

Common Core Mathematics

Practice at 3 Levels ●●●

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Using This Book

What Is the Common Core?

The Common Core State Standards are an initiative by the states to set shared, consistent, and clear expectations of what students are expected to learn, so teachers and parents know what they need to do to help them. The standards are designed to be rigorous and pertinent to the real world. They reflect the knowledge and skills that our young people need for success in college and careers.

What Are the Intended Outcomes of Common Core?

The goal of the Common Core Standards is to facilitate the following competencies.

Students will:

- demonstrate independence;
- build strong content knowledge;
- respond to the varying demands of audience, task, purpose, and discipline;
- comprehend as well as critique;
- value evidence;
- use technology and digital media strategically and capably;
- come to understand other perspectives and cultures.

What Does This Mean for You?

If your state has joined the Common Core State Standards Initiative, then as a teacher you are required to incorporate these standards into your lesson plans. Your students may need targeted practice in order to meet grade-level standards and expectations and thereby be promoted to the next grade. This book is appropriate for on-grade-level students as well as intervention, ELs, struggling readers, and special needs. To see if your state has joined the initiative, visit the Common Core States Standards Initiative website to view the most recent adoption map: <http://www.corestandards.org/in-the-states>.

What Does the Common Core Say Specifically About Math?

For math, the Common Core sets the following key expectations.

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

How Does Common Core Mathematics Help My Students?

- **Mini-lesson for each unit** introduces Common Core math skills and concepts.

Unit 4
Ratios, Decimals, and Percents

Standard

Ratios and Proportional Relationships 6.RP
Understand ratio concepts and use ratio reasoning to solve problems.
6.RP.1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
6.RP.3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
 a) Find a percent of a quantity (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

Model the Skill

◆ Draw the following table on the board.

Ratio	Decimal	Percent
$\frac{5}{10}$	0.5	50%
$\frac{1}{2}$		
$\frac{3}{4}$		

◆ **Say:** Today we are relating fractions, ratios, decimals, and percentages. Look at this table. What decimal shows the ratio 5 to 10? (0.5) What percent is equal to 0.5? (50%) Why? (Because 5/10 or 0.5 is equal to 50/100, or 0.50, and percent is part of 100.)

◆ Repeat with other examples in the table. Remind students that percent is a ratio that compares a number to 100. To write an equivalent decimal, simply divide the numerator by the denominator. Then convert the decimal to percent by multiplying by 100 (which, in short, means moving decimal point two places to the right).

◆ Assign students the appropriate practice pages to support their understanding of the skill.

Assess the Skill

Use the following problems to pre-/post-assess students' understanding of the skill.

$\frac{1}{50}$	$\frac{1}{100}$	$\frac{3}{5}$	$\frac{3}{25}$
_____ %	_____ %	_____ %	_____ %

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Common Core Standard(s) covered in the unit

Mini-lesson introduces or refreshes target skills and concepts

Quick and easy ongoing assessment opportunities

- **Four practice pages** with three levels of differentiated practice, and word problems follow each mini-lesson.

Unit 4 • Ratios, Decimals, and Percents Name _____

Write a ratio as a percent using equal ratios.

1 $\frac{2}{5} \times \frac{\square}{\square} = \frac{\square}{100}$
 $\frac{\square}{100} = \square\%$
 $\frac{2}{5} = \square\%$

2 $\frac{9}{25} \times \frac{\square}{\square} = \frac{\square}{100}$
 $\frac{\square}{100} = \square\%$
 $\frac{9}{25} = \square\%$

Remember: Multiply both terms of the ratio by the same number.
 $\frac{2}{5} \times \frac{20}{20} = \frac{40}{100}$

3 $\frac{3}{20} \times \frac{\square}{\square} = \frac{\square}{100}$
 $\frac{\square}{100} = \square\%$
 $\frac{3}{20} = \square\%$

4 $\frac{1}{5} \times \frac{\square}{\square} = \frac{\square}{100}$
 $\frac{\square}{100} = \square\%$
 $\frac{1}{5} = \square\%$

5 $\frac{7}{10} \times \frac{\square}{\square} = \frac{\square}{100}$
 $\frac{\square}{100} = \square\%$
 $\frac{7}{10} = \square\%$

Write a ratio as a percent using a decimal.

