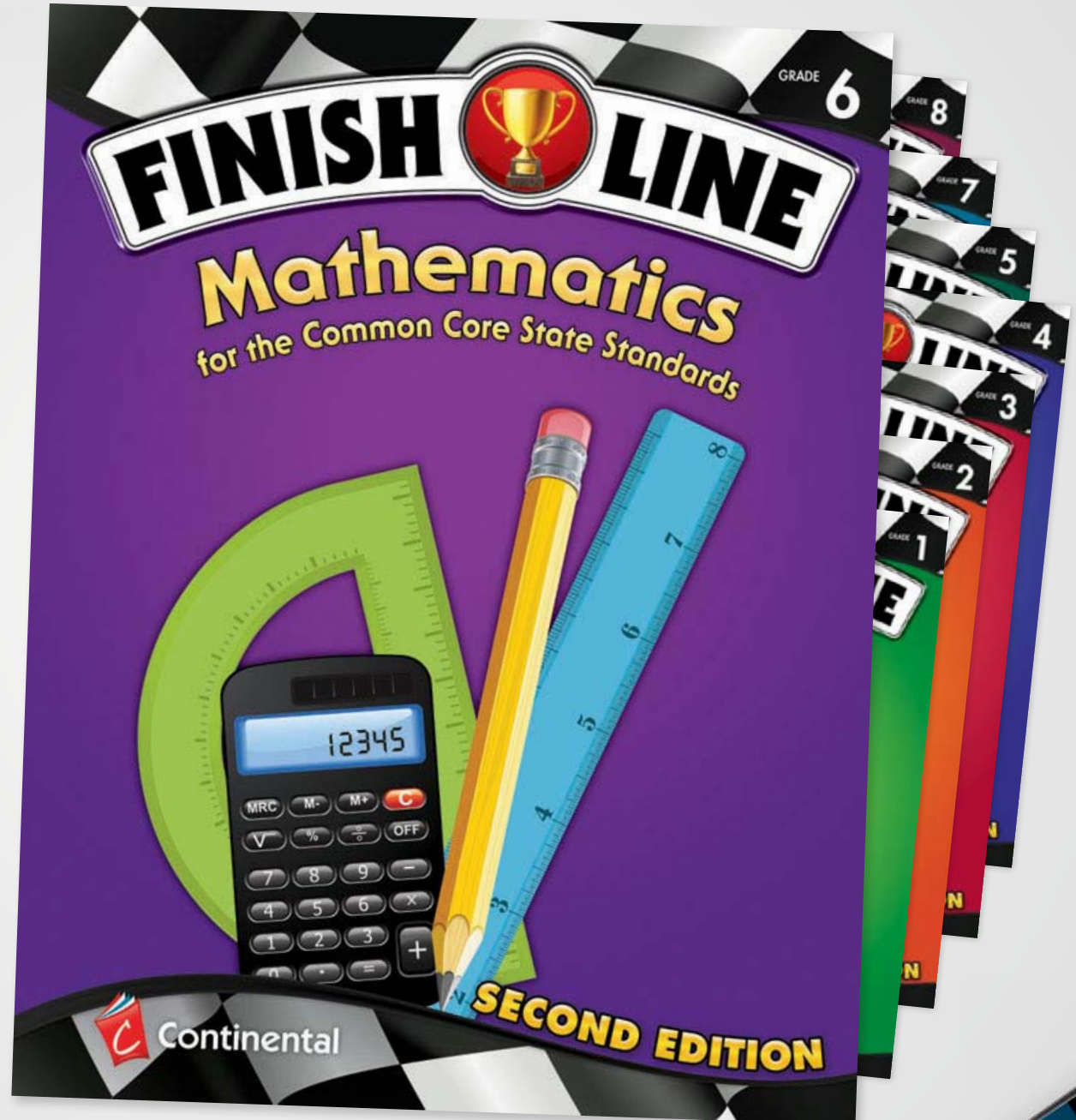


- Now for grades 1–8
- New Spanish edition
- New Student Answer Booklets



Continental
inspire every learner



The *Finish Line*/Common Core Connection

The Common Core states that math mastery is accompanied by the development of the NCTM process skills found in the Standards for Mathematical Practice. *Finish Line*'s instructional lessons are modeled after this approach.

