Education* and *Issues in Accounting Education*. His article “Putting Strategy into the Balanced Scorecard” won the 2003 International Federation of Accountants’ Articles of Merit competition, and his articles “Using Six Sigma to Improve the Finance Function” and “Lean Accounting: What’s It All About?” were awarded the Institute of Management Accountants’ Lybrand Gold and Silver Medals in 2005 and 2006. He has received Miami University’s Richard T. Farmer School of Business Teaching Excellence Award.

Prior to joining the faculty at Miami University, Professor Brewer was employed as an auditor for Touche Ross in the firm’s Philadelphia office. He also worked as an internal audit manager for the Board of Pensions of the Presbyterian Church (U.S.A.).

Let **Garrison** be Your Guide

For centuries, the lighthouse has provided guidance and safe passage for sailors. Similarly, Garrison/Noreen/Brewer has successfully guided millions of students through managerial accounting, lighting the way and helping them sail smoothly through the course.

Decades ago, lighthouses were still being operated manually. In these days of digital transformation, lighthouses are run using automatic lamp changers and other modern devices. In much the same way, Garrison/Noreen/Brewer has evolved over the years. Today, the Garrison book not only guides students—accounting majors and other business majors alike—safely through the course but is enhanced by a number of powerful tools to augment student learning and increase student motivation. Connect, which includes adaptive and interactive study features such as SmartBook, Concept Overview Videos, Auto-Graded Excel Simulations, and Guided Examples, as well as a repository of additional resources tied directly to the text, will improve students' engagement in and out of class, help them maximize their study time, and make their learning experience more enjoyable. Animated, narrated Concept Overview Videos for each learning objective teach the core concepts of the text with auto-graded knowledge-check questions, and animated, narrated Guided Examples connected to practice exercises provide a step-by-step walk through of a similar exercise, assisting students when they need it most. Excel Simulations provide the student the opportunity to learn valuable Excel skills while solving problems specific to the text pedagogy.

Just as the lighthouse continues to provide reliable guidance to seafarers, the Garrison/Noreen/Brewer book continues its tradition of leading the way and helping students sail successfully through managerial accounting by always focusing on three important qualities: **relevance**, **accuracy**, and **clarity**.

I am a big fan of this book. I have taught this course with a few other books and this book does the best job tying all the concepts together. When asked I always refer to this book as being superior to the other books that I have used.

Garrison truly is the gold standard of managerial accounting texts.

*Pamela Rouse,
Butler University*

*Christopher O'Byrne,
Cuyamaca College*

Garrison is clearly the best managerial accounting text available.

*Carleton Donchess,
Bridgewater State University*

I have always liked this textbook in my over 20 years of teaching Accounting. It is quite readable and comprehensive and the end-of-chapter material is quite effective."

*Rama Ramamurthy,
Georgetown University*

Garrison does a superior job of introducing Managerial Accounting and necessary management skills. In addition, the textbook discusses the crucial topics of why managerial accounting matters to one's career, ethics, and social responsibility.

*Ann K. Brooks,
University of New Mexico*

The authors have done a great job explaining managerial accounting concepts and providing real-world examples that students can relate to.

*Stephen Benner,
Eastern Illinois University*

It provides simple and clear explanations of the concepts with easy to follow examples. It is ideal for undergraduate and graduate level accounting students.

*Rong Huang,
Baruch College*

The Garrison [text] is clearly the best written managerial accounting book that I have reviewed. The examples throughout the chapter would enable a student to use this book and learn managerial accounting in an on-line or hybrid class.

*Edna Mitchell,
Polk State College*

RELEVANCE. Every effort is made to help students relate the concepts in this book to the decisions made by working managers. In the sixteenth edition, the authors have added 13 new **Integration Exercises** that help students learn to think like managers. These exercises link learning objectives across chapters in ways that enable students to grasp how managerial accounting “all fits together” to provide enhanced managerial insights. New and revised In Business boxes throughout the book link chapter concepts to pertinent real-world examples. Service industry references appear throughout the chapter narrative and end-of-chapter material to provide students with relevant context for the material they are learning.

ACCURACY. The Garrison book continues to set the standard for accurate and reliable material in its sixteenth edition. With each revision, the authors evaluate the book and its supplements in their entirety, working diligently to ensure that the end-of-chapter material, solutions manual, and test bank are consistent, current, and accurate.

CLARITY. Generations of students have praised Garrison for the friendliness and readability of its writing, but that's just the beginning. In the sixteenth edition, the authors have rewritten various chapters with input and guidance from instructors around the country to ensure that teaching and learning from Garrison remains as easy as it can be.


The authors' steady focus on these three core elements has led to tremendous results. *Managerial Accounting* has consistently led the market, being used by over two million students and earning a reputation for reliability that other texts aspire to match.

Garrison's Powerful Pedagogy

Managerial Accounting includes pedagogical elements that engage and instruct students without cluttering the pages or interrupting student learning. Garrison's key pedagogical tools enhance and support students' understanding of the concepts rather than compete with the narrative for their attention.

NEW* Integration Exercises

We have added 13 new exercises (located in the back of the book) that integrate learning objectives across chapters. These exercises will increase the students' level of interest in the course because they forge the connections across chapters. Rather than seeing each chapter as an isolated set of learning objectives, students begin to see how "it all fits together" to provide greater managerial insight and more effective planning, controlling, and decision making. The integration exercises also are tailor-made for flipping the classroom because they offer challenging questions that require students to work in teams to derive solutions that synthesize what they have learning throughout the semester.

 connectThe Foundational 15

Clopack Company manufactures one product that goes through one processing department called Mixing. All raw materials are introduced at the start of work in the Mixing Department. The company uses the weighted-average method of process costing. Its Work in Process T-account for the Mixing Department for June follows (all forthcoming questions pertain to June):

Work in Process—Mixing Department	
June 1 balance	28,000
Materials	120,000
Direct labor	79,500
Overhead	97,000
June 30 balance	?

The June 1 work in process inventory consisted of 5,000 units with \$16,000 in materials cost and \$12,000 in conversion cost. The June 1 work in process inventory was 100% complete with respect to materials and 50% complete with respect to conversion. During June, 37,500 units were started into production. The June 30 work in process inventory consisted of 8,000 units that were 100% complete with respect to materials and 40% complete with respect to conversion.

Required:

1. Prepare the journal entries to record the raw materials used in production and the direct labor cost incurred.
2. Prepare the journal entry to record the overhead cost applied to production.
3. How many units were completed and transferred to finished goods during the period?