6 $\frac{2}{5} \rightarrow 5 \overline{) 2.00}$
 $\frac{2}{5} = 0.\underline{\quad}$
 $\frac{2}{5} = \square\%$

7 $\frac{1}{3} \rightarrow 3 \overline{) 1.000}$
 $\frac{1}{3} = 0.\underline{\quad}$
 $\frac{1}{3} = \square\%$

8 $\frac{1}{2} \rightarrow 2 \overline{) 1.00}$
 $\frac{1}{2} = 0.\underline{\quad}$
 $\frac{1}{2} = \square\%$

9 $\frac{3}{8} \rightarrow 8 \overline{) 3.00}$
 $\frac{3}{8} = 0.\underline{\quad}$
 $\frac{3}{8} = \square\%$

10 $\frac{5}{6} \rightarrow 6 \overline{) 5.00}$
 $\frac{5}{6} = 0.\underline{\quad}$
 $\frac{5}{6} = \square\%$

★ Draw a circle around ratios that are repeating decimals.

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Level 1: Students who need extra support can start at the first practice page, which offers the most on-page support. This page often includes illustrations or model drawing to support every question.

Level 1



Level 2: The second level of practice offers streamlined support features for the first few problems (illustrations, model drawing, or an algorithm reminder for support).

Name _____ Unit 4 • Ratios, Decimals, and Percents

Write each as a percent.

1 $\frac{1}{4}$ 2 $\frac{1}{10}$ 3 $\frac{4}{5}$ 4 $\frac{4}{25}$

5 $\frac{1}{3}$ 6 $\frac{5}{8}$ 7 $\frac{9}{12}$ 8 $\frac{3}{4}$

9 0.37 10 0.08 11 0.6 12 0.375

Note: Memorize common ratio and percent equivalents.

Remember: You can use equivalent ratios or write a decimal first.

Complete.

Ratio	Decimal	Percent
1 $\frac{1}{5}$	0.5	
2 $\frac{80}{100}$		$33\frac{1}{3}\%$
3 $\frac{3}{8}$		
4 $\frac{1}{6}$		87.5%
5		60%

☆ Tell how to write a decimal as a percent.

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Level 2



Each practice page includes a bonus thinking-skills question so students can answer "How do you know?" to address Common Core Standards of Mathematical Practice and demonstrate their reasoning and understanding of the concept.



Level 3: The third practice page does not offer on-page support and depicts how students are expected to be able to perform at this grade level, whether in class or in testing.

Name _____ Unit 4 • Ratios, Decimals, and Percents

Write each as a percent.

1 $\frac{2}{10}$ 2 $\frac{4}{8}$ 3 $\frac{5}{20}$ 4 $\frac{1}{5}$

5 $\frac{12}{16}$ 6 $\frac{1}{40}$ 7 $\frac{2}{3}$ 8 $\frac{24}{50}$

9 0.21 10 0.06 11 0.9 12 0.425

13 1.0 14 0.49 15 0.803 16 0.999

Complete.

Ratio	Decimal	Percent
1 $\frac{3}{5}$	0.4	
2 $\frac{2}{6}$		$33\frac{1}{3}\%$
3 $\frac{2}{6}$	0.666	
4 $\frac{6}{24}$		29%
5	0.525	

☆ How do you write the ratio $\frac{3}{5}$ as a percent? Explain the steps you take.

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Level 3



How do you write the ratio $\frac{3}{8}$ as a percent? Explain the steps you take.

Bonus Thinking Skills question on each practice page

Word Problems: Each unit ends with a page of short-answer and multiple-choice word problems so students are challenged to marry their computation skills with their quantitative-reasoning and problem-solving skills and grow more familiar with the types of problems they will encounter on standardized tests.

Word Problem Page

Name _____ Unit 4 • Word Problems • Ratios, Decimals, and Percents

Solve.

1 Taha finished 78% of her homework. What fraction of the homework did she finish? 2 Ben played in the 1st, 2nd, and 4th quarters of the game. He sat out the third quarter. What percentage of the game did Ben play?

3 Nine out of 25 students finished their work early on Tuesday. What percentage of the class finished their work early? 4 Twenty percent of the dogs at the pound needed medical care. What is the ratio of dogs that needed care to dogs that did not?

5 Is $\frac{4}{5}$ equal to 80%? Explain. 6 Is 0.6% equivalent to the decimal 0.6? Explain.

Circle the letter for the correct answer.