- Communication
- Connections
- Representation
- Reasoning and proof
- Problem solving



Grades 1–8



Standards coverage

Organized by the domains of the Common Core

Unit 6 Equations and Inequalities	103
6.EE.5 Lesson 1 Equations and Inequalities.....	104
6.EE.6 Lesson 2 Writing Equations.....	108

Table of Contents

Introduction.....	5
Unit 1 Ratios and Percents	7
6.RP.1 Lesson 1 Ratios.....	8
6.RP.3.a Lesson 2 Equivalent Ratios.....	12
6.RP.2, 6.RP.3.b Lesson 3 Rates.....	16
6.RP.3.d Lesson 4 Measurement Conversions.....	20
6.RP.3.c Lesson 5 Percents.....	24
Review Ratios and Percents.....	28
Unit 2 Operations	31
6.NS.2 Lesson 1 Dividing Whole Numbers.....	32
6.NS.1 Lesson 2 Dividing Fractions.....	36
6.NS.3 Lesson 3 Adding and Subtracting Decimals.....	40
6.NS.3 Lesson 4 Multiplying and Dividing Decimals.....	44
Review Operations.....	48
Unit 3 Factors and Multiples	51
6.NS.4 Lesson 1 Greatest Common Factors.....	52
6.NS.4 Lesson 2 Least Common Multiples.....	56
Review Factors and Multiples.....	60
Unit 4 Positive and Negative Numbers	63
6.NS.5 Lesson 1 Integers.....	64
6.NS.6 a, c Lesson 2 Rational Numbers on Number Lines.....	68
6.NS.6 b, c; 6.NS.8 Lesson 3 Coordinate Graphing.....	72
6.NS.7 a, b Lesson 4 Comparing Integers.....	7
6.NS.7 c, d Lesson 5 Absolute Value.....	



Same *Finish Line* lesson format you know

Page #1: Instruction

Sidebar include relevant info that expands on the lesson topic

LESSON 1 **Dividing Whole Numbers** 6.NS.2

Division is the opposite of multiplication. A **quotient** is the answer to a division problem.

A warehouse receives 18 boxes. Each weighs the same amount. The total weight of the boxes is 810 pounds. What is the weight of each box?

Divide 810 by 18.

$$\begin{array}{r} 45 \leftarrow \text{Quotient} \\ 18 \overline{)810} \\ \underline{72} \\ 90 \\ \underline{90} \\ 0 \end{array}$$

$810 \div 18 = 45$ Each box weighs 45 pounds.

Some division problems divide two whole numbers that result in a **decimal quotient**. To solve these, divide the numbers and add a decimal point to the dividend and in the quotient directly above the decimal point in the dividend. Add 0's after the decimal in the dividend and bring them down to the remainder as needed until the remainder is 0.

Four friends buy bus tickets. They pay a total of \$198. Each bus ticket costs the same. What is the cost of each ticket?

Divide 198 by 4.

$$\begin{array}{r} 49.5 \\ 4 \overline{)198.0} \\ \underline{16} \\ 38 \\ \underline{36} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

0 Remainder is 0.

The **dividend** is the number being divided. The **divisor** is the number that divides.


Divisor
↓
 $8 \overline{)360}$ ← Dividend

Decimals are used when a quotient has a remainder. The decimal part of the quotient represents the value of the remainder.

Adding 0's to the right of a decimal point does not change the value of the number.

