Study Guide

Mathematics for Business and Finance

Contents

YOUR COURSE

Welcome to your Mathematics for Business and Finance course! This course will provide a foundation in basic mathematical operations, which will be beneficial to you if you're planning a career in business. The material in your course is divided into four lessons that are based on the textbook *Practical Business Math Procedures,* Eleventh Edition, by Jeffrey Slater and Sharon M. Wittry. At the end of each lesson, you'll complete an online examination.

This study guide will serve as a road map to your textbook and will give you a little bit of extra help along the way. It contains your reading assignments for each lesson. Before you begin your lesson assignments, read through all of the instructions in this study guide to familiarize yourself with the contents of your textbook and your lessons.

Your textbook is designed to help you learn by example and through practice. *Remember:* Practice is the key to mathematical success! You'll find that the textbook is easy to follow and very organized. Each chapter contains information on a math topic, example problems, and practice exercises that you can complete on your own. It's highly recommended that you complete all of the practice exercises.

OBJECTIVES

When you complete your course, you'll be able to

- Perform basic operations using whole numbers, fractions, decimals, and percents

- Use a checking account and prepare a bank statement reconciliation

- Write and solve business-related equations

- Perform basic business-related math involving invoices, trade and cash discounts, markup and markdown, payroll, simple interest and promissory notes, and compound interest and present value

- Apply your knowledge of business math to annuities, consumer and business credit, mortgages, financial statements and ratios, inventory, and depreciation

- Apply your knowledge of business math to taxes, insurance, and investments

- Interpret business data and statistics and present them in an understandable format

KNOW YOUR TEXTBOOK

Your textbook, *Practical Business Math Procedures,* by Jeffrey Slater and Sharon M. Wittry, contains the study material on which your examinations are based. Each time "your textbook" is mentioned in this study guide, it's referring to this book. This textbook will introduce you to the basic mathematical operations that business people need to know. The textbook is divided into 22 chapters, with each chapter covering a major aspect of business math. It's important that you become thoroughly familiar with the contents of your textbook. Get your textbook out now and refer to it as you read through the following information.

First, look at the *contents* section that begins on page x.

Each chapter in your textbook begins with a list of learning unit objectives. These *objectives* tell you what you'll learn in each chapter—that is, they list your goals for each chapter. At this time, look at page 3 (the first page of Chapter 1) and observe the objectives for Chapter 1. You should read one Learning Unit at a time, in the order presented.

As you begin to work through each chapter in the textbook, notice that for each objective, there's a Learning Unit followed by example problems. You'll also find Practice Quizzes corresponding to each Learning Unit.

You'll also find an "Extra Practice Quiz with Worked-Out Solutions" section after the Practice Quizzes. While you should work through the Practice Quizzes, you're *not* responsible for completing the Extra Practice Quizzes.

At the end of each chapter in the textbook, you'll find an Interactive Chapter Organizer that will help you confirm your mastery of the concepts covered.

Finally, at the end of each chapter in your textbook, you'll find End-of-Chapter Problems, Challenge Problems, and a Summary Practice Test.

What You Are Responsible For

1. You must answer the following questions listed in the End-of-Chapter Problems:

   - The odd-numbered Drill Problems (1, 3, 5, and so on)

   - The odd-numbered Word Problems (disregard the "Additional Sets of Word Problems")

2. You must answer all of the questions for the Summary Practice Tests.

What You Are Not Responsible For

You're *not* required to complete or review any of the following:

1. Additional Sets of Word Problems

2. Challenge Problems

3. Appendix A: Additional Homework by Learning Unit, located at the back of the textbook

4. References in the textbook pertaining to the DVD that comes with the textbook

5. References in working out the problems using Excel

Note: Many of today's laptops and notebooks don't have a DVD player installed. The DVD is not needed to complete the assignments. However, you can use the DVD as an additional learning aide. Watch the DVD if you have the means to. The DVD includes information such as the solutions to the questions for the Summary Practice Test.

If your computer doesn't have the ability to play the DVD, follow these instructions to view the contents of the DVD, as well as additional online resources and tools:

1. Go to **http://tinyurl.com/mathdvd** to access the online student materials associated with your textbook.

2. At the bottom of the left menu, choose the chapter you're working on from the drop-down menu.

3. Under More Resources, click LU and SPT Videos. The available videos will then display in the content area to the right of the menu.

The videos can also be viewed on YouTube by searching for "Slater Wittry" and choosing the Slater Wittry YouTube channel/subscription. You can also access the channel by visiting **http://tinyurl.com/slaterwittry.**

After taking a quick look at the textbook, *Practical Business Math Procedures,* you may feel slightly intimidated. Please don't be. *Remember:* We're here to help you through this course, and we won't let you down. The textbook contains a large amount of material, but it's covered in short sections with lots of practice applications in between each section. Before you know it, you'll finish one section, chapter, lesson, and then the whole textbook. Take your time with each section. If you don't feel confident with the material, go back and study it again. Practice helps you work through problem areas before you take your exam. You'll do fine, and in no time you'll have your business math course behind you. Are you ready? Let's get started.

A STUDY PLAN

This study guide divides the contents of your textbook into four lessons for you to study. For each lesson, you'll complete several reading assignments. Then, you'll complete an online examination on the material you study for the lesson. This study guide contains a list of your lesson assignments for the textbook *Practical Business Math Procedures.* Be sure to read all the assigned lesson material before you attempt to complete your examinations.

To get the most benefit out of each of your lessons, follow these steps:

Step 1:   Start by reading the introduction to Lesson 1 in this study guide. Then, begin to read Assignment 1. Carefully note the pages where the reading assignment begins and ends.

Step 2:   Skim the assigned pages in your textbook to get a general idea of their contents.

Step 3:   Now, read the assigned pages in your textbook to get a general idea of their contents. Try to see the "big picture" of the material during this first reading.

Step 4:   Next, go back and study the assigned pages carefully. Pay careful attention to all details, including the illustrations, charts, and diagrams. Follow through all of the steps in the example problems. Take notes on the important points and terms in a notebook, if you wish.

Step 5:   At the end of each section of the reading assignment, check to be sure you learned the material by completing the assigned End-of-Chapter Problems and Summary Practice Tests.

Write out the answers to the problems on a separate piece of paper. Try to solve the problems on your own without referring to the textbook. Don't worry about making a mistake. The purpose of answering these questions is to check your learning and to help you recognize the areas that you may need to study again.

After you've completed your assigned End-of-Chapter Problems and Summary Practice Tests, compare your answers against those provided in your online Answer Key Supplement to confirm that you solved the exercises correctly. If you solved any problems incorrectly, review the material for that topic until you're sure that you understand it.

Note that the End-of-Chapter Problems and Summary Practice Tests are provided only for you to review your

learning. You won't be graded on these exercises. Do *not* send your answers to the school.

Step 6: Repeat Steps 1 through 5 for each of the reading assignments in the lesson, as necessary.

Step 7: When you've finished reading all of the assigned pages for the first lesson and you're sure that you're comfortable with the material, complete the online examination for that lesson. You can access the online examination on your My Courses page.