L04-1, L04-2, L04-3,
L04-4, L04-5

The Foundational 15

Each chapter contains one Foundational 15 exercise that includes 15 "building-block" questions related to one concise set of data. These exercises can be used for in-class discussion or as homework assignments. They are found before the Exercises and are available in **Connect**.

I like the "Foundational 15" and its integration of all the chapter objectives into one problem that can be reviewed in class.

Melanie Anderson, Slippery Rock University

Concept Overview Videos

New for the 16th edition of Garrison, the Concept Overview Videos cover each learning objective through narrated, animated presentations. Formerly Interactive Presentation, each Concept Overview Video has been enhanced for improved accessibility, and includes both the visual animations and transcript to accommodate all types of learners. The Concept Overview Videos also pause frequently to check for comprehension with assignable, auto-graded Knowledge Check questions..

CHAPTER 4

Process Costing

Costing the “Quicker-Picker-Upper”

BUSINESS FOCUS



© Kristoffer Tippelzer/Alamy

If you have ever spilled milk, there is a good chance that you used Bounty paper towels to clean up the mess. **Procter & Gamble (P&G)** manufactures Bounty in two main processing departments—Paper Making and Paper Converting. In the Paper Making Department, wood pulp is converted into paper and then spooled into 2,000 pound rolls. In the Paper Converting Department, two of the 2,000 pound rolls of paper are simultaneously unwound into a machine that creates a two-ply paper towel that is decorated, perforated, and embossed to create texture. The large sheets of paper towels that emerge from this process are wrapped around a cylindrical cardboard core measuring eight feet in length. Once enough sheets wrap around the core, the eight foot roll is cut into individual rolls of Bounty that are sent down a conveyor to be wrapped, packed, and shipped.

In this type of manufacturing environment, costs cannot be readily traced to individual rolls of Bounty; however, given the homogeneous nature of the product, the total costs incurred in the Paper Making Department can be spread uniformly across its output of 2,000 pound rolls of paper. Similarly, the total costs incurred in the Paper Converting Department (including the cost of the 2,000 pound rolls that are transferred in from the Paper Making Department) can be spread uniformly across the number of cases of Bounty produced.

P&G uses a similar costing approach for many of its products such as Tide detergent, Crest toothpaste, and Dawn dishwashing liquid. ■

Source: Conversation with Brad Bays, formerly a Procter & Gamble financial executive.

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LEARNING OBJECTIVES

After studying Chapter 4, you should be able to:

- LO4-1 Record the flow of materials, labor, and overhead through a process costing system.
- LO4-2 Compute the equivalent units of production using the weighted-average method.
- LO4-3 Compute the cost per equivalent unit using the weighted-average method.
- LO4-4 Assign costs to units using the weighted-average method.
- LO4-5 Prepare a cost reconciliation report using the weighted-average method.
- LO4-6 (Appendix 4A) Compute the equivalent units of production using the FIFO method.
- LO4-7 (Appendix 4A) Compute the cost per equivalent unit using the FIFO method.
- LO4-8 (Appendix 4A) Assign costs to units using the FIFO method.
- LO4-9 (Appendix 4A) Prepare a cost reconciliation report using the FIFO method.
- LO4-10 (Appendix 4B) Allocate service department costs to operating departments using the direct method.
- LO4-11 (Appendix 4B) Allocate service department costs to operating departments using the step-down method.

Opening Vignette

Each chapter opens with a **Business Focus** feature that provides a real-world example for students, allowing them to see how the chapter’s information and insights apply to the world outside the classroom. **Learning Objectives** alert students to what they should expect as they progress through the chapter.

I like how you engage the reader with the “Business Focus” at the beginning of the chapter.

*Kathy Crusto-Way,
Tarrant County College*

An excellent text that is especially good for introductory managerial accounting classes because it is organized in a logical topic development flow.

*Elizabeth Widdison,
University of Washington, Seattle*

Excellent coverage of the topics. Easy for students to read.

*Sharon Bell,
The University of North Carolina at Pembroke*

In Business Boxes

These helpful boxed features offer a glimpse into how real companies use the managerial accounting concepts discussed within the chapter. Each chapter contains multiple current examples.

MANAGERIAL ACCOUNTING IN ACTION THE WRAP-UP



Prem Narayan and Bob Luchinni met to discuss the results of Bob's analysis.

Prem: Bob, everything you have shown me is pretty clear. I can see what impact the sales manager's suggestions would have on our profits. Some of those suggestions are quite good and others are not so good. I am concerned that our margin of safety is only 50 speakers. What can we do to increase this number?

Bob: Well, we have to increase total sales or decrease the break-even point or both.

Prem: And to decrease the break-even point, we have to either decrease our fixed expenses or increase our unit contribution margin?

Bob: Exactly.

Prem: And to increase our unit contribution margin, we must either increase our selling price or decrease the variable cost per unit?

Bob: Correct.

Prem: So what do you suggest?

Bob: Well, the analysis doesn't tell us which of these to do, but it does indicate we have a potential problem here.

Prem: If you don't have any immediate suggestions, I would like to call a general meeting next week to discuss ways we can work on increasing the margin of safety. I think everyone will be concerned about how vulnerable we are to even small downturns in sales.

JUNK FOOD GOES ON A HEALTH KICK

Candy manufacturers are feeling pressure from customers to remove unhealthy ingredients from their snack food. For example, **Nestlé** has been working on removing artificial colors (such as Red 40 and Yellow 5) and artificial flavors (such as Vanillin) from its more than 250 chocolate products. The company plans to use Annatto (which comes from achiote trees) instead of artificial food colors and it intends to replace vanillin with natural vanilla flavor. While these natural ingredients cost more, Nestlé says that it will not offset these higher material costs with higher prices. In addition to Nestlé, **Mondelez International**, the makers of Oreo cookies and Cadbury chocolate, plans to reduce the saturated fat and sodium in its products by 10% by 2020.

Source: Annie Gasparro, "Nestlé Bars Artificial Color, Flavors," *The Wall Street Journal*, February 18, 2015, p. B6.

IN BUSINESS



© Ryan Remiorz/The Canadian Press/AP Images

Managerial Accounting in Action Vignettes

These vignettes depict cross-functional teams working together in real-life settings, working with the products and services that students recognize from their own lives. Students are shown step-by-step how accounting concepts are implemented in organizations and how these concepts are applied to solve everyday business problems. First, "The Issue" is introduced through a dialogue; the student then walks through the implementation process; finally, "The Wrap-up" summarizes the big picture.