$6 = 6.0 = 6.00$

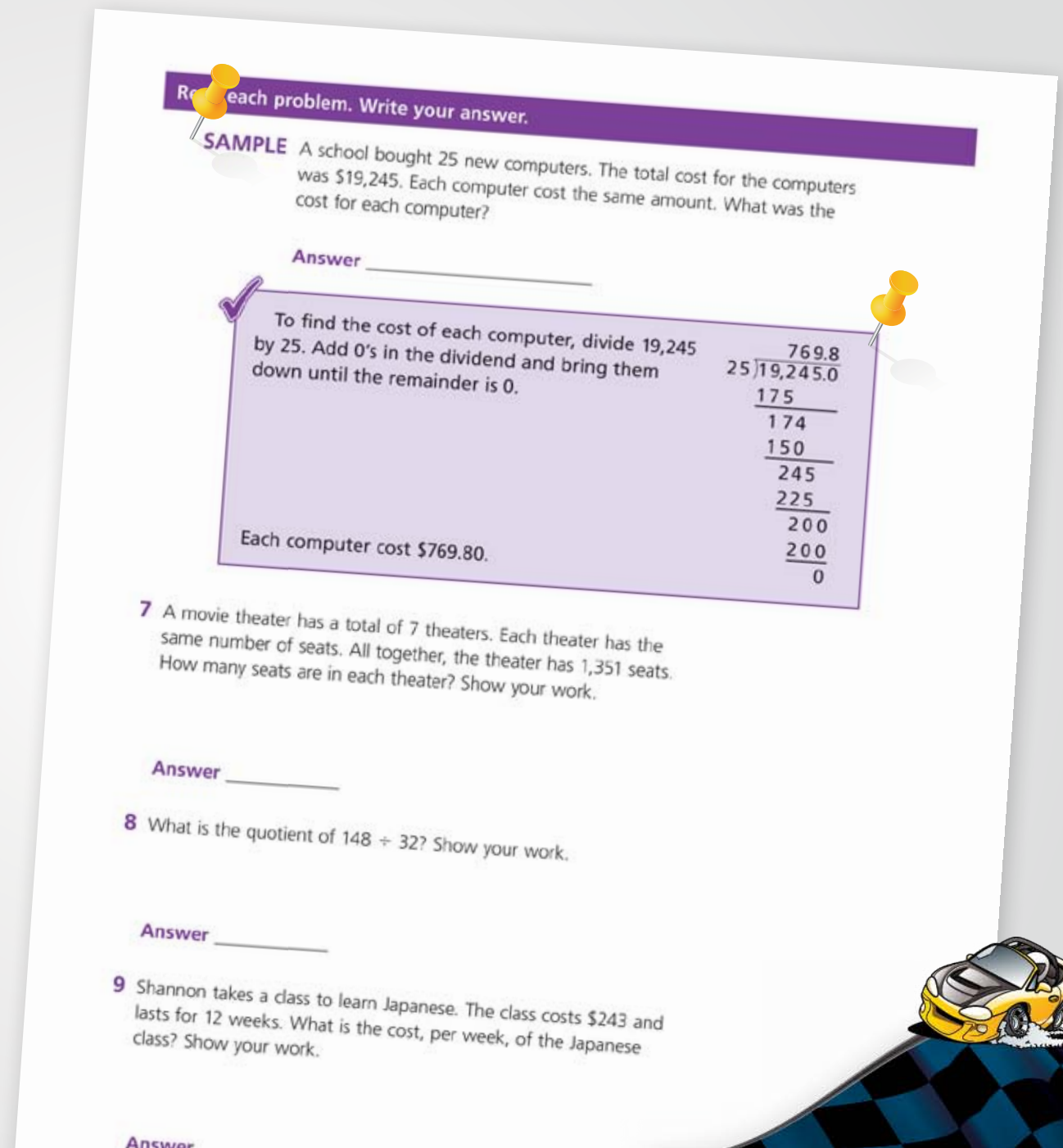
Be sure to line up the decimal point in the quotient with the decimal point in the dividend.



Same *Finish Line* lesson format you know

Page #3: Sample begins short-response section

Explanation of how to find the correct answer



Same *Finish Line* lesson format you know

Page # 4:
Extended-response
section

Tips and reminders

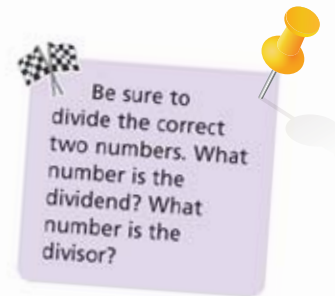
Read the problem. Write your answer to each part.

10 A market research company plans to survey 4,000 people about their thoughts on an upcoming election. The research company has 16 employees. Each employee will survey the same number of people.

Part A How many people will each employee survey? Show your work.

Answer _____

Part B The total amount of money each of the 16 employees earns for doing the survey is \$3,400. How much money do the employees earn for each person they survey? Show your work.

 Be sure to divide the correct two numbers. What number is the dividend? What number is the divisor?

Answer _____



Process skills

Communication

Communication (explanations, justifications, etc.) of mathematical ideas and of reasoning (may involve modeling)

Read each problem. Write your answer.

SAMPLE A photographer charges \$12 for a set of 20 pictures. Each picture costs the same amount. At this rate, how many pictures cost \$30?

Answer _____

✓ First find the unit rate, in dollars per picture, charged by the photographer: $\frac{\text{dollars}}{\text{picture}} = \frac{12}{20} = 0.6$ or \$0.60 per picture. To find the number of pictures that would cost \$30, divide this amount by the unit rate: $\$30 \div \$0.60 = 50$. So, 50 pictures would cost \$30.

6 One serving of vegetables has 60 calories. Write the unit rate as a ratio. Then write an equivalent ratio.

Answer _____

7 A printer outputs 75 pages in 5 minutes. How many pages does the printer output in 1 minute?

Answer _____

8 When resting, Tara's heart beats 68 times a minute. Explain why this is an example of a unit rate.

9 Nina jumps 225 times in 3 minutes. At this rate, how many times can she jump in 5 minutes?

Answer _____



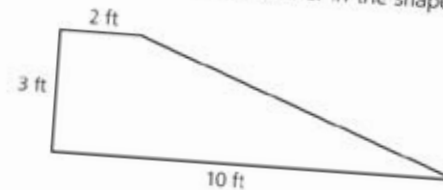
Process skills

Connections


Making connections between mathematical ideas (looking for structure, identifying patterns, applying rules to specific situations and deriving rules from specific examples) and/or ideas and real-life situations

Read the problem. Write your answer to each part.

- 9 Chantal cut a piece of fabric for a banner in the shape shown below.



- Part A** What is the area of the banner? Show your work.

 What are the height and base lengths of this figure?



Answer _____

- Part B** Explain how you could use exactly one formula and how you could use more than one formula to find the area of this banner.



Process skills

Representation

Representation of mathematical ideas (modeling with drawing, diagrams, graphs, words, (e.g. writing a representative word problem for a specific equation), equations

Read the problem. Write your answer to each part.

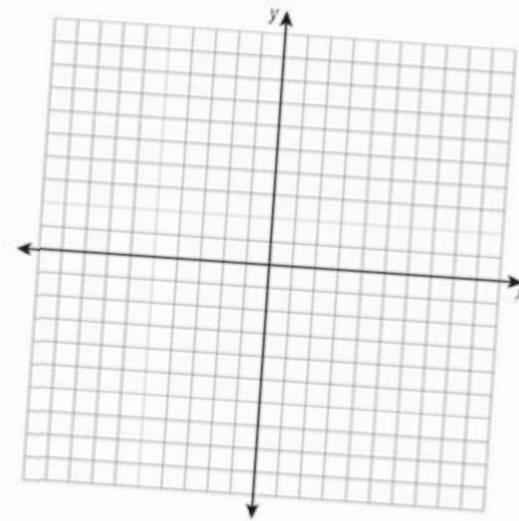
5 Alea made the function table below.

x	y
3	18
5	30
8	48
10	60

Part A Describe in words the relationship between x and y .
Then write an equation to model this function.



Part B On the coordinate plane below, draw the line represented by this function.



Be sure to label each axis with appropriate numbers based on the numbers in the table.



Process skills

Reasoning and proof

Reasoning and proof (this is the primary higher-order thinking skill) to draw conclusions, make predictions, and support them

Read the problem. Write your answer to each part.


10 This table shows the number of protons, neutrons, and electrons in some chemical elements.

Element	Protons	Neutrons	Electrons
Gold	79	118	79
Silver	47	61	47
Iron	26	30	26

Part A What is the ratio of protons and electrons in gold to total protons in gold, silver, and iron?

Answer _____

Part B Is the ratio of protons to electrons the same or different for each of these elements? Explain how you know.

 What operation can you use to help find the total protons in all three of these elements?



Process skills

Problem solving

Problem solving to apply skills (including higher-order reasoning) to new situations, both abstract and real life, generally involving making choices of strategies, etc.

Read each problem. Write your answer to each part.

15 A horse can gallop at a rate of 30 miles per hour.

Part A How many yards per minute is this?

Answer _____

Part B At this rate, how long will it take the horse to run a race of 1,100 yards?

Answer _____


16 Wendy works 35 hours in 5 days.

Part A Write a unit rate to describe the number of hours Wendy works.

Answer _____

Part B Write an equivalent ratio for the number of hours Wendy works.

Answer _____

17  A soup recipe calls for 6 cups of broth. A chef will triple this recipe. He wants to know how many quarts of broth he will need.

Part A How many quarts of broth will the chef need?

Answer _____

Part B Explain how you solved this problem.



Features

Contents

Introduction..... 3

Suggestions for Use..... 8

Additional Materials for Review..... 9

Scoring Rubric for Constructed-Response Items..... 10

Scoring Rubric for Extended-Response Items..... 10

Answer Key

 Unit 1..... 11

 Unit 2..... 13

 Unit 3..... 14

 Unit 4..... 15

 Unit 5..... 17

 Unit 6..... 18

 Unit 7..... 20

 Unit 8..... 21

 Unit 9..... 23

Practice Test..... 25

Reproducible Answer Sheets for Practice Test..... 27

Reproducible Answer Sheet for Multiple-Choice Items with
 Answer Key for Practice Test..... 31

Common Core State Standards for Mathematics, Grade 6..... 32

Reproducible Skill Analysis Chart for Practice Test..... 37

Reproducible Cut-Out Tools..... 38

Acknowledgments



Features

Common Core State Standards for Mathematics, Grade 6



Ratios and Proportional Relationships

6.RP

Understand ratio concepts and use ratio reasoning to solve problems.