Each examination contains a number of multiple-choice questions. Take your time as you complete each examination—there's no time limit. You may go back to your course materials to review information at any time when you're working on the examinations. When you're finished with each examination, submit your answers online to the school for grading. Submit your answers as soon as you complete the examination. Do *not* wait until another examination is ready.

Step 8: Repeat steps 1–7 for Lessons 2–4.

Remember: You may email your instructor for help whenever you need it. Your instructor can answer your questions, provide additional information, and provide further explanation of your study materials. Email your questions to your instructor, and he or she will see to it that you receive the needed information. Your instructor's guidance and suggestions will be very helpful as you progress through your course.

Now, look over the lesson assignments. Then, begin your study of Lesson 1.

Good luck with your course!

Lesson 1: Basic Operations and Banking

For:	Read in this study guide:	Read in the textbook:
Assignment 1	Pages 10	Chapter 1, Pages 1–33
Assignment 2	Pages 11–13	Chapter 2, Pages 34–63
Assignment 3	Pages 14–15	Chapter 3, Pages 64–89
Assignment 4	Pages 15–16	Chapter 4, Pages 90–115
Assignment 5	Pages 16–17	Chapter 5, Pages 116–141
Assignment 6	Pages 18–19	Chapter 6, Pages 142–175

Examination 060320   Material in Lesson 1

Lesson 2: Business and Finance Basics I

For:	Read in this study guide:	Read in the textbook:
Assignment 7	Pages 22–24	Chapter 7, Pages 176–207
Assignment 8	Pages 24–25	Chapter 8, Pages 208–241
Assignment 9	Pages 26–27	Chapter 9, Pages 242–263
Assignment 10	Pages 27–28	Chapter 10, Pages 264–283
Assignment 11	Pages 28–29	Chapter 11, Pages 284–299
Assignment 12	Pages 29–31	Chapter 12, Pages 300–321

Examination 060321   Material in Lesson 2

Lesson 3: Business and Finance Basics II

For:	Read in this study guide:	Read in the textbook:
Assignment 13	Pages 34–35	Chapter 13, Pages 322–346E
Assignment 14	Pages 35–36	Chapter 14, Pages 348–371
Assignment 15	Pages 36–38	Chapter 15, Pages 372–389
Assignment 16	Pages 38–39	Chapter 16, Pages 390–423
Assignment 17	Pages 40–41	Chapter 17, Pages 424–441

Examination 060322   Material in Lesson 3

Assignments

Lesson 4: Business and Finance Basics III and Statistics

For:	Read in this study guide:	Read in the textbook:
Assignment 18	Pages 44–45	Chapter 18, Pages 442–467
Assignment 19	Pages 45–46	Chapter 19, Pages 468–483
Assignment 20	Pages 47–48	Chapter 20, Pages 484–507
Assignment 21	Pages 48–49	Chapter 21, Pages 508–527
Assignment 22	Pages 49–50	Chapter 22, Pages 528–553

Examination 060323   Material in Lesson 4

Note: To access and complete any of the examinations for this study guide, click on the appropriate **Take Exam** icon on your "My Courses" page. You should not have to enter the examination numbers. These numbers are for reference only if you have reason to contact Student Services.

Basic Operations and Banking

INTRODUCTION

In this lesson, you'll be building a strong mathematics foundation in basic operations by using whole numbers, fractions, decimals, and percents. You'll also gain a better understanding of checking accounts. You'll work with equations, and you'll learn to write and solve your own business-related equations.

You'll also learn about business-related math topics, including invoices, trade and cash discounts, markup and markdown, payroll, simple interest and promissory notes, and compound interest and present value.

When you complete this lesson, you'll be able to

- Identify, convert, and complete basic operations with whole numbers, fractions, decimals, and percents

- Round whole numbers and decimals to specific place values

- Operate a checking account, understand how the various forms are used, and prepare a bank statement reconciliation

- Summarize the rules and terminology of equations

- Write, set up, and solve business-related word problems using equations that include ratios, proportions, and percents

Remember: You can visit **http://www.tinyurl.com/mathdvd** to view online student materials associated with your textbook. These materials include chapter video resources, quizzes, and so on.

ASSIGNMENT 1

Read this introduction to Assignment 1. Then, study Chapter 1, "Whole Numbers: How to Dissect and Solve Word Problems," pages 1–33, in the textbook *Practical Business Math Procedures.* At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

This first assignment contains a review of basic operations (addition, subtraction, multiplication, and division), as well as rounding. You may already be proficient in these areas, but even if you are, it won't hurt to review the topics presented and test your knowledge by completing the practice problems. Remember to review the interactive Chapter Organizer and Study Guide on pages 20–21 before completing the assigned End-of-Chapter Problems.

When you're comfortable and confident with your results, proceed to the next assignment. Remember that mathematics is a subject that continually builds on previous knowledge. You won't be able to build a strong foundation if you skip over some topics or try to complete them too quickly. Take a little time to review any material that you don't have complete confidence in. You shouldn't move on to the next chapter until you've totally mastered the present chapter. Your math skills will get stronger as you work through and master each chapter.

The following are some basic guidelines to keep in mind as you read this chapter:

- Whole numbers start at the understood decimal point and increase in value from right to left.

- When you're rounding whole numbers, all of the places to the right of the place being rounded should be zeros.

- When you're solving problems on paper, keep your work neat and your columns straight. It's easy to make mistakes if your numbers aren't lined up properly.

After you've read pages 1–33 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 1, move on to Assignment 2.

ASSIGNMENT 2

Read this introduction to Assignment 2. Then, study Chapter 2, "Fractions," pages 34–63, in the textbook *Practical Business Math Procedures.* At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

Don't be afraid of a little fraction. It's just a mathematical way of expressing a part of a whole thing. There are some great explanations in your textbook of the various types of fractions and how to convert and reduce fractions. Review these sections carefully. They'll be an important part of your fraction future—and there will be a future. Fractions play a big role in the business world, and they're an important piece in the mathematical puzzle.

Determining a common denominator of two or more fractions can be a little confusing at first. We're going to try to make it as easy as possible. Study the examples given on pages 41–43 of your textbook. Here are two additional example problems for you to study and review.

Example: Find the least common denominator of the fractions $^1/_3$, $^5/_{12}$, and $^7/_{18}$.

Solution: Follow the steps provided here to solve the problem.

		3	12	18	
Step 1: Write all the **denominators** in a row.					
Step 2: Find the smallest prime number that divides evenly into any of the denominators. Write that number to the left of the row, and divide. Place all quotients and undivided numbers in the next row down.	2	3	6	9	Two is the smallest prime number that will divide evenly into the denominators. We bring down the 3, because 2 doesn't divide evenly into 3. $$12 \div 2 = 6$$ $$18 \div 2 = 9$$
Step 3: Repeat the process until the new row contains all ones.	2	3	3	9	Three isn't divisible by 2, so we bring it down again. $$6 \div 2 = 3$$ Nine isn't divisible by 2, so it comes down.
The smallest prime number that divides evenly into any of the denominators is now 3, not 2.	3	1	1	3	$$3 \div 3 = 1$$ $$3 \div 3 = 1$$ $$9 \div 3 = 3$$
Repeat the process using 3.	3	1	1	1	Bring down the 1's. $$3 \div 3 = 1$$
Step 4: Multiply all the prime numbers on the left together to get the lowest common denominator of the fractions.					$2 \times 2 \times 3 \times 3 = 36$ LCD = 36

Example: Find the least common denominator of the fractions $\frac{5}{6}$, $\frac{3}{8}$, and $\frac{11}{12}$.