**In-depth, clear coverage;
interesting updated examples
in the "In Business" boxes.**

*Natalie Allen,
Texas A&M University*

**Extremely well written with
great examples, including
the "Managerial in Action"
segments.**


*Loisanne Kattelman,
Weber State University*

Applying Excel 

LO4-2, LO4-3, LO4-4, LO4-5

This exercise relates to the Double Diamond Skis' Shaping and Milling Department that was discussed earlier in the chapter. The Excel worksheet form that appears below consolidates data from Exhibits 4-5 and 4-8. Download the workbook containing this form from Connect, where you will also receive instructions about how to use this worksheet form.

	A	B	C	D
Chapter 4: Applying Excel				
Data				
Beginning work in process inventory:				
Units in process	200			
Completion with respect to materials	35%			
Completion with respect to conversion	35%			
Units in the beginning work in process inventory:				
Completed units	\$3,000			
Conversion cost	\$1,575			
Units started into production during the period	1,000			
Cost added to production during the period:				
Materials cost	\$180,000			
Conversion cost	\$255,000			
Ending work in process inventory:				
Units in process	400			
Completion with respect to materials	35%			
Completion with respect to conversion	35%			
Enter a formula into each of the cells marked with a # below.				
Weighted-Average method				
Equivalent Units of Production				
Units transferred to the next department	Materials	Conversion		

Exercises 

EXERCISE 4-1 Process Costing Journal Entries LO4-1

Quality Brick Company produces bricks in two processing departments—Molding and Firing. Information relating to the company's operations in March follows:

- Raw materials used in production: Molding Department, \$23,000; and Firing Department, \$8,000.
- Direct labor costs incurred: Molding Department, \$12,000; and Firing Department, \$7,000.
- Manufacturing overhead was applied: Molding Department, \$25,000; and Firing Department, \$37,000.
- Unfired, molded bricks were transferred from the Molding Department to the Firing Department. According to the company's process costing system, the cost of the unfired, molded bricks was \$57,000.
- Finished bricks were transferred from the Firing Department to the finished goods warehouse. According to the company's process costing system, the cost of the finished bricks was \$103,000.
- Finished bricks were sold to customers. According to the company's process costing system, the cost of the finished bricks sold was \$103,000.

Required:
Prepare journal entries to record items (a) through (f) above.

EXERCISE 4-2 Equivalent Units of Production—Weighted-Average Method LO4-2
Choco Labs, Inc., uses the weighted-average method in its process costing system. The following data are available for one department for October:

	Units	Percent Completed	
		Materials	Conversion
Work in process, October 1	20,000	65%	80%

PROBLEM 4-1B Converting Production Department—Weighted-Average Method

LO4-2, LO4-3, LO4-4, LO4-5

Old Country Links, Inc., produces sausages in three production departments—Mixing, Casing and Curing, and Packaging. In the Mixing Department, meats are prepared and ground and then mixed with spices. The spiced meat mixture is then transferred to the Casing and Curing Department, where the mixture is force-fed into casings and then hung and cured in climate-controlled smoking chambers. In the Packaging Department, the cured sausages are sorted, packed, and labeled. The company uses the weighted-average method in its process costing system. Data for September for the Casing and Curing Department follow:

	Units	Percent Completed	
		Mixing	Conversion
Work in process inventory, September 1	1	100%	90%
Work in process inventory, September 30	1	100%	80%

Cases 

CASE 4-19 Second Department—Weighted-Average Method LO4-2, LO4-3, LO4-4, LO4-5
"I think we got it, which we had that new assistant controller," said Ruth Scarpino, president of Province Industries. "Just look at this report that he prepared for last month for the Finishing Department. I can't understand it." The report represents the costs of the mixed meat mixture transferred in from the Mixing Department.

Finishing Department costs:			
Work in process inventory, April 1, 450 units; materials	\$1,670	\$90	\$605
100% complete; conversion 60% complete		\$6,006	\$42,490
Costs transferred in during the month from the preceding department, 1,950 units		17,940	
Materials cost added during the month		6,210	
Conversion costs incurred during the month		13,920	
Total departmental costs		\$46,278	
Finishing Department costs assigned to:			
Units completed and transferred to finished goods, 1,800 units at \$25.71 per unit		\$46,278	
Work in process inventory, April 30, 600 units; materials 0% complete; conversion 35% complete		0	
Total departmental costs assigned		\$46,278	

*Costs of cost transferred in, \$4,068; materials cost, \$1,940; and conversion cost, \$2,160.

End-of-Chapter Material

Managerial Accounting has earned a reputation for the best end-of-chapter practice material of any text on the market. Our problem and case material continues to conform to AACSB recommendations and makes a great starting point for class discussions and group projects. When Ray Garrison first wrote *Managerial Accounting*, he started with the end-of-chapter material, then wrote the narrative in support of it. This unique approach to textbook authoring not only ensured consistency between the end-of-chapter material and text content but also underscored Garrison's fundamental belief in the importance of applying theory through practice. It is not enough for students to read, they must also understand. To this day, the guiding principle of that first edition remains, and Garrison's superior end-of-chapter material continues to provide accurate, current, and relevant practice for students.

Strong integration between chapter content and end-of-chapter exercises/problems. Clearly written and well-organized content.

Carleton Donchess, Bridgewater State University

Garrison has the best online material I have ever seen.

Minna Yu, Monmouth University

Utilizing the Icons



To reflect our service-based economy, the text is replete with examples from service-based businesses. A helpful icon distinguishes service-related examples in the text.



The IFRS icon highlights content that may be affected by the impending change to IFRS and possible convergence between U.S. GAAP and IFRS.



Ethics assignments and examples serve as a reminder that good conduct is vital in business. Icons call out content that relates to ethical behavior for students.



The writing icon denotes problems that require students to use critical thinking as well as writing skills to explain their decisions.

Author-Written Supplements

Unlike other managerial accounting texts, the book's authors write the major supplements such as the test bank and solution files, ensuring a perfect fit between text and supplements.

Guided Examples are one of my students' favorite features in Connect. They use them extensively to help with their homework.

Amy Bentley, Tallahassee Community College

I am a big proponent of including Excel® in the course. The students really need practice with Excel and this course really lends itself to providing good problems they can practice with.