7 What decimal is equal to 1.3%? 8 What ratio is equal to 60%?

a) 0.013 a) $\frac{5}{7}$
 b) 0.13 b) $\frac{10}{75}$
 c) 1.3 c) $\frac{3}{4}$
 d) 13.0 d) $\frac{1}{4}$

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Common Core Standards Alignment Chart • Grade 6

Units	6.RP.1	6.RP.2	6.RP.3	6.NS.1	6.NS.2	6.NS.3	6.NS.4	6.NS.5	6.NS.6	6.NS.7	6.NS.8	6.EE.1	6.EE.2	6.EE.3	6.EE.4	6.EE.5	6.EE.6	6.EE.7	6.EE.8	6.EE.9	6.G.1	6.G.2	6.G.3	6.G.4	6.SP.1	6.SP.2	6.SP.3	6.SP.4	6.SP.5
Ratios & Proportional Relationships																													
Unit 1: Ratios & Equivalent Ratios	✓		✓																										
Unit 2: Rates		✓	✓																										
Unit 3: Understand Percent	✓		✓																										
Unit 4: Ratios, Decimals, and Percents	✓		✓																										
Unit 5: Find Percent of a Number			✓																										
The Number System																													
Unit 6: Divide Whole Numbers				✓																									
Unit 7: Add and Subtract Decimals					✓																								
Unit 8: Multiply and Divide Decimals					✓																								
Unit 9: Greatest Common Factor & Least Common Multiple						✓																							
Unit 10: Multiply Fractions			✓																										
Unit 11: Divide Fractions			✓																										
Unit 12: Understand Integers							✓			✓																			
Unit 13: Order Rational Numbers								✓	✓																				
Unit 14: Graph Points on the Coordinate Plane							✓		✓																				
Expressions & Equations																													
Unit 15: Exponents											✓																		
Unit 16: Order of Operations											✓																		
Unit 17: Algebraic Expressions												✓																	
Unit 18: Properties of Operations													✓	✓															
Unit 19: Write and Solve Equations															✓	✓	✓												
Unit 20: Write and Solve Inequalities															✓			✓											
Unit 21: Graph Equations																				✓									
Geometry																													
Unit 22: Area of Polygons																					✓								
Unit 23: Draw Polygons on the Coordinate Plane																							✓						
Unit 24: Find Surface Area																								✓					
Unit 25: Find Volume																						✓							
Statistics & Probability																													
Unit 26: Mean, Median, and Mode																									✓	✓	✓		
Unit 27: Make and Interpret Dot Plots																											✓	✓	
Unit 28: Make and Interpret Histograms																											✓	✓	
Unit 29: Make and Interpret Box Plots																											✓	✓	

Greatest Common Factor and Least Common Multiple

Standard

The Number System

Compute fluently with multi-digit numbers and find common factors and multiples.

6.NS.4. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express $36 + 8$ as $4(9 + 2)$.

Model the Skill

- ◆ Ask: *What are the factors of 12?* (1, 2, 3, 4, 6, 12) *What are the factors of 8?* (1, 2, 4, 8) List the factors on the board.
- ◆ Ask: *What are the common factors of 12 and 8?* (1, 2, 4) *If the common factors are 1, 2, and 4, what is the greatest common factor of 12 and 8?* (4)
- ◆ Ask: *What are six multiples of 12?* (12, 24, 36, 48, 60, 72) *What are six multiples of 8?* (8, 16, 24, 32, 40, 48) List the multiples on the board.
- ◆ Ask: *What is the least common multiple of 12 and 8?* (24)
- ◆ Repeat with other number pairs. Then assign students the appropriate practice pages to support their understanding of the skill.

Assess the Skill

Use the following problems to pre-/post-assess students' understanding of the skill.

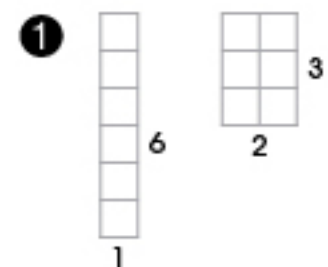
GCF of 5 and 10: _____

LCM of 5 and 10: _____

GCF of 6 and 9: _____

LCM of 6 and 9: _____

List all the factors of each number.



Factors of 6: _____



Factors of 12: _____

③ What are the common factors of 6 and 12?

④ What is the greatest common factor (GCF) of 6 and 12?

⑤ Factors of 15: _____
Factors of 20: _____

⑥ What is the GCF of 15 and 20?

Write the first 5 multiples of each number.

⑦

x	1	2	3	4	5
3	3	6	___	___	___

Multiples of 3: _____

⑧

x	1	2	3	4	5
5	5	10	___	___	___

Multiples of 5: _____

⑨ What is the least common multiple (LCM) of 3 and 5? _____

Think: The least number other than 0 that is a multiple of each.

⑩ Multiples of 4: _____
Multiples of 6: _____

⑪ What is the LCM of 4 and 6?

★ 50 is a multiple of what number? Draw a circle around that number.