Solution: Follow the steps provided to solve the problem.

		6	8	12	
Step 1: Write all the **denominators** in a row.		6	8	12	
Step 2: Find the smallest prime number that divides evenly into any of the denominators. Write that number to the left of the row, and divide. Place all quotients and undivided numbers in the next row down.	2	3	4	6	Two is the smallest prime number that will divide evenly into the denominators. $6 \div 2 = 3$ $8 \div 2 = 4$ $12 \div 2 = 6$
Step 3: Repeat the process until the new row contains all ones.	2	3	2	3	Three isn't evenly divisible by 2, so bring it down. $4 \div 2 = 2$ $6 \div 2 = 3$
	2	3	1	3	Three isn't evenly divisible by 2, so bring it down. $2 \div 2 = 1$
Use 3 as the prime.	3	1	1	1	$3 \div 3 = 1$ Bring down the 1. $3 \div 3 = 1$
Step 4: Multiply all the prime numbers on the left together to get the lowest common denominator of the fractions.					$2 \times 2 \times 2 \times 3 = 24$ LCD = 24

If you're subtracting mixed numbers and your minuend fraction is smaller than your subtrahend fraction, don't forget to borrow one whole unit from the whole number part of the minuend to add to the fractional part.

Do you feel comfortable with the process? If your answer is yes, continue on. If your answer is no, review the process again. Take it slowly, one step at a time. Look over the examples in the textbook again.

The steps for multiplication and division of fractions are covered in Learning Unit 2-3. Remember to always reduce your answer to lowest terms after you perform these operations.

The following are some basic guidelines to keep in mind as you read this chapter:

- When you find an LCD, make sure that the numbers you divide into the denominators are *prime numbers* (divisible only by themselves and 1).

- Reduce all of your answers to lowest terms. Be especially careful with mixed numbers. If your fractional part is improper, make sure that once you reduce it, you add the whole number. For example,

$$25 \frac{11}{5} = 25 + 2 \frac{1}{5} = 27 \frac{1}{5}$$

- When you multiply fractions, you can reduce before multiplying by finding every common factor that divides evenly into at least one numerator and one denominator. This will help to avoid large numbers after multiplication.

- In the division of fractions, the second term—the divisor—is the one that should be inverted. Change the division sign to a multiplication sign and multiply.

After you've read pages 34–63 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 2, move on to Assignment 3.

ASSIGNMENT 3

Read this introduction to Assignment 3. Then, study Chapter 3, "Decimals," pages 64–89, in the textbook *Practical Business Math Procedures.* At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

Decimals, like fractions, express a part of a whole number. Working with decimals will be an important part of your business math experience. Many business applications involve decimals. The most important application of decimals is in the expression of money amounts—dollars and cents. Be sure to carefully review the examples and rules for decimals in your textbook.

The following are some basic guidelines to keep in mind as you read this chapter:

- When you read a decimal, read the decimal point as "and."

- The decimal point is located at the very end of a whole number (that is, at the far right of the number). Although a decimal point isn't written after a whole number, it's understood to be there.

- The key to adding and subtracting decimals accurately is to keep the decimals lined up and the columns straight.

- When you're dividing decimals, move the decimal point the same number of places in both the dividend and the divisor.

- To convert a decimal to a fraction, be sure to know your place values. If you can read a decimal, you can write it as a fraction. Think about it: the decimal 0.03 is equal to $^3/_{100}$.

- A fraction is just a way of expressing a division problem. To convert a fraction to a decimal, divide the numerator by the denominator.

After you've read pages 64–89 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those

provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 3, move on to Assignment 4.

ASSIGNMENT 4

Read this introduction to Assignment 4. Then, study Chapter 4, "Banking," pages 90–115, in the textbook *Practical Business Math Procedures*. At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

Understanding how to use a checking account is very important to both your business and personal life. Most businesses today use and accept checks because this is a convenient way of doing business.

A number of things should be considered when you're choosing a financial institution in which to open a checking account. Different institutions offer various checking features in both business and personal accounts. Sometimes, special offers are available if you have both business and personal accounts in the same institution. The best advice, however, is to shop around before making a choice. This assignment will help you to understand how checking accounts work and how to balance checking accounts. The features you want from a financial institution, however, must be chosen based on your own personal or business needs. Only you can make those decisions.

Your textbook contains some excellent discussions that cover signature cards, checks, deposit slips, check stubs, and check registers. Review this information closely, and be sure to learn all of the different terms that are associated with checking accounts.

Here are some basic guidelines to keep in mind as you read this chapter:

- Use the proper form when you're writing a check. Sign your check in the exact same way you signed it on your signature card.

- Learn the terminology associated with checking accounts.

- Always remember to accurately record the amount of your checks and deposits on your check stub or register. This is the only way that you can keep track of your balance.

- Periodically compare your bank statement against your check stubs or register, and prepare a *bank statement reconciliation.* Adjust your recorded account balance if necessary. Do this for both business and personal accounts.

After you've read pages 90–115 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 4, move on to Assignment 5.

ASSIGNMENT 5

Read this introduction to Assignment 5. Then, study Chapter 5, "Solving for the Unknown: A How-to Approach for Solving Equations," pages 116–141, in the textbook *Practical Business Math Procedures.* At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

Don't let the words *formula, equation, knowns,* and *unknowns* intimidate you. These are simply mathematical ways to express relationships and represent terms. In business, occasions will often arise when you'll need to perform repetitive tasks. Mathematical formulas allow you to standardize procedures so that you can make these repetitive tasks easier. These terms are important to know. They'll help you to understand the differences in how formulas and equations are created.

Equations are used to express equality. If a mathematical statement contains an equal sign, it's an equation. In this assignment, you'll learn how to write and solve equations. You'll start off slowly, but before you know it, you'll be using equations to solve business calculations with confidence.

The following are some basic guidelines to keep in mind as you read this chapter:

- An equation is like a balanced scale. If you change something on one side of the equation, you must make exactly the same change on the other side of the equation in order to keep it balanced.

- Use the opposite operation on both sides of an equation to solve it. The opposite of addition is subtraction, and the opposite of subtraction is addition. The opposite of multiplication is division, and the opposite of division is multiplication.

- To solve for an unknown in an equation that contains more than one operation and no parentheses, perform the addition and subtraction operations first, and then the multiplication and division operations.

- When you're solving equations that contain parentheses, you must perform the operations within the parentheses and remove the parentheses before any other operations can be performed.

- To combine multiple unknowns, move all of the unknowns to the same side of the equation to solve.

- When you're solving an equation, make sure that you answer the question that was asked. Check your answer to make sure it's reasonable.

- To solve an equation using proportions, cross-multiply and solve for your variable.

To calculate how many assignments you have remaining in this lesson, you can set up an equation as follows:

assignments in the lesson – assignments you've completed = assignments remaining in this lesson

After you've read pages 116–141 in _Practical Business Math Procedures_ carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 5, move on to Assignment 6.

ASSIGNMENT 6

Read this introduction to Assignment 6. Then, study Chapter 6, "Percents and Their Applications," pages 142–175, in the textbook *Practical Business Math Procedures*. At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

Percents have many uses in business calculations, but it's surprising how many of us aren't sure exactly how to figure them out. A few common uses of percents are figuring out the tip for a food server, calculating the percentage off on a sale item in a department store, and determining the interest on a savings account. It's important to remember that like a fraction or a decimal, a percent is a part of a whole. A percent is used to indicate the number of parts per hundred. So, 8% means 8 parts out of 100, and 43% means 43 parts out of 100.

In this assignment, your textbook covers some of the basic rules that apply to percent calculations. You'll learn to convert percents to decimals, decimals to percents, percents to fractions, and fractions to percents. You'll also learn how to solve percent problems using percentage formulas that involve *portion, rate,* and *base.* Study these operations carefully. Once you master the methods that are used to solve for portion, rate, and base, you'll have mastered percents.

A few other types of problems deal with percents, including percent of increase, percent of decrease, and percentage points. All of these problems use the basic rules for percents and the basic equations. When you're working with percents, the most common problem will require you to convert a percent to a decimal, or a decimal to a percent. Once you learn how to solve this most common type of problem with confidence, you'll be ready to solve just about any type of percent problem.

The following are some basic guidelines to keep in mind as you read this chapter:

- The *base* represents the whole: $B = {}^P\!/_R$

- The *portion* represents the part of the whole: $P = R \times B$

- The *rate* is the variable that contains the percent sign (%) or the word *percent: $R = {}^P\!/_B$

When you're solving a problem, make sure that you answer the question that was asked. You may need to make a conversion at the end of your problem.

After you've read pages 142–175 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 1 through Assignment 6, complete the online examination for Lesson 1.

NOTES

Business and Finance Basics I

INTRODUCTION

In this lesson, you'll further develop your math skills by applying what you've learned in Lesson 1 to situations that occur in everyday life. You'll learn how to take information and figure out the solutions to the problems that you'll come across. For example, if you work 40 hours a week and earn $10 per hour, you're supposed to be paid $400. However, after taxes are deducted from your paycheck, you receive $284.32 in your paycheck. How were taxes calculated and deducted from your check? Do you know whether $284.32 is the correct amount, or would you just accept that amount?

In this lesson, you'll learn not only how to solve problems like payroll, but also how to calculate the various types of discounts—there are more types of discounts than just, for example, a 20% sales discount you get in the store when you buy a sweater on sale—and simple and compound interest. You'll also learn how to use the time value of money, figure notes so that you know how much to pay when you borrow money, and calculate the correct selling prices so that you can make a profit.

When you complete this lesson, you'll be able to

- Read, describe, extend, and total an invoice

- Calculate single trade discounts and series trade discounts

- Calculate cash discounts and identify the terms of sale

- Compute markups based on cost and selling price

- Determine markdowns, compute selling price after multiple operations, and calculate the selling price of perishable goods

- Determine employees' gross earnings, payroll deductions, and employer's payroll expenses

- Identify the record-keeping responsibilities associated with payroll

Lesson 2

- Calculate simple interest using the simple-interest formula

- Describe promissory notes and discounting

- Compute compound interest and present value using various methods

ASSIGNMENT 7

Read this introduction to Assignment 7. Then, study Chapter 7, "Discounts: Trade and Cash," pages 176–207, in the textbook *Practical Business Math Procedures.* At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

This assignment will help you to understand all of the terms associated with invoices, single trade discounts, and series trade discounts. You'll also learn about cash discounts and terms of sale. Don't be confused by these terms; they're explained well in your textbook.

This assignment contains quite a few formulas. Many of these formulas are related, and some simply show alternate methods to make calculations. Don't let the formulas overwhelm you. Take your time, study the formulas one at a time until you're familiar with them, and go over the material until you feel confident about it. By the time you reach the end of the chapter, the last formula you learn will be

your hard work = success

Keep these basic guidelines in mind as you read this chapter:

- When the terms are *FOB shipping point,* the freight charges are paid by the buyer. When the terms are *FOB destination,* the seller is responsible for the shipping charge to the destination.

- To find the *extended total* of an invoice, multiply the number of items purchased by the cost per item. To find an *invoice total,* add the extended totals plus the shipping charges, insur-ance charges, and any other adjust-ments that may be involved in the transaction.

- To calculate the amount of a single trade discount, multiply the list price by the trade discount percent. Don't forget to change your percent to a decimal by moving the decimal two places to the left. After moving the decimal, you no longer need the percent symbol.

- When you're finding the net price using the net price factor, subtract the trade discount percent from 100%. Change your answer to a decimal by moving the decimal two places to the left; then, multiply that number by the list price.

- To find the trade discount rate, divide the amount of the trade discount by the list price. Remember to change your decimal answer to a percent by moving the decimal two places to the right, and then add a percent sign.

- When you're dealing with percents, to find the complement of a discount, subtract it from 100%.

- Remember that 100% is equal to 1, or one whole thing.

- In a whole number, the decimal point appears at the end of the number (at the far right). The decimal point isn't usually included when whole numbers are written, but it's understood to be there. The number 132 can be written with a decimal point as follows:

132.

However, the decimal point doesn't need to be written with a whole number under normal circumstances.

- To subtract a decimal from 1, write the decimal point after the 1 and add the necessary zeros. For example, suppose you need to subtract 0.3275 from 1. The problem would be set up like this:

$$
\begin{array}{r}
1.0000 \\
-\ 0.3275 \\
\hline
0.6725
\end{array}
$$

- Leap years are evenly divisible by four. In leap years, February has 29 days; in every other year, February has 28 days. In every year, the months April, June,

September, and November each contain 30 days. The months January, March, May, July, August, October, and December each contain 31 days.

■ A number of different dating methods can be used when you're calculating a discount. Make sure that you're aware of which one is being used.

After you've read pages 176–207 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 7, move on to Assignment 8.

ASSIGNMENT 8

Read this introduction to Assignment 8. Then, study Chapter 8, "Markups and Markdowns: Perishables and Breakeven Analyses," pages 208–241, in the textbook *Practical Business Math Procedures*. At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

Pricing items is a critical task in a business. If prices are too high, the business can lose customers; if prices are too low, the business can lose money. Thus, it's important to use the following basic formula to calculate the correct selling price of an item:

$$selling\ price = cost + markup$$

This formula can be rearranged in two other ways:

$$markup = selling\ price - cost$$

$$cost = selling\ price - markup$$

These three equations make it easy to calculate each value without rearranging the original formula every time.

The textbook also contains several other formulas that deal with markups and markdowns. Go over each formula carefully to make sure that you understand which one should be used in a particular exercise. Also, make sure that your numbers are written in the correct form. For example, when you're using percents, make sure that you change the percent to a decimal

where appropriate. If an exercise asks for a percent and your answer is a decimal, make sure you convert back to a percent. Once again, be sure that you answer the question that's being asked and that your answer is in the correct form.

The following are some basic guidelines to keep in mind as you read this chapter:

■ If you're asked for the percent of markup based on selling price, make sure your answer is a percent, not a decimal. To change the decimal to a percent, move the decimal two places to the right.

■ When calculating the cost, after adding 100% to the percent markup on cost, change your answer to a decimal by moving the decimal two places to the left. Then, divide it into your selling price.

■ Formulas can be transposed based on the factor that you're trying to find. For example, look at the following equation:

$$selling\ price = cost + markup$$

In this equation, to solve for cost, subtract markup from both sides of the equation as follows:

$$selling\ price - markup = cost + markup - markup$$

$$selling\ price - markup = cost,\ or\ cost = selling\ price - markup$$

After you've read pages 208–241 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 8, move on to Assignment 9.

ASSIGNMENT 9

Read this introduction to Assignment 9. Then, study Chapter 9, "Payroll," pages 242–263, in the textbook *Practical Business Math Procedures*. At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

Most of us accept our paychecks every payday without paying much attention to the deductions. The only time we notice a problem is when the amount of the check isn't the same as usual. However, it's important to pay attention to the amounts that are deducted from your paycheck so that you can make sure the amounts are correct. As a business owner, employer, or employee, you should be aware of the basic types of payroll deductions.

Some of the basic payroll deductions are federal income tax, federal unemployment, state unemployment, Social Security, Medicare, and miscellaneous voluntary deductions (such as health insurance). Your textbook explains each deduction and how to calculate it. Once you know how to calculate all of your deductions, you can calculate your net pay. Your *net pay* (or *take-home pay*) is equal to your *gross pay* minus all of your deductions.

The following are some basic guidelines to keep in mind as you read this chapter:

- Your *gross pay* is the amount you earn before deductions. Your *net pay* is what's left after the deductions are taken out.

- If you get paid time-and-a-half, multiply your hourly rate by 1.5 to calculate your overtime pay. To calculate double-time pay, multiply your hourly rate by 2, and to calculate triple-time pay, multiply your hourly rate by 3.

- *Straight piecework* pays a flat rate per unit, no matter how many units you can produce. *Differential piecework* pays you more as you produce more units.

- You aren't responsible for paying Social Security tax on any amount over $106,800. (Note that this amount changes almost every year.)

- As an employee, you must complete a W-4 form that's used by your employer to determine the amount of income tax that will be withheld from your paycheck.

- You can determine federal income tax withholding by using the *wage bracket table* or by using the *percentage method.*

- An employer is responsible for matching all FICA tax payments for each employee.

- If you're self-employed, you can estimate your earnings for the year and pay your federal income tax on a quarterly basis.

After you've read pages 242–263 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 9, move on to Assignment 10.

ASSIGNMENT 10

Read this introduction to Assignment 10. Then, study Chapter 10, "Simple Interest," pages 264–283, in the textbook *Practical Business Math Procedures.* At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

It's important to be able to calculate interest amounts in any business. For example, most businesses will need to obtain a loan at some point. Therefore, it's important to understand the terms that are associated with interest, such as *principal, rate, time, simple interest,* and *compound interest.* These terms and others are explained in your textbook.

You can use the following formula to calculate simple interest:

$$I = PRT$$

In this formula, *I* stands for interest, *P* stands for the amount of the principal, *R* stands for the interest rate, and *T* stands for the time the loan is given for. Note that each variable in the formula is expressed in distinct units. Confusing the units is one of the most common mistakes made when using this

formula. The *principal* is expressed in dollars and cents. The *rate* is usually given as a percent. The rate must be converted to a decimal by moving the decimal two places to the left. The *time* is given in years. Remember that there are 12 months in a year. If a loan is taken for six months, the time would be equal to $^6/_{12}$ or $^1/_2$ (or 0.5 in decimal form). A time period of 18 months would be written as $^{18}/_{12}$, which is equal to $1\,^6/_{12}$, or $1\,^1/_2$ (or 1.5 in decimal form). Remember that it's easiest to multiply your variables when they're expressed as decimals.

Some loans are given for a time period calculated in days. Two methods are used to calculate simple interest on a loan that's given in terms of days. The *exact interest method* uses the number of days of the loan divided by 365. The *ordinary interest method* uses the number of days of the loan divided by 360. Because either method can be used, the method should be specified when you're making calculations. Make sure that you double-check the time period when you're using the simple interest formula.

After you've read pages 264–283 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 10, move on to Assignment 11.

ASSIGNMENT 11

Read this introduction to Assignment 11. Then, study Chapter 11, "Promissory Notes, Simple Discount Notes, and the Discount Process," pages 284–299, in the textbook *Practical Business Math Procedures.* At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

A *promissory note* is a promise to pay back an amount of money to a lender on a certain date. Some have interest, and some don't. The different parts of a promissory note are listed in your textbook. Your textbook also covers bank discounts, proceeds, and discounting notes before maturity.

The following are some basic guidelines to keep in mind as you read this chapter:

- When you're using the formula for simple interest, the rate should be expressed as a decimal. *Remember:* To change a percent to a decimal, move the decimal two places to the left.

- Time should be expressed in terms of a year when you're calculating simple interest. When you're calculating the interest on a loan that's given for a specific number of days, to calculate the *exact interest,* you must divide by 365; to calculate the *ordinary interest,* you must divide by 360.

- A *bank discount* is to a *promissory note* as interest is to a loan. The *face value* on a promissory note is the same as the *principal* on a loan, and the *discount rate* on a promissory note is the same as the *rate* on a loan. The formula $I = PRT$ is the same as *bank discount = face value × discount rate × time.*

After you've read pages 284–299 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 11, move on to Assignment 12.

ASSIGNMENT 12

Read this introduction to Assignment 12. Then, study Chapter 12, "Compound Interest and Present Value," pages 300–321, in the textbook *Practical Business Math Procedures*. At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

In Assignment 10, you learned about simple interest. Another method called *compound interest* is also used to calculate interest. Compound interest is calculated a number of times during the term of a loan or investment. In this method, you actually earn interest on your interest. The compound interest method yields a larger amount of total interest than the simple interest method.

The textbook shows several methods that you can use to calculate the *compound amount* (also called the *future value*) and the compound interest. There are many different ways of accomplishing the same goal, so choose the method that you're most comfortable with.

Present value is an amount of money that's put away today at compound interest to yield a specific amount for the future. Once again, several different methods can be used to solve for present value. Use the method that you feel most comfortable with.

The following are some basic guidelines to keep in mind as you read this chapter:

- The term *annually* means "once a year"; *semiannually* means "twice a year"; *quarterly* means "four times a year"; *monthly* means "12 times a year"; and *daily* means 365 times a year.

- To use the compound interest table, you must know the total number of periods and the rate per period. The same holds true for present value.