Stacy Kline, Drexel University

Business Ethics are of growing importance and the coverage early in the book is commendable.

Heminigild Mpundu, University of Northern Iowa



Assurance of Learning Ready

Many educational institutions today are focused on the notion of assurance of learning, an important element of some accreditation standards. *Managerial Accounting*, 16e, is designed specifically to support your assurance of learning initiatives with a simple, yet powerful, solution.

Each question for *Managerial Accounting*, 16e, maps to a specific chapter learning outcome/objective listed in the text. The reporting features of **Connect** can aggregate student to make the collection and presentation of assurance of learning data simple and easy.

AACSB Statement

McGraw-Hill Education is a proud corporate member of AACSB International. Recognizing the importance and value of AACSB accreditation, we have sought to recognize the curricula guidelines detailed in AACSB standards for business accreditation by connecting selected questions in *Managerial Accounting*, 16e, to the general knowledge and skill guidelines found in the AACSB standards. The statements contained in *Managerial Accounting*, 16e, are provided only as a guide for the users of this text. The AACSB leaves content coverage and assessment clearly within the realm and control of individual schools, the mission of the school, and the faculty. The AACSB does also charge schools with the obligation of doing assessment against their own content and learning goals. While *Managerial Accounting*, 16e, and its teaching package make no claim of any specific AACSB qualification or evaluation, we have, within *Managerial Accounting*, 16e, tagged questions according to the six general knowledge and skills areas. The labels or tags within *Managerial Accounting*, 16e, are as indicated. There are, of course, many more within the test bank, the text, and the teaching package which might be used as a “standard” for your course. However, the labeled questions are suggested for your consideration.

New in the Sixteenth Edition

Faculty feedback helps us continue to improve *Managerial Accounting*. In response to reviewer suggestions, the authors have made the following changes to the text:

- We split the job-order costing chapter into two chapters to improve the students' ability to understand the material and to give professors greater flexibility in choosing how to cover the material.
- We reviewed all end-of-chapter exercises and problems and revised them as appropriate to better function within Connect.
- We added 13 Integration Exercises in the back of the book to help students connect the concepts. These exercises are suitable for both a flipped classroom model and in-class active learning environment as they engage students and encourage critical thinking.
- In-Business boxes are updated throughout to provide relevant and current real-world examples for use in classroom discussion and to support student understanding of key concepts as they read through a chapter.

Prologue

The Prologue has added coverage of the CGMA exam and an updated summary of the CMA exam content specifications.

Chapter 1

The high-low method has been removed from this chapter. We added an exhibit to visually depict product and period cost flows. We also made various changes to further emphasize the chapter's unifying theme of *different cost classifications for different purposes*. We have created 11 new end-of-chapter exercises/problems.

Chapter 2

This is a new chapter that explains how to use a job-order costing system to calculate unit product costs. It

describes how to use plantwide and multiple overhead rates to apply overhead costs to individual jobs. The chapter has a strong managerial accounting orientation because it looks at how job-order costing systems serve the needs of internal managers.

Chapter 3

This is a new chapter that explains how job-order costing systems can be used to determine the value of ending inventories and cost of goods sold for external reporting purposes. The chapter has a strong financial accounting orientation because it uses journal entries and T-accounts to explain the flow of costs in a job-order costing system. The chapter also has a new appendix that uses Microsoft Excel® to explain the flow of costs in a job-order costing system.

Chapter 4

We revised the text in the main body of the chapter and Appendix 4A to better highlight the key concepts and steps needed to perform the weighted-average and FIFO process costing calculations. We also revised the first few paragraphs of Appendix 4B to better clarify its purpose and to better distinguish that purpose from the intent of the service department cost allocation coverage that appears later in the book.

Chapter 5

We added a new appendix that explains how to analyze mixed costs using the high-low method and the least-squares regression method.

Chapter 6

We added new text that better highlights this chapter's reliance on actual costing and contrasts it with the job-order costing chapters' reliance on normal costing.

Chapter 7

This chapter has a new appendix titled Time-Driven Activity-Based Costing: A Microsoft Excel-Based Approach.

Chapter 8

The end-of-chapter materials include three new exercises/problems (8-17, 8-18, and 8-27).

Chapter 9

We revised numerous end-of-chapter exercises and problems to better align them with Connect.

Chapter 10

We overhauled Appendix 10B to introduce students to a Microsoft Excel-based approach for creating an income statement using standard costing.

Chapter 11

This chapter includes four new In Business boxes.

Chapter 12

We revised the front-end of the chapter to better highlight the six key concepts that provide the foundation for effective decision making. We also revised the end-of-chapter exercises and problems to better dovetail with Connect and streamlined the coverage of sell or process further decisions to aid student comprehension. In addition, we relocated the Pricing appendix to this chapter and added new coverage of customer latitude and pricing and value-based pricing.

Chapter 13

We revised many end-of-chapter exercises and problems and extensively revised the formatting within Connect throughout all the chapters, (not just Chapter 13) to allow students greater flexibility for alternate methods of approaching a problem, such as performing net present value calculations.

Chapter 14

We added three new In Business boxes.

Chapter 15

We added four new In Business boxes.



