

# GET STUDENTS TO THINK...AND THINK AGAIN

## THINK ABOUT IT AND THINK AGAIN

At key points in each chapter, Prior checks to see that students are thinking about the material. When they are actively engaged in the book, students learn the concepts and are able to think critically about them.

**You Try It 1** Dina and Chuck are married, and each contributes to the United Way through their monthly paychecks. Their total monthly contribution is \$150. Each month, Dina contributes \$80 to the United Way. According to this situation, write the following ratios in standard ratio form and fractional form. Use Example 1 as a guide.

Word form	Standard ratio form	Fractional form
a) Dina's amount : Chuck's amount		
b) Chuck's amount : Dina's amount		
c) Dina's amount : Total amount		
d) Chuck's amount : Total amount		

**Think About It 1** As fractions, what kind of relationship does the ratio  $A : B$  have with the ratio  $B : A$ ?

Think About It boxes pose thought-provoking questions that encourage discussion of the concepts and topics. The concepts covered in these boxes are revisited in the Think Again exercises that begin each exercise set.

**Section 6.1 Exercises**

**FOR EXTRA HELP**  
 Student Resources on DVD-ROM includes:  
 • Student's Solutions Manual  
 • Video Lectures  
 • Chapter Test Prep Video  
 MyMathLab MathXL

**Think Again**

Write a sentence or two for each response.

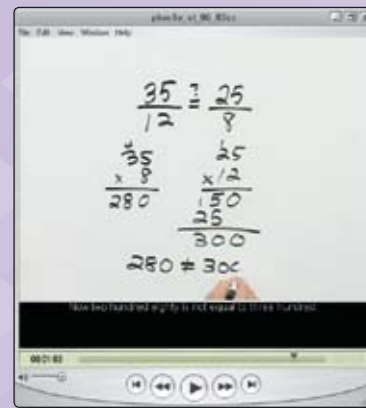
- As fractions, what kind of relationship does the ratio  $A : B$  have with the ratio  $B : A$ ? (Refer to Think About It 1)
- The ratio  $\frac{40}{96}$  is equivalent to the ratio  $\frac{50}{720}$ . Without using cross multiplication, what is another way to show that these two ratios are equivalent?

## STUDENT RESOURCES DVD-ROM

This all-in-one Student Resources DVD-ROM set contains everything that students need to study efficiently. All of the following items are contained on a few discs, saving natural resources and providing a budget-friendly option for students.

- The Chapter Test Prep Videos provides step-by-step solutions to every problem in the Chapter Test. These videos provide guidance and support when students need the most help: the night before an exam. All videos include optional subtitles in English and Spanish.
- The Student's Solutions Manual contains detailed, worked-out solutions to all You Try It Exercises, the odd-numbered, section-level exercises, and all chapter review and chapter test exercises in the text.

- Video Lectures cover important definitions, procedures, and concepts from every section of the book by working through examples and exercises. Section openers are presented by the author, and all videos have optional subtitles in English and Spanish.