- To calculate the value of the expression 5^7, multiply 5 by itself seven times as follows:

$$5^7 = 5 \times 5 \times 5 \times 5 \times 5 \times 5 \times 5 = 78{,}125$$

Remember that you *do not* solve this type of expression by multiplying 5 by 7.

As another example, calculate the value of the expression $(1.05)^6$. To do this, multiply 1.05 by itself six times, as follows:

$$(1.05)^6 = 1.05 \times 1.05 \times 1.05 \times 1.05 \times 1.05 \times 1.05 = 1.3400956$$

Do not multiply 1.05 by 6.

- To find an *effective interest rate,* remember to divide your numerator by your denominator. Your answer will be a decimal. To change it to a percent, move the decimal two places to the right and add a percent sign.

- ■ Remember that time is calculated in terms of a year. Twelve months is equal to one year; six months is equal to one-half year ($^6/_{12}$ or 0.5); and three months is equal to one-fourth year ($^3/_{12}$ or 0.25).

After you've read pages 300–321 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignments 6 through 12, complete the online examination for Lesson 2.

Mathematics for Business and Finance

Business and Finance Basics II

INTRODUCTION

In this lesson, you'll learn about annuities, consumer and business credit, mortgages, financial statements and ratios, inventory, and depreciation. A knowledge of these topics will be useful in both your job and your personal life. You'll be able to apply a lot of what you learn in this lesson in everyday situations.

You'll also learn about several new business math applications. You'll become familiar with different types of taxes, insurance, and investments. You'll also learn about business statistics, data interpretation, and presentation.

OBJECTIVES

When you complete this lesson, you'll be able to

- Calculate the future and present value of an annuity

- Compute sinking funds and amortization by table or formula

- Determine finance charges and new balances for revolving credit card accounts

- Estimate the deferred payment prices, finance charges, amount of monthly payments, and annual percentage rates for installment loans

- Determine monthly payments, PITI, and interest rates on mortgages

- Calculate the potential amount of credit on home equity loans

- Understand the components contained on a balance sheet and an income statement

Lesson 3

- Price, estimate, and calculate inventory

- Determine inventory turnover

- Report depreciation for financial statements and income tax

ASSIGNMENT 13

Read this introduction to Assignment 13. Then, study Chapter 13, "Annuities and Sinking Funds," pages 322–346E, in the text-book _Practical Business Math Procedures._ At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

Chapter 12 dealt with lump sum investments. Chapter 13, on the other hand, is concerned with annuities. An annuity is a payment or receipt of equal amounts of money per period for a specified amount of time. There are many different types of annuities. Your textbook defines _simple annuities_ and _complex annuities,_ for example, and _annuities certain_ and _contingent annuities._ In this assignment, you'll learn to calculate _present value, future value,_ the amount of a _sinking fund payment,_ and the amount of an _amortization payment._

Annuities are used for many different things, including insurance and retirement plans. Working with annuities is similar to working with compound interest. You can perform calculations the long way, by consulting a table, or by applying a formula. The textbook covers all three methods. Once again, use whatever method you feel most comfortable with. You may want to solve using one method and check your work using an alternate method. This procedure will give you some practice using different methods and will also verify your answer.

The following are some basic guidelines to keep in mind as you read this chapter:

- In an _annuity due,_ the payment is made at the beginning of each period. In an _ordinary annuity,_ the payment is made at the end of each period.

- Keep close track of the beginning and the end of each period.

- If you're using the tables to figure out the future value of an annuity due, you can use the same table to calculate an ordinary annuity. The steps are slightly different, however, so be careful to use the correct sequence of steps.

- Use the same tables to figure out present value of an ordinary annuity and an annuity due. Once again—watch your steps.

After you've read pages 322–346E in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 13, move on to Assignment 14.

ASSIGNMENT 14

Read this introduction to Assignment 14. Then, study Chapter 14, "Installment Buying" pages 348–371, in the textbook *Practical Business Math Procedures.* At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

Credit can be a great asset if used properly. The best advantage of credit is that you can use something before you pay for it. However, many people find it easy to overextend their credit and fall into debt. Abusing credit can put a person or a business into serious financial trouble.

There are many different types of credit accounts and many different types of lending institutions. There are so many now that they'll compete with each other to gain your business. If you become familiar with the terms that are used and how credit works, you'll be able to decide who can give you the best deal.

Another form of credit includes installment loans and mortgages. This assignment will teach you about *finance charges, regular monthly payments, add-on interest,* and *annual percentage rates.*

The following are some basic guidelines to keep in mind as you read this chapter:

- When you're obtaining a credit card, you should be aware of the annual percentage rate, the periodic rate, the finance charge (and how it's calculated), and the billing cycle. All could make a difference for you.

- To calculate the finance charges on a revolving charge account, you can use either the *unpaid balance method* (also called the *previous month's balance method*) or the *average daily balance method.* Follow the steps provided in your textbook to use these methods.

- When you're calculating the average daily balance, pay close attention to the dates and the number of days at each balance. Both could seriously affect your outcome.

- To find your periodic rate, divide the annual percentage rate by 12.

- Use the sum-of-the-digits formula, $\dfrac{n(n-1)}{2}$, to calculate your rebate fraction quicker and easier.

After you've read pages 348–371 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 14, move on to Assignment 15.

ASSIGNMENT 15

Read this introduction to Assignment 15. Then, study Chapter 15, "The Cost of Home Ownership," pages 372–389, in the textbook *Practical Business Math Procedures*. At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

Owning a home or a business is probably a goal most of us will have at some point during our lives, and most of us will need to borrow money to achieve this goal. This assignment will help you to understand the different types of mortgage

loans that are available to you. Your textbook explains the different types of loans and then helps you work through all the different calculations that are associated with these loans.

If you already own a home or a business but need money to expand, make improvements, or consolidate other bills, you can take out a *home equity loan* (also called a *second mortgage* or *a line of credit*). You can use the equity in your home to establish a line of credit. There's a tax benefit in doing this, so it's always to your advantage to use this type of loan rather than an installment loan or consumer loan. Also, many times the interest rates on a home equity loan are lower than those on consumer loans. Once you're finished with this chapter, you can make the comparison yourself.

The following are some basic guidelines to keep in mind as you read this chapter:

- Closely review the terminology in this chapter. When you're meeting with a representative from a financial institution, if you thoroughly understand the terms being used, you'll be able to concentrate on the benefits that are being offered. Use your textbook as a reference guide.

- Amortization tables for mortgages are listed in years. An amortization table can be used to prepare an amortization schedule that shows the status of a mortgage loan after each payment.

- The PITI includes the four elements of a mortgage payment: the principal, the interest, the taxes, and the insurance.

- To determine how much money you can borrow on a home equity loan, second mortgage, or line of credit, you need to know the appraised value of your home, the lender's percentage, and the amount that you still owe on your first mortgage (if you have one).