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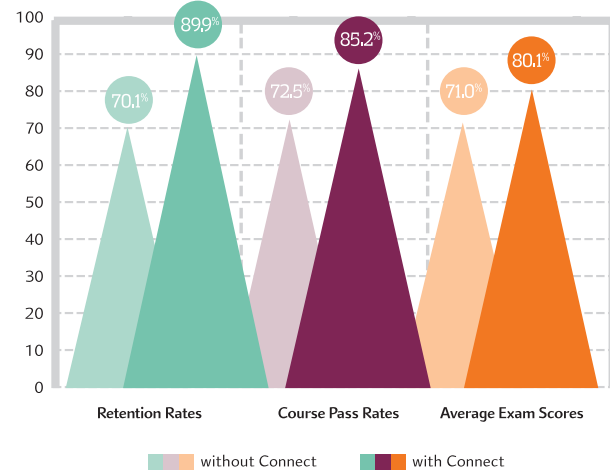
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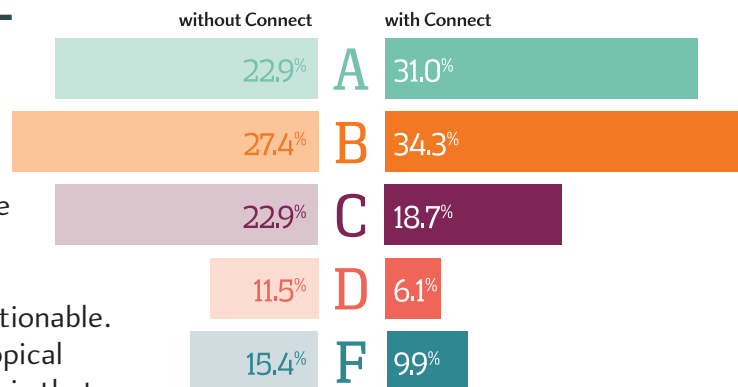
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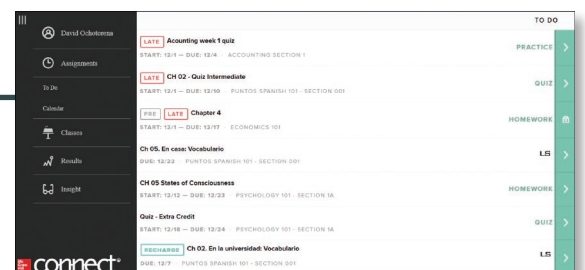
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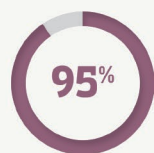
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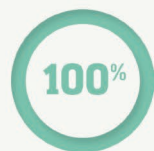
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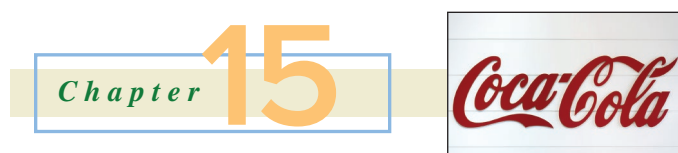
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Credits for Chapter Openers

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Managerial Accounting: An Overview

Managerial Accounting: It's More Than Just Crunching Numbers

BUSINESS FOCUS



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“Creating value through values” is the credo of today’s management accountant. It means that management accountants should maintain an unwavering commitment to ethical values while using their knowledge and skills to influence decisions that create value for organizational stakeholders. These skills include managing risks and implementing strategy through planning, budgeting and forecasting, and decision support. Management accountants are strategic business partners who understand the financial and operational sides of the business. They report and analyze financial as well as nonfinancial measures of process performance and corporate social performance. Think of these responsibilities as relating to profits (financial statements), processes (customer focus and satisfaction), people (employee learning and satisfaction), and the planet (environmental stewardship). ■

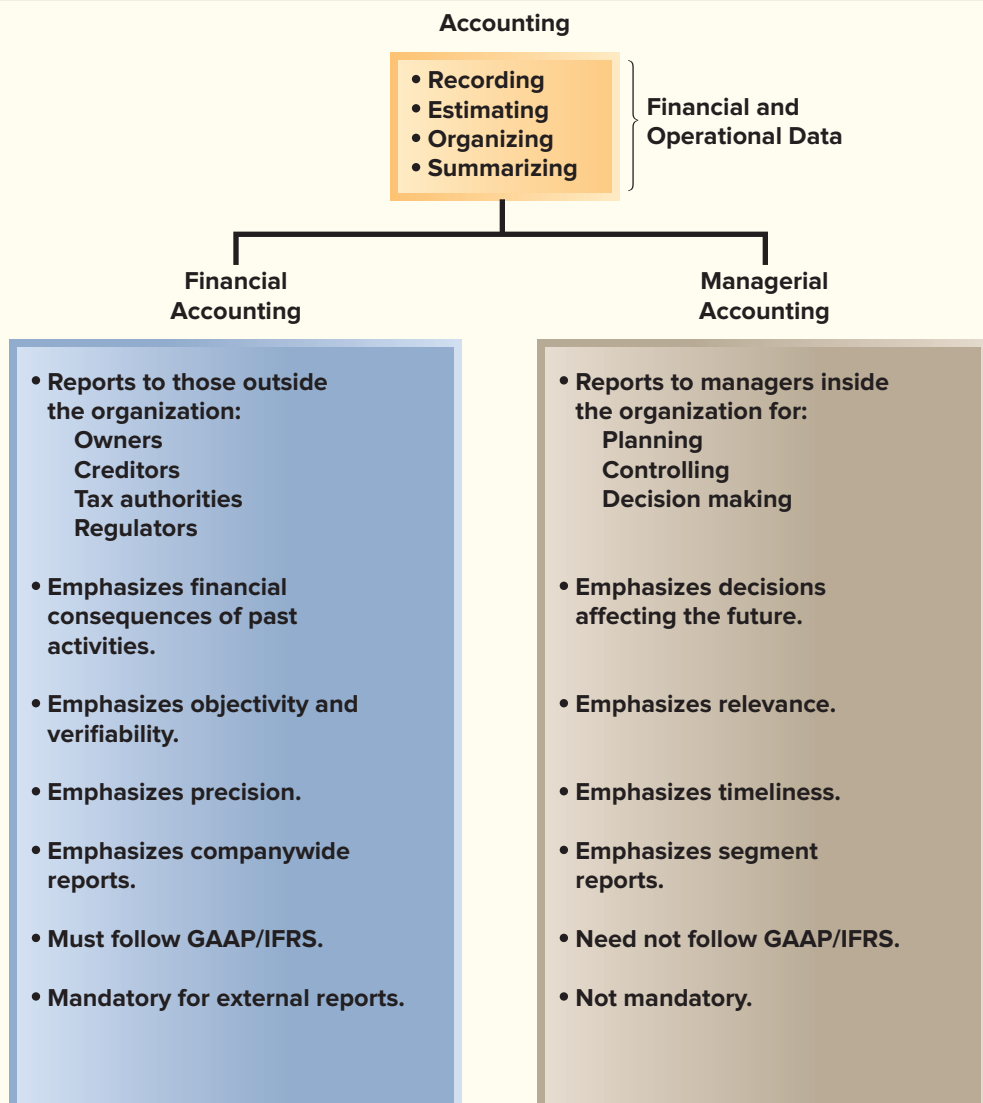
Source: Conversation with Jeff Thomson, president and CEO of the Institute of Management Accountants.

What Is Managerial Accounting?

The prologue explains why managerial accounting is important to the future careers of all business students. It begins by answering two questions: (1) What is managerial accounting? and (2) Why does managerial accounting matter to your career? It concludes by discussing six topics—ethics, strategic management, enterprise risk management, corporate social responsibility, process management, and leadership—that define the business context for applying the quantitative aspects of managerial accounting.