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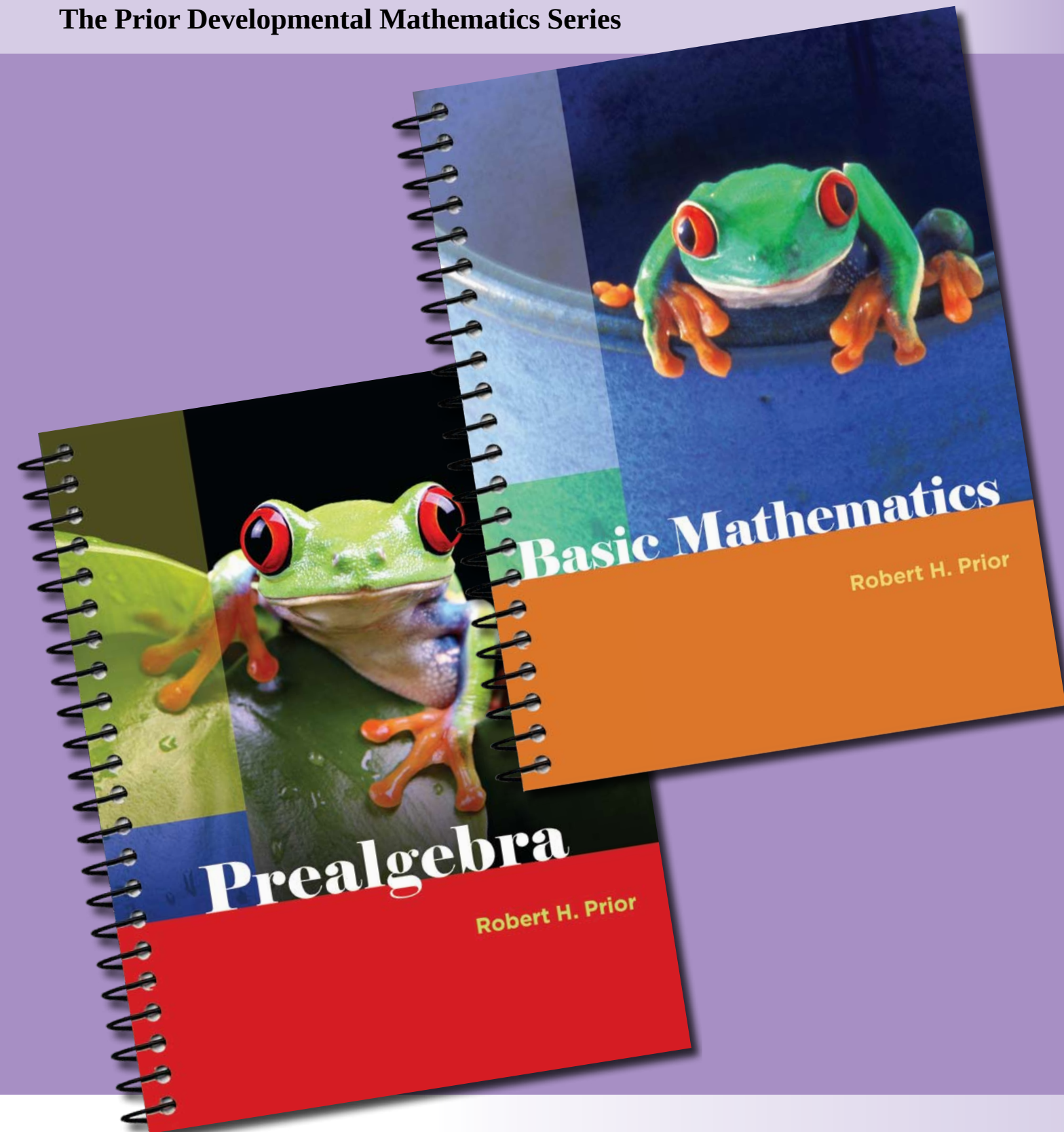
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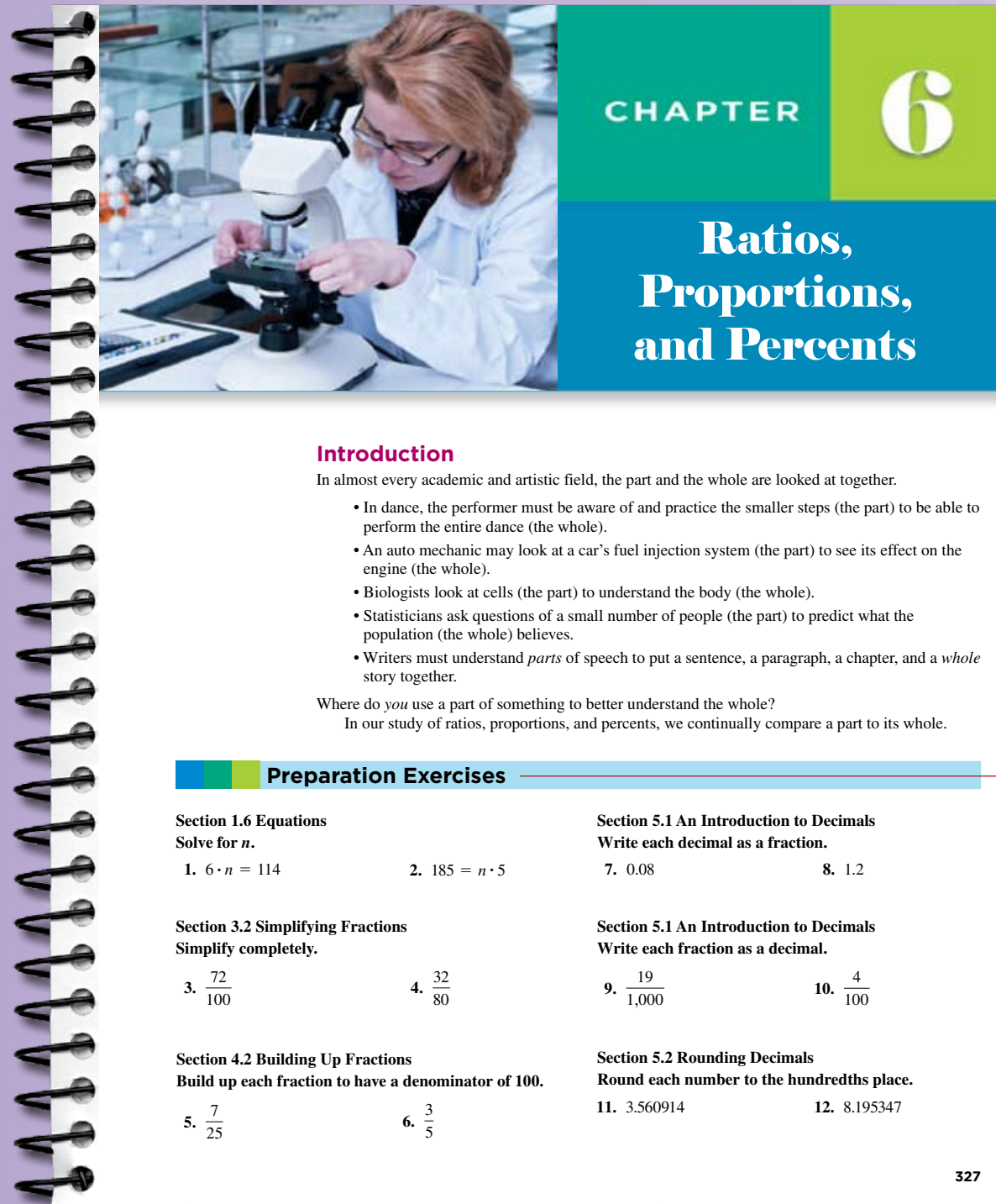
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# SELF-ASSESSMENT AND ACTIVE PARTICIPATION

