

## Introduction to *Fifth Grade Everyday Mathematics*

Welcome to *Fifth Grade Everyday Mathematics*®. This curriculum was developed by the University of Chicago School Mathematics Project to offer students a broad background in mathematics.

The features of the program are described below to help familiarize you with the structure and expectations of *Everyday Mathematics*.

**A problem-solving approach based on everyday situations** Students learn basic math skills in a context that is meaningful by connecting their own knowledge and experience with mathematical concepts.

**Frequent practice of basic skills** Students practice basic skills in a variety of engaging ways. They complete mental math and fluency exercises on a daily basis, and they play games specifically designed to help them develop and practice basic skills.

**An instructional approach that revisits concepts regularly** Lessons are arranged to take advantage of previously learned concepts and skills and to build on them throughout the year.

### **A curriculum that explores mathematical content beyond basic arithmetic**

Mathematics standards in the United States and around the world tell us that basic arithmetic skills are only the beginning of the mathematical knowledge students need to become mathematically proficient adults and critical thinkers. *Fifth Grade Everyday Mathematics* develops concepts and skills in topics covering a broad range of mathematics, including operations and algebraic thinking, number and operations in base ten, number and operations with fractions, measurement and data, and geometry.

*Everyday Mathematics* provides you with ample opportunities to monitor your child's progress and participate in your child's mathematical experiences. Throughout the year you will receive Family Letters to keep you informed of the mathematical content your child is studying in each unit. These letters include helpful information, such as a vocabulary list, Do-Anytime Activities suggested for you and your child, and answer guides to selected Home Link (homework) activities.

**Please keep this Family Letter for reference as your child works through Unit 1.**

Following the recommendations of the Common Core State Standards, *Fifth Grade Everyday Mathematics* emphasizes the following content:

**Operations and Algebraic Thinking** Understand and evaluate numerical expressions with grouping symbols (parentheses, brackets, and braces); write expressions that represent real-world situations; analyze patterns and describe relationships between numbers.

**Number and Operations in Base 10** Understand the meanings, uses, and representations of numbers in our base-10 place-value system; understand and perform operations with multidigit numbers and decimals.

**Number and Operations—Fractions** Add and subtract fractions with unlike denominators; multiply fractions and mixed numbers; divide whole numbers by unit fractions and unit fractions by whole numbers; solve real-world problems that involve fractions and computation with fractions.

**Measurement and Data** Create and interpret line plots to represent fractional data; convert between measurement units and use conversions to solve real-world problems; understand concepts of volume; find the volume of rectangular prisms.

**Geometry** Use and understand a coordinate grid to graph and solve real-world and mathematical problems; understand categories and subcategories of shapes; classify 2-dimensional shapes based on their properties.

## Unit 1: Area and Volume

Students begin Unit 1 by exploring the Grade 5 *Student Reference Book*. They review how to interpret parentheses in mathematical expressions, and they review area and develop strategies for finding the area of rectangles in which the length of one side is a fraction. Students then begin to explore the concept of volume. They measure how much a container can hold by packing it with small items like beans or popcorn kernels, and then they move to a more standard unit: the unit cube. Students learn to measure volume in increasingly sophisticated ways. They start by counting individual cubes. Then they work with layers of cubes. Finally, students discover two mathematical formulas for volume. They use their understanding of volume measurement to solve real-world problems about the volume of boxes, cases, and other containers.

As your child works through Unit 1, Home Links will provide many opportunities to explore the volume of everyday objects at home. While Unit 1 lessons focus on the volume of rectangular prisms (boxes), it is important to remember that all 3-dimensional objects have volume.

## Vocabulary

Important terms in Unit 1:

**area** The amount of surface inside a 2-dimensional figure. Area is often measured in *square units*, such as square inches or square centimeters, or other units, such as acres.

**cubic unit** A unit such as a cubic centimeter or a cubic foot used in measuring *volume*.

## Unit 1: Family Letