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Meeting Standards

Introduction

Approaching Math Content— Today's Standards

The Common Core State Standards address several important goals in education:

- to prepare students for college and careers
- to develop critical-thinking and analytical skills students need for success
- to help teachers measure student progress and achievement throughout the year

The Common Core Mathematics Standards seek to provide teachers and students with focused mathematics instruction. The standards are designed to deepen students' understanding as they progress through grade levels and topics.

Mathematics is a subject in which concepts build in a progression. A strong foundation of basic concepts must be laid, beginning in the early grades. The Common Core State Standards recognize this learning sequence. Mathematical thinking is divided into several broad categories, referred to as "domains." Elementary grades address the same general domains, with specific standards for student understanding and achievement within each domain. For grade 6, these domains include Ratios & Proportional Relationships, The Number System, Expressions & Equations, Geometry, and Statistics & Probability.

It is important for students to understand the role mathematics plays in everyday life. The Common Core Mathematics Standards encourage students to apply their mathematical knowledge to real-world problems and situations. Teachers, in turn, assess student understanding and mastery of concepts by asking them to explain their thinking and justify their answers. Word problems provide students with opportunities for the practical application of mathematical concepts.

This book presents word problems in a realistic setting. Students dig into the content of each "scenario" as they apply math concepts to solve multiple problems. Each unit is designed to encourage students to read for understanding, revisit content on a variety of levels, and use information as a tool for solving more complex problems.

Establishing Mathematical Practices

The Common Core Standards for Mathematical Practice (SMP) describe practices students can implement to help them engage with mathematical content. As your students work through the activities in this book, encourage them to develop these habits as they practice and develop problem-solving skills.

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

These practices help students understand core mathematical concepts so they can apply a variety of strategies for successful problem solving. As students learn underlying principles, they will be able to . . .

- consider similar problems.
- represent problems in ways that make sense.
- justify conclusions and explain their reasoning.
- apply mathematics to practical situations.
- use technology to work with mathematics.
- explain concepts to other students.
- consider a broad overview of a problem.
- deviate from a known procedure to use an appropriate shortcut.
- reason and explain why a mathematical statement is true.
- explain and apply appropriate mathematical rules.

Help your students and their families find success. Work with administrators, other teachers, and parents to plan and hold math-coaching nights for parents. The tips on page 6 may be helpful for parents as they work with students at home. Consider photocopying the page to send home in students' homework folders to aid with math assignments. Additionally, prepare a visual aid to help parents understand students' work in math. Share this aid with parents at back-to-school night or on other occasions when they visit the classroom.

How to Use This Book

This book contains several mathematical problem-solving units. Each unit gives students the opportunity to practice and develop one or more essential mathematical skills. Units are grouped by domains—although within a unit, more than one domain may be addressed. Within each domain, math concepts build on one another, forming a foundation for student learning and understanding. In addition to the Common Core Mathematics Standards covered in this book, the passages that accompany each unit meet one or more English Language Arts Standards as they provide practice reading appropriate literature and nonfiction text.

About the Units

Each unit is three pages in length. Depending on the needs of your students, you may wish to introduce units in small-group or whole-class settings using a guided-to-independent approach. Reading the passages and responding to activities in collaborative groups allows students to share and support their problem-solving results. As an alternative, students can work independently and compare responses with others. Whichever method you choose, the reading and math activities will provide students with the tools they need to build mathematical knowledge for today's more rigorous math standards.

Page 1

All units begin with a reading passage that presents a mathematical problem or situation. Engaging nonfiction and fiction passages are included in the book. Passages are age-level appropriate and fall within a range of 925 to 1070 on the Lexile scale.

Each passage incorporates information to be used for solving practical math problems. They also allow students to experience a variety of genres and make meaningful connections between math and reading.



How to Use This Book (cont.)

About the Units (cont.)



The second page of each unit introduces problem-solving tasks. Space is provided for students to draw pictures, work out their answers, write equations, show their work, and explain their thinking. Students are asked to use the unit passage to respond to reading content and investigate the text in order to find solutions to the problems on the page.

The questions require students to look back at the text for clues and information that relates to each question. They must then interpret this information in a way that helps them solve each task on the page. In doing so, students learn to support their responses with concrete evidence.



Page 3

The *Engage* option extends the mathematical situation with questions that allow students to look back at the reading passage and use critical-thinking skills.

The activities in this section strengthen students' comprehension skills by posing questions or situations for which further reflection of the text is required. Questions may be open-ended and require higher-level thinking skills and supported responses. Activities in this section focus on a combination of reading and math skills.

While students can respond independently to the activities on this page, you may wish to have them discuss their answers with a partner, in a small group, or with the entire class. This method can also provide closure to the unit.

ME	Ratios & Proportional Relationship
Engage Directions: Practice working	with ratios by solving the problems below.
Find the amount of each ingredient if find the amounts.	you divided the recipe in half. Use visual models to
blow would use company the	of the mains is question 1 to the smallest of the second
How would you compare the amount recipe? Write this as a ratio. 	of the recipe in question 1 to the amount of the original films for the harvest party, how would they change
How would you compare the amount recipe? Write this as a ratio. 	of the recipe in question 1 to the amount of the original fins for the harvest party, how would they change amount of each ingredient needed?
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How would you compare the amount recipe? With this as a ratio. "" Histobelia and Kaltyn needed 36 mut the recipe? "" Wat ratio could they use to find the Express the amount of dried cramber How does knowledge of ratios help p	I to the recipe in question 1 to the amount of the original films for the harvest party, how would they change amount of each ingredient needed?
) How would you compare the amount recipe? Write this as a ratio.) It is abelia and Kaltyn needed 36 mu the recipe? What ratio could they use to find the Express the amount of dried cranteer How does knowledge of ratios help p	e of the recipe in question 1 to the amount of the original films for the harvest party, how would they change amount of each ingredient needed?

DATE

NAME

Harvest Party

"What should I take to the harvest party tomorrow?" Isabella turned so she was walking almost sideways as she talked to Kaitlyn.

Kaitlyn dodged the weight of Isabella's backpack as it threatened to slide from her shoulder. "It's the holiday season, so how about something with cranberries?"

"Cranberry muffins!" cried Isabella.

"What?" Kaitlyn stopped abruptly, causing Isabella to stumble.

Isabella yanked on her friend's sleeve. "This is the perfect time! Call home while we walk to my house. We'll do our homework while the muffins are in the oven."

"Does the recipe make enough that we both could contribute muffins to the party?" Kaitlyn pulled her phone out of her jeans pocket.

Nodding, Isabella gave a dramatic sigh as she waited for Kaitlyn to get permission for the baking project. Finally, they reached Isabella's house and scampered to the kitchen to get started with their baking.

Orange-Cranberry Muffins

- 1 egg
- $\frac{1}{2}$ cup sugar
- $\frac{1}{2}$ cup milk 2 tsp. baking powder
- $\frac{1}{4}$ cup oil $\frac{1}{2}$ tsp. salt
- $1\frac{1}{2}$ cups flour $\frac{1}{3}$ cup dried cranberries

Stir together egg, milk, oil, orange juice, and zest. In a separate bowl, stir together flour, sugar, baking powder, and salt. Add dry ingredients to liquid ingredients. Stir to blend. Stir in cranberries and chocolate chips. Fill muffin cups $\frac{1}{2}$ full (makes 12). Bake at 400° for 20–25 minutes.



• 1 T. orange juice

(optional)

• 1 T. orange zest (optional)

• $\frac{1}{4}$ cup mini chocolate chips

- A ratio describes the relationship between two quantities.
 - A ratio *a*:*b* with $b \neq 0$ can be expressed as $\frac{a}{b}$.

THINK ABOUT THE MATH

- A ratio may express the amounts of a part to one whole.
- 1 whole egg is equal to 3 tablespoons liquid.
- There are 4 tablespoons in onequarter cup of liquid.
- Use a visual model to help find a ratio.

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Ratios & Proportional Relationships

Harvest Party

NAME _____ DATE problem Solving Directions: Use page 13 to answer these questions. First, skim the paragraphs to find information that might help you solve the problem. Remember to show your thinking as you do the math! n de la construction de la constru 1 Write the ratio of sugar to flour as a fraction in lowest terms. 2 How much total liquid is in the recipe? To the nearest whole cup, what is the total amount of dry ingredients in the recipe? (Do not include optional ingredients.) 3 Write the ratio of liquids to dry ingredients. Express this ratio in words. How do you think this ratio affects the finished product (muffins)? What do you think would happen if the ratio of sugar to flour was different?

Harvest Party

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N	A	M	E

DATE

Engage Directions: Practice working with ratios by solving the problems below.

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Find the amount of each ingredient if you divided the recipe in half. Use visual models to find the amounts.

2 How would you compare the amount of the recipe in question 1 to the amount of the original recipe? Write this as a ratio.

If Isabella and Kaitlyn needed 36 muffins for the harvest party, how would they change the recipe?

What ratio could they use to find the amount of each ingredient needed?

Express the amount of dried cranberries they would need if they made 36 muffins.

5 How does knowledge of ratios help people cook tasty things to eat?