- Two ratios are used by lenders to determine a borrower's ability to pay back a loan: the *housing expense ratio* and the *total obligations ratio.* These ratios are calculated using the following formulas:

$$\text{Housing expense ratio} = \frac{\text{Monthly housing expenses (PITI)}}{\text{Monthly gross income}}$$

$$\text{Total obligations ratio} = \frac{\text{Total monthly financial obligations}}{\text{Monthly gross income}}$$

After you've read pages 372–389 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 15, move on to Assignment 16.

ASSIGNMENT 16

Read this introduction to Assignment 16. Then, study Chapter 16, "How to Read, Analyze, and Interpret Financial Reports" pages 390–423, in the textbook *Practical Business Math Procedures*. At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

As a business owner or operator, you must be able to determine the financial state of your business. To do that, you must be able to prepare and understand financial statements. *Financial statements* are reports that summarize your company's financial data.

There are four basic types of financial statements: balance sheets, income statements, owner's equity statement, and cash flow statements. A *balance sheet* lists a company's financial position as of a certain date. An *income statement* summarizes the operations of a business over a period of time. An *owner's equity statement* represents the resources that are invested in the business by the owner(s). A *cash flow statement* lists the amount of cash that comes into and goes out of the business. All of these statements are important in any business operation.

Once your reports are complete, you can make comparisons to ensure that your business is being run effectively and efficiently. You can use *financial ratios* to evaluate the operating performance of a company. Your textbook will help you to analyze this information and determine trends in your company's financial data.

The following are some basic guidelines to keep in mind as you read this chapter:

■ The accounting equation is written as follows:

assets = liability + owner's equity

■ When you're preparing a balance sheet, make a list of the company's assets, liabilities, and equity.

■ A *vertical analysis* uses percents to compare items on a balance sheet to total assets. A *horizontal analysis* compares items in the current period with corresponding items from previous periods.

■ A list of components that should be contained in the different types of financial statements appears in your textbook. Review them closely.

■ When you're preparing a horizontal analysis of an income statement, make sure you write any decrease inside parentheses.

■ A *ratio* is simply a comparison of one amount to another.

■ To prepare a *trend analysis,* choose a base year and let it equal 100%. Calculate the index number for each succeeding year. Round each index number to the nearest tenth percent.

After you've read pages 390–423 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 16, move on to Assignment 17.

ASSIGNMENT 17

Read this introduction to Assignment 17. Then, study Chapter 17, "Depreciation," pages 424–441, in the textbook *Practical Business Math Procedures.* At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

The *depreciation* of a long-term asset is its decrease in value from its original cost, calculated over its useful life. This means that as an item gets older, it generally loses value. One exception to this rule is land—it tends to increase in value over time. Just about everything else—equipment, buildings, vehicles, and so on—can be depreciated.

There are several different ways to calculate depreciation. Your textbook covers three methods: the *straight-line method,* the *declining-balance method,* and the *units-of-production method.* Different methods are used for different reasons, but they all accomplish the same goal.

There are two reasons why depreciation is calculated in business. One reason is that it's necessary to maintain accurate business records; the other reason is that it's required by the Internal Revenue Service (IRS). The government dictates how depreciation is calculated for IRS purposes. This method is called the *modified accelerated cost recovery system (MACRS).* It allows a business to write off an asset quicker than one of the traditional methods we just listed.

The following are some basic guidelines to keep in mind as you read this chapter:

■ To calculate depreciation, you must know four things: the total cost of the asset, the residual (salvage) value of the asset, the useful life of the asset, and the method of depreciation that matches the way the asset will depreciate.

■ The *straight-line method* of depreciation calculates total depreciation by subtracting the salvage value from the total cost. To find the annual depreciation, divide the total depreciation by the estimated useful life in years. A schedule is set up starting with the original cost decreasing each year by the annual depreciation and ending with the salvage value.

- The *declining-balance method* of depreciation uses a multiple of the straight-line rate to calculate depreciation. The most common multiples are 1.25 (the 125% declining balance), 1.50 (the 150% declining balance), and 2 (the double-declining balance).

- The *units-of-production method* of depreciation doesn't use time to determine depreciation. It's based on how much the asset is used.

- The method used to calculate depreciation for federal income tax purposes is called the *modified accelerated cost recovery system (MACRS).*

After you've read pages 424–441 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignments 13 through 17, complete the online examination for Lesson 3.

NOTES

Business and Finance Basics III and Statistics

INTRODUCTION

In this lesson, you'll learn the basics of important business and finance concepts so that you can speak competently with others about these topics. Recall an earlier example in which we discussed how individuals might be familiar with net pay for payroll checks, but they might not know how to calculate the net pay. Similarly, many people have heard of property tax. However, do they know how to calculate the property tax, or do they just blindly accept what is listed on the bill for property tax? Various methods of calculating depreciation can be used. You can decide which method is right for you, so that it presents your financial information in the best light instead of just accepting straight-line depreciation because it's the easiest to calculate.

You'll also learn about other types of taxes; a variety of insurances such as life, fire, and auto insurance; the most common types of financial investments—stocks, bonds and mutual funds; and the basics of statistics. Why statistics? In addition to its use in business, think about what you're doing when you calculate your GPA. That's right—you're using statistics!

When you complete this lesson, you'll be able to

- Calculate sales taxes, excise taxes, property taxes, and income taxes

- Summarize and calculate typical premiums for life, property, and motor vehicle insurance

- Read and understand stock, bond, and mutual fund quotes

- Make calculations with the values of stocks, bonds, and mutual funds

- Read tables, line charts, bar charts, and pie charts

- Determine the mean, median, mode, and range for groups of unsorted data

Lesson 4

ASSIGNMENT 18

Read this introduction to Assignment 18. Then, study Chapter 18, "Inventory and Overhead," pages 442–467, in the textbook *Practical Business Math Procedures.* At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

In this assignment, you'll learn about the importance of inventory. Identification and organization are the two things that are critical to the success of an inventory system. Computers have made it much easier to keep track of inventory, and many different software programs are available to help set up inventory systems. In smaller businesses that can't afford computer systems, an inventory system can be maintained by using traditional "paper and pencil" methods.

Three basic methods are used to calculate the value of inventory: the *first-in, first-out (FIFO)* method; the *last-in, first-out (LIFO)* method, and the *average cost* method. The FIFO method assumes that the first items bought are the first items to be sold. The LIFO method assumes that the last items bought are the first items sold. The average cost method assumes that the cost of each unit is the average cost of all goods available during that accounting period.

There are several different ways to estimate ending inventory. Your textbook explains these methods, as well as inventory turnovers and targets. Maintaining inventory isn't difficult if you're well organized and have a good system in place.

The following are some basic guidelines to keep in mind as you read this chapter:

- When you're calculating the value of ending inventory using the *FIFO method,* start with your ending balance and work backward through the incoming shipments. When you're calculating the value of ending inventory using the *LIFO method,* start with the beginning inventory and work forward through the incoming shipments.

- To use the *retail method* of estimating inventory, you need to know the beginning inventory, purchases, and net sales.

- To calculate the *inventory turnover rate at retail,* divide your net sales by the average inventory at retail.

- Inventory standards are published by trade associations and the federal government. They help comparable companies figure out the amount of inventory they should carry to reach maximum efficiency.