Many students enrolled in this course will have recently completed an introductory *financial accounting* course. **Financial accounting** is concerned with reporting financial information to external parties, such as stockholders, creditors, and regulators. **Managerial accounting** is concerned with providing information to managers for use within the organization. Exhibit P-1 summarizes seven key differences between financial and managerial accounting. It recognizes that the fundamental difference between financial and managerial accounting is that financial accounting serves the needs of those *outside* the organization, whereas managerial accounting serves the needs of managers employed *inside* the organization. Because of this fundamental difference in users, financial accounting emphasizes the financial consequences of past activities, objectivity and verifiability, precision, and

EXHIBIT P-1
Comparison of Financial and Managerial Accounting



companywide performance, whereas managerial accounting emphasizes decisions affecting the future, relevance, timeliness, and *segment* performance. A **segment** is a part or activity of an organization about which managers would like cost, revenue, or profit data. Examples of business segments include product lines, customer groups (segmented by age, ethnicity, gender, volume of purchases, etc.), geographic territories, divisions, plants, and departments. Finally, financial accounting is mandatory for external reports and it needs to comply with rules, such as generally accepted accounting principles (GAAP) and international financial reporting standards (IFRS), whereas managerial accounting is not mandatory and it does not need to comply with externally imposed rules.

As mentioned in Exhibit P-1, managerial accounting helps managers perform three vital activities—*planning*, *controlling*, and *decision making*. **Planning** involves establishing goals and specifying how to achieve them. **Controlling** involves gathering feedback to ensure that the plan is being properly executed or modified as circumstances change. **Decision making** involves selecting a course of action from competing alternatives. Now let's take a closer look at these three pillars of managerial accounting.

Planning

Assume that you work for **Procter & Gamble (P&G)** and that you are in charge of the company's campus recruiting for all undergraduate business majors. In this example, your planning process would begin by establishing a goal such as: our goal is to recruit the "best and brightest" college graduates. The next stage of the planning process would require specifying how to achieve this goal by answering numerous questions such as:

- How many students do we need to hire in total and from each major?
- What schools do we plan to include in our recruiting efforts?
- Which of our employees will be involved in each school's recruiting activities?
- When will we conduct our interviews?
- How will we compare students to one another to decide who will be extended job offers?
- What salary will we offer our new hires? Will the salaries differ by major?
- How much money can we spend on our recruiting efforts?

As you can see, there are many questions that need to be answered as part of the planning process. Plans are often accompanied by a *budget*. A **budget** is a detailed plan for the future that is usually expressed in formal quantitative terms. As the head of recruiting at P&G, your budget would include two key components. First, you would have to work with other senior managers inside the company to establish a budgeted amount of total salaries that can be offered to all new hires. Second, you would have to create a budget that quantifies how much you intend to spend on your campus recruiting activities.

THE FINANCIAL SIDE OF RUNNING A COMMUNITY THEATRE

Formulating plans and creating budgets is an important part of running a community theater. For example, the **Manatee Players** is a theater group from Bradenton, Florida, that has seen its annual operating budget grow from \$480,000 to \$1.5 million over the last 10 years. The theater's ticket sales cover about 77% of its operating costs, with additional financial support coming from individual and corporate donors.

In addition to managing its revenues, the theater also seeks to control its costs in various ways—such as saving \$3,000 per year by bringing the production of its programs in-house. Rather than promoting individual shows, the group has decided to focus its marketing dollars on touting the entire season of shows. It also shifted a portion of its marketing budget away from traditional methods to more cost-effective social-media outlets.

Source: Kevin Brass, "Let's Put on a Show," *The Wall Street Journal*, November 3, 2014, p. D7.

IN BUSINESS



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Controlling

Once you established and started implementing P&G's recruiting plan, you would transition to the control process. This process would involve gathering, evaluating, and responding to feedback to ensure that this year's recruiting process meets expectations. It would also include evaluating the feedback in search of ways to run a more effective recruiting campaign next year. The control process would involve answering questions such as:

- Did we succeed in hiring the planned number of students within each major and at each school?
- Did we lose too many exceptional candidates to competitors?
- Did each of our employees involved in the recruiting process perform satisfactorily?
- Is our method of comparing students to one another working?
- Did the on-campus and office interviews run smoothly?
- Did we stay within our budget in terms of total salary commitments to new hires?
- Did we stay within our budget regarding spending on recruiting activities?

As you can see, there are many questions that need to be answered as part of the control process. When answering these questions your goal would be to go beyond simple yes or no answers in search of the underlying reasons why performance exceeded or failed to meet expectations. Part of the control process includes preparing *performance reports*. A **performance report** compares budgeted data to actual data in an effort to identify and learn from excellent performance and to identify and eliminate sources of unsatisfactory performance. Performance reports can also be used as one of many inputs to help evaluate and reward employees.

Although this example focused on P&G's campus recruiting efforts, we could have described how planning enables **FedEx** to deliver packages across the globe overnight, or how it helped **Apple** develop and market the iPad. We could have discussed how the control process helps **Pfizer**, **Eli Lilly**, and **Abbott Laboratories** ensure that their pharmaceutical drugs are produced in conformance with rigorous quality standards, or how **Kroger** relies on the control process to keep its grocery shelves stocked. We also could have looked at planning and control failures such as **Takata**'s recall of more than 30 million defective driver-side air bags installed by a variety of automakers such as **Honda**, **Ford**, **Toyota**, and **Subaru**. In short, all managers (and that probably includes you someday) perform planning and controlling activities.

Decision Making

Perhaps the most basic managerial skill is the ability to make intelligent, data-driven decisions. Broadly speaking, many of those decisions revolve around the following three questions. *What* should we be selling? *Who* should we be serving? *How* should we execute? Exhibit P-2 provides examples of decisions pertaining to each of these three categories.

The left-hand column of Exhibit P-2 suggests that every company must make decisions related to the products and services that it sells. For example, each year **Procter & Gamble** must decide how to allocate its marketing budget across numerous brands that each generates over \$1 billion in sales as well as other brands that have promising growth potential. **Mattel** must decide what new toys to introduce to the market. **Southwest Airlines** must decide what ticket prices to establish for each of its thousands of flights per day. **General Motors** must decide whether to discontinue certain models of automobiles.