1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."
2. Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger."
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. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
 - b. Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?
 - c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means $30/100$ times the quantity); solve problems involving finding the whole, given a part and the percent.
 - d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

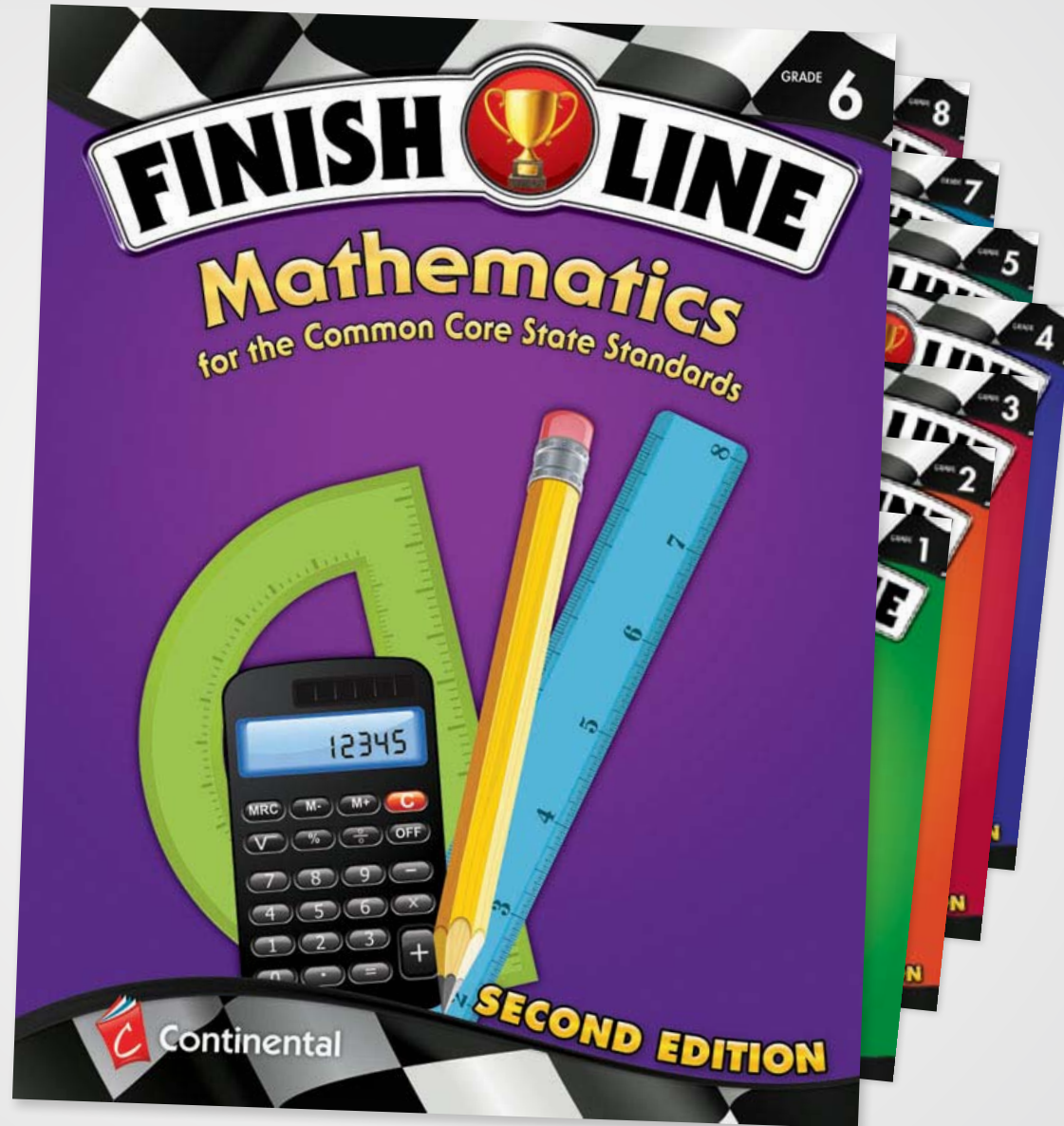


The Number System

6.NS

Apply and extend previous understanding of division of whole numbers to divide whole numbers.





Continental
inspire every learner