After you've read pages 442–467 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 18, move on to Assignment 19.

ASSIGNMENT 19

Read this introduction to Assignment 19. Then, study Chapter 19, "Sales, Excise, and Property Taxes," pages 468–483, in the textbook *Practical Business Math Procedures.* At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

It's something we all dread, but something we all have to do—pay taxes. You'll encounter all types of taxes when you're involved in a business. In this assignment, you'll learn about some of the basic types of taxes, such as sales tax, excise tax, property tax, and income tax. The information you'll learn may help you in both business and personal tax situations.

Calculating certain types of taxes can be fairly easy if you remember the rules for percents. *Sales taxes* and *excise taxes* are usually expressed as a percentage of purchase price. Sales tax percentages vary from state to state, and excise tax percentages vary from product to product. Excise tax is calculated separately from sales tax.

Property tax (also called *ad valorem tax*) is slightly different. It may still be a percentage, but it's based on the assessed value of a property. You should familiarize yourself with the tax terms and categories that relate to property taxes in your textbook.

Income tax is another type of tax that most of us are subject to. Income tax is paid as you earn income throughout the year. The textbook will help you with the basics of calculating taxable income for individuals, and what your tax liability might be. Answers to questions, help, and tax forms are available from the IRS over the phone, through the mail, or on the Internet.

The following are some basic guidelines to keep in mind as you read this chapter:

- State sales tax rates range from 3% to 9%. Cities and counties can add 0.5% to 6% to these rates.

- *Excise tax* is imposed on luxury items or nonessential items. Some of these items include alcoholic beverages, tobacco products, furs, airline tickets, and telephone services.

- Excise tax and sales tax are calculated independently on the actual selling price. The total purchase price of an item is equal to the selling price plus the sales tax plus the excise tax.

- *Property tax* (also known as *ad valorem tax)* is a tax that's based on the assessed value of a property.

- The term *mills* means 1/1,000, or 0.001, of a dollar. The tax rate in decimal form equals the tax rate in mills multiplied by 0.001.

- Income tax payments can be made through withholdings by your employer. If you're self-employed, you should make quarterly *estimated tax payments.*

- You can obtain the most current tax tables in many IRS publications. You can order forms, instructions, and publications by calling the IRS at 1-800-TAX-FORM or through the IRS online at www.irs.gov.

After you've read pages 468–483 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 19, move on to Assignment 20.

ASSIGNMENT 20

Read this introduction to Assignment 20. Then, study Chapter 20, "Life, Fire, and Auto Insurance," pages 484–507, in the textbook *Practical Business Math Procedures.* At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

This assignment will introduce you to different types of insurance. Insurance helps to reduce financial risk when unexpected events occur, such as fires, floods, earthquakes, auto accidents, illnesses, and death. Your textbook discusses life insurance, fire insurance, and motor vehicle insurance. The insurance business is huge, and many companies out there want your business. If you learn the terminology that relates to insurance, you'll be in a better position to get what you're looking for.

The following are some basic guidelines to keep in mind as you read this chapter:

■ In 1960, the average household carried $13,000 in life insurance. Today, the average household carries almost fifteen times that amount, or $189,800 in life insurance.

■ Review the five types of life insurance described in your textbook. Be familiar with each type before deciding which is best for you.

■ One rule of thumb concerning insurance is that you should carry between seven and ten times your annual income for life insurance, depending on your lifestyle, the number of dependents you have, and your other sources of income.

■ Important factors that you should consider when you're purchasing fire insurance are the dollar amount of insurance purchased on the property, the location of the property, the proximity and quality of fire protection that's available, the construction of the building, the dollar amount of the contents of the building, and the flammability of the contents.

■ In most areas, you're required to have motor vehicle insurance to register your vehicle.

- Vehicle insurance includes liability, collision, and comprehensive insurance. *Liability insurance* provides coverage of bodily injury and property damage.

After you've read pages 484–507 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 20, move on to Assignment 21.

ASSIGNMENT 21

Read this introduction to Assignment 21. Then, study Chapter 21, "Stocks, Bonds, and Mutual Funds," pages 508–527, in the textbook *Practical Business Math Procedures.* At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the Summary Practice Test.

Are you ready to learn some more terms? There are certainly a lot of them to learn when it comes to investments. Each investment category has its own associated set of terms, so review them all closely. If you consult with someone about financial matters, it's very important that you understand these terms. There's a lot to remember in this assignment, but you can master it. Read through this material carefully and you'll be able to have an intelligent conversation with any financial advisor.

The three basic types of investments are *stocks, bonds,* and *mutual funds.* A share of stock represents "ownership" in a corporation. A bond is a type of loan in which the bond buyer lends money to the bond issuer. Bonds can be issued by corporations or the government. Mutual funds are professionally managed investment companies that pool money from many people and invest it in various places. Mutual funds are very popular because they reduce risk and take the guesswork out of investing. In a mutual fund, top professionals do your investing for you.

The following are some basic guidelines to keep in mind as you read this chapter:

■ A *dividend* is a distribution of a company's profits to its shareholders or stock owners.

■ You can read *stock quotations* in a newspaper, or you can watch them as they change online. Many sites on the Internet and the various online services carry stock quotes. To find them, search for "stock quotes" using one of the many different search engines available on the Internet.

■ *Secured bonds* are backed by a lien on a plant, equipment, or other corporate assets. *Unsecured bonds* are backed only by the general credit of the issuing corporation. *Convertible stocks* can be exchanged for a specified number of shares of common stock, and *callable bonds* can be redeemed before the maturity date.

■ The degree of success you have with your investments is measured by calculating the *return on investment (ROI).* The ROI is expressed as a percent rounded to the nearest tenth.

After you've read pages 508–527 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignment 21, move on to Assignment 22.

ASSIGNMENT 22

Read this introduction to Assignment 22. Then, study Chapter 22, "Business Statistics," pages 528–553, in the textbook *Practical Business Math Procedures*. At the end of the chapter, complete the odd-numbered Drill and Word Problems as well as the first Challenge Problem.

The amount of information that's available at our fingertips today is amazing. With a computer and the help of the Internet, you can get information on virtually any topic. However, in

business, you must be able to interpret information in a meaningful way and organize it into a format that can be read and understood by others.

This assignment is designed to help you interpret information and present it in a way that others will be able to understand. Your textbook covers reading, interpreting, and constructing information from tables, line graphs, bar graphs, and pie charts.

The second part of the assignment deals with basic statistics. You'll learn to calculate and determine the average (mean), median, mode, and range of a collection of ungrouped data. You'll construct frequency charts using grouped data, compute the mean of grouped data, and construct a histogram from a frequency distribution. All of these tools will help you to make comparisons with data.

Perhaps the best thing about this chapter is that it's the last chapter in the book. You've made it to the end! Give yourself a pat on the back. You deserve it.

After you've read pages 528–553 in *Practical Business Math Procedures* carefully and solved the assigned End-of-Chapter Problems, check your answers against those provided in your online Answer Key Supplement. When you're sure that you completely understand the material from Assignments 18 through 22, complete the online examination for Lesson 4.