The middle column of Exhibit P-2 indicates that all companies must make decisions related to the customers that they serve. For example, **Sears** must decide how to allocate its marketing budget between products that tend to appeal to male versus female customers. **FedEx** must decide whether to expand its services into new markets across the globe. **Hewlett-Packard** must decide what price discounts to offer corporate clients that purchase large volumes of its products. A bank must decide whether to discontinue customers that may be unprofitable.

EXHIBIT P-2

Examples of Decisions

What should we be selling?	Who should we be serving?	How should we execute?
What products and services should be the focus of our marketing efforts?	Who should be the focus of our marketing efforts?	How should we supply our parts and services?
What new products and services should we offer?	Who should we start serving?	How should we expand our capacity?
What prices should we charge for our products and services?	Who should pay price premiums or receive price discounts?	How should we reduce our capacity?
What products and services should we discontinue?	Who should we stop serving?	How should we improve our efficiency and effectiveness?

The right-hand column of Exhibit P-2 shows that companies also make decisions related to how they execute. For example, **Boeing** must decide whether to rely on outside vendors such as **Goodrich, Saab,** and **Rolls-Royce** to manufacture many of the parts used to make its airplanes. **Cintas** must decide whether to expand its laundering and cleaning capacity in a given geographic region by adding square footage to an existing facility or by constructing an entirely new facility. In an economic downturn, a manufacturer might have to decide whether to eliminate one 8-hour shift at three plants or to close one plant. Finally, all companies have to decide among competing improvement opportunities. For example, a company may have to decide whether to implement a new software system, to upgrade a piece of equipment, or to provide extra training to its employees.

This portion of the chapter has explained that the three pillars of managerial accounting are planning, controlling, and decision making. This book helps prepare you to become an effective manager by explaining how to make intelligent data-driven decisions, how to create financial plans for the future, and how to continually make progress toward achieving goals by obtaining, evaluating, and responding to feedback.

Why Does Managerial Accounting Matter to Your Career?

Many students feel anxious about choosing a major because they are unsure if it will provide a fulfilling career. To reduce these anxieties, we recommend deemphasizing what you cannot control about the future; instead focusing on what you can control right now. More specifically, concentrate on answering the following question: What can you do now to prepare for success in an unknown future career? The best answer is to learn skills that will make it easier for you to adapt to an uncertain future. You need to become adaptable!

Whether you end up working in the United States or abroad, for a large corporation, a small entrepreneurial company, a nonprofit organization, or a governmental entity, you'll need to know how to plan for the future, how to make progress toward achieving goals, and how to make intelligent decisions. In other words, managerial accounting skills are useful in just about any career, organization, and industry. If you commit energy to this course, you'll be making a smart investment in your future—even though you cannot clearly envision it. Next, we will elaborate on this point by explaining how managerial accounting relates to the future careers of business majors and accounting majors.

Business Majors

Exhibit P-3 provides examples of how planning, controlling, and decision making affect three majors other than accounting—marketing, supply chain management, and human resource management.

EXHIBIT P-3 Relating Managerial Accounting to Three Business Majors			
	Marketing	Supply Chain Management	Human Resource Management
Planning	How much should we budget for TV, print, and Internet advertising?	How many units should we plan to produce next period?	How much should we plan to spend for occupational safety training?
	How many salespeople should we plan to hire to serve a new territory?	How much should we budget for next period's utility expense?	How much should we plan to spend on employee recruitment advertising?
Controlling	Is the budgeted price cut increasing unit sales as expected?	Did we spend more or less than expected for the units we actually produced?	Is our employee retention rate exceeding our goals?
	Are we accumulating too much inventory during the holiday shopping season?	Are we achieving our goal of reducing the number of defective units produced?	Are we meeting our goal of completing timely performance appraisals?
Decision Making	Should we sell our services as one bundle or sell them separately?	Should we transfer production of a component part to an overseas supplier?	Should we hire an on-site medical staff to lower our health care costs?
	Should we sell directly to customers or use a distributor?	Should we redesign our manufacturing process to lower inventory levels?	Should we hire temporary workers or full-time employees?

The left-hand column of Exhibit P-3 describes some planning, controlling, and decision-making applications in the marketing profession. For example, marketing managers make planning decisions related to allocating advertising dollars across various communication mediums and to staffing new sales territories. From a control standpoint, they may closely track sales data to see if a budgeted price cut is generating an anticipated increase in unit sales, or they may study inventory levels during the holiday shopping season so that they can adjust prices as needed to optimize sales. Marketing managers also make many important decisions such as whether to bundle services together and sell them for one price or to sell each service separately. They may also decide whether to sell products directly to the customer or to sell to a distributor, who then sells to the end consumer.

The middle column of Exhibit P-3 states that supply chain managers have to plan how many units to produce to satisfy anticipated customer demand. They also need to budget for operating expenses such as utilities, supplies, and labor costs. In terms of control, they monitor actual spending relative to the budget, and closely watch operational measures such as the number of defects produced relative to the plan. Supply chain managers make numerous decisions, such as deciding whether to transfer production of a component part to an overseas supplier. They also decide whether to invest in redesigning a manufacturing process to reduce inventory levels.

The right-hand column of Exhibit P-3 explains how human resource managers make a variety of planning decisions, such as budgeting how much to spend on occupational safety training and employee recruitment advertising. They monitor feedback related to numerous management concerns, such as employee retention rates and the timely completion of employee performance appraisals. They also help make many important decisions such as

whether to hire on-site medical staff in an effort to lower health care costs, and whether to hire temporary workers or full-time employees in an uncertain economy.

For brevity, Exhibit P-3 does not include all business majors, such as finance, management information systems, and economics. Can you explain how planning, controlling, and decision-making activities would relate to these majors?

Accounting Majors

Many accounting graduates begin their careers working for public accounting firms that provide a variety of valuable services for their clients. Some of these graduates will build successful and fulfilling careers in the public accounting industry; however, most will leave public accounting at some point to work in other organizations. In fact, the **Institute of Management Accountants** (IMA) estimates that more than 80% of professional accountants in the United States work in nonpublic accounting environments (www.imanet.org/about_ima/our_mission.aspx).

The public accounting profession has a strong financial accounting orientation. Its most important function is to protect investors and other external parties by assuring them that companies are reporting historical financial results that comply with applicable accounting rules. Managerial accountants also have strong financial accounting skills. For example, they play an important role in helping their organizations design and maintain financial reporting systems that generate reliable financial disclosures. However, the primary role of managerial accountants is to partner with their co-workers within the organization to improve performance.