Prior reinforces self-assessment and active participation with a variety of integrated features. These tools allow students to prepare for what they are about to learn, check their understanding of the concepts being taught, and refer back to the appropriate sections for review.

## SECTION 6.1 Ratios

### OBJECTIVES

**In this section, you will learn to**

- Define *ratio* and identify the form in which a ratio is written.
- Simplify ratios.
- Use cross multiplication to determine if two ratios are equivalent.

### You Need to Know

**To successfully complete this section, you need to understand**

- Multiplying whole numbers (1.4)
- Simplifying fractions (3.2)
- Multiplying decimals (5.4)
- Dividing decimals (5.5)

### Introduction

Consider this: A father and son went into business together selling collectible sports cards. To start the business, the father, George, invested \$5,000 and the son, Tom, invested \$3,000, a total investment of \$8,000. When they share profits from the income of their sports card shop, George gets a  $\frac{5}{8}$  share and Tom gets a  $\frac{3}{8}$  share. Does this seem like a fair way for them to distribute the profits?

If in the first month their profits are \$800, how much of the \$800 should George and Tom receive?

In investment businesses, the greater the amount of the investment, the greater the amount of the *return* when the profits are given out.

We can start to compare George's and Tom's shares by the amount they originally invested: \$5,000 to \$3,000. However, since not all income will be based in the thousands of dollars, let's look at this in a simplified form: \$5 to \$3.

We can interpret this as for every \$5 that George invested, Tom invested \$3. We can double each amount, and the comparison will be consistent: For every \$10 (twice \$5) George invested, Tom invested \$6 (twice \$3).

This type of comparison of numbers is called a *ratio*. A **ratio** is a comparison between two numbers using division. The symbol used to represent a ratio is the colon (:).

A **You Need to Know** list references materials that students should already know in order to successfully complete the section objectives, which are also clearly stated at the beginning of each section.

**Preparation Exercises, located at the start of every chapter, help students to review what they need to know before beginning the chapter.**

### Example 2

Write each ratio in fractional form and then simplify. Make sure you divide out any common units of measure (or counts) as well.

a) 14 feet : 21 feet      b) 45 marbles : 5 marbles      c) 3.6 miles : 2.7 liters

**Procedure** For part c, multiply the fraction by  $\frac{10}{10}$  to eliminate the decimals.

**Answer**

a)  $\frac{14 \text{ feet}}{21 \text{ feet}} = \frac{2 \cdot 7 \text{ feet}}{3 \cdot 7 \text{ feet}} = \frac{2}{3}$       We also can rewrite this in standard ratio form, 2 : 3.

b)  $\frac{45 \text{ marbles}}{5 \text{ marbles}} = \frac{9 \cdot 5 \text{ marbles}}{1 \cdot 5 \text{ marbles}} = \frac{9}{1}$       This fraction cannot simplify to just 9. As a ratio, it must remain in fractional form or be rewritten in standard form.

c)  $\frac{3.6 \text{ miles}}{2.7 \text{ liters}} = \frac{3.6 \times 10 \text{ miles}}{2.7 \times 10 \text{ liters}} = \frac{36 \text{ miles}}{27 \text{ liters}} = \frac{4 \cdot 9 \text{ miles}}{3 \cdot 9 \text{ liters}} = \frac{4 \text{ miles}}{3 \text{ liters}}$       In this example, the units of measure are not the same and cannot be divided out.

**You Try It 2** Write each ratio in fractional form and then simplify. Make sure you divide out any common units of measure (or counts) as well. Use Example 2 as a guide.

a) 18 miles : 24 miles      c) 0.3 grams of fat : 1.8 ounces

b) 35 girls : 15 girls      d) 3.6 feet : 0.4 seconds

**Multiple You Try It Exercises** follow each example, allowing students to immediately practice and apply the concepts they have just learned, while effectively bringing exercise sets into each lesson.