Given the 80% figure mentioned above, if you are an accounting major there is a very high likelihood that your future will involve working for a nonpublic accounting employer. Your employer will expect you to have strong financial accounting skills, but more importantly, it will expect you to help improve organizational performance by applying the planning, controlling, and decision-making skills that are the foundation of managerial accounting.

IN BUSINESS

A NETWORKING OPPORTUNITY

The **Institute of Management Accountants** (IMA) is a network of more than 70,000 accounting and finance professionals from over 120 countries. Every year the IMA hosts a student leadership conference that attracts 300 students from over 50 colleges and universities. Guest speakers at past conferences have discussed topics such as leadership, advice for a successful career, how to market yourself in a difficult economy, and excelling in today's multigenerational workforce. One student who attended the conference said, "I liked that I was able to interact with professionals who are in fields that could be potential career paths for me." For more information on this worthwhile networking opportunity, contact the IMA at the phone number and website shown below.

Source: Conversation with Jodi Ryan, the Institute of Management Accountants' Director, Education/Corporate Partnerships. (201) 474-1556 or visit its website at www.imanet.org.

Professional Certification—A Smart Investment If you plan to become an accounting major, the Certified Management Accountant (CMA) and Chartered Global Management Accountant (CGMA) designations are globally respected credentials that will increase your credibility, upward mobility, and compensation.

The CMA exam is sponsored by the Institute of Management Accountants (IMA) in Montvale, New Jersey. To become a CMA requires membership in the IMA, a bachelor's degree from an accredited college or university, two continuous years of relevant professional experience, and passage of the CMA exam. Exhibit P-4 summarizes the topics covered in the IMA's two-part CMA exam. For brevity, we are not going to define all the terms included in this exhibit. Its purpose is simply to emphasize that the CMA

EXHIBIT P-4**CMA Exam Content Specifications**

<i>Part 1</i>	<i>Financial Reporting, Planning, Performance and Control</i>
	External financial reporting decisions
	Planning, budgeting, and forecasting
	Performance management
	Cost management
	Internal controls
<i>Part 2</i>	<i>Financial Decision Making</i>
	Financial statement analysis
	Corporate finance
	Decision analysis
	Risk management
	Investment decisions
	Professional ethics

exam focuses on the planning, controlling, and decision-making skills that are critically important to all managers. Information about becoming a CMA is available on the IMA's website (www.imanet.org) or by calling 1-800-638-4427.

The CGMA designation is co-sponsored by the **American Institute of Certified Public Accountants** (AICPA) and the **Chartered Institute of Management Accountants** (CIMA), each of whom provides a distinct pathway to becoming a CGMA. The AICPA pathway requires a bachelor's degree in accounting (accompanied by a total of 150 college credit-hours), passage of the Certified Public Accountant (CPA) exam, membership in the AICPA, three years of relevant management accounting work experience, and passage of the CGMA exam—which is a case-based exam that focuses on technical skills, business skills, leadership skills, people skills, and ethics, integrity, and professionalism. Notice that the AICPA's pathway to becoming a CGMA requires passage of the multi-part CPA exam, which emphasizes rule-based compliance—assurance standards, financial accounting standards, business law, and the tax code. Information on becoming a CGMA is available at www.cgma.org.

IN BUSINESS**HOW'S THE PAY?**

The **Institute of Management Accountants** has created the following table that allows individuals to estimate what their salary would be as a management accountant.

			Your Calculation
Start with this base amount		\$42,660	\$42,660
If you are top-level management	ADD	\$59,595	
OR, if you are senior-level management	ADD	\$39,131	
OR, if you are middle-level management	ADD	\$22,089	
Number of years in the field _____	TIMES	\$979	
If you have an advanced degree	ADD	\$20,102	
If you hold the CMA	ADD	\$21,919	
If you hold the CPA	ADD	\$5,907	_____
Your estimated salary level			=====

For example, if you make it to top-level management in 10 years, have an advanced degree and a CMA, your estimated salary would be \$154,066 [$\$42,660 + \$59,595 + (10 \times 979) + \$20,102 + \$21,919$].

Source: Kip Krumweide, "IMA's Global Salary Survey," *Strategic Finance* March 2016, pp. 27–35.

Managerial Accounting: Beyond the Numbers

Exhibit P-5 summarizes how each chapter of the book teaches measurement skills that managers use on the job every day. For example, Chapter 8 teaches you the measurement skills that managers use to answer the question—how should I create a financial plan for next year? Chapters 9 and 10 teach you the measurement skills that managers use to answer the question—how well am I performing relative to my plan? Chapter 7 teaches you measurement skills related to product, service, and customer profitability. However, it is vitally important that you also understand managerial accounting involves more than just “crunching numbers.” To be successful, managers must complement their measurement skills with six business management perspectives that “go beyond the numbers” to enable intelligent planning, control, and decision making.

An Ethics Perspective

Ethical behavior is the lubricant that keeps the economy running. Without that lubricant, the economy would operate much less efficiently—less would be available to consumers, quality would be lower, and prices would be higher. In other words, without fundamental trust in the integrity of business, the economy would operate much less efficiently. Thus, for the good of everyone—including profit-making companies—it is vitally important that business be conducted within an ethical framework that builds and sustains trust.

Code of Conduct for Management Accountants The **Institute of Management Accountants** (IMA) of the United States has adopted an ethical code called the

Chapter Number	The Key Question from a Manager’s Perspective	EXHIBIT P-5 Measurement Skills: A Manager’s Perspective
Chapter 1	What cost classifications do I use for different management purposes?	
Chapter 2	How much does it cost us to manufacture customized jobs for each of our customers?	
Chapters 3 & 4	What is the value of our ending inventory and cost of goods sold for external reporting purposes?	
Chapter 5	How will my profits change if I change my selling price, sales volume, or costs?	
Chapter 6	How should the income statement be presented?	
Chapter 7	How profitable is each of our products, services, and customers?	
Chapter 8	How should I create a financial plan for next year?	
Chapters 9 & 10	How well am I performing relative to my plan?	
Chapter 11	What performance measures should we monitor to ensure that we achieve our strategic goals?	
Chapter 12	How do I quantify the financial impact of pursuing one course of action versus another?	
Chapter 13	How do I make long-term capital investment decisions?	
Chapter 14	What cash inflows and outflows explain the change in our cash balance?	
Chapter 15	How can we analyze our financial statements to better understand our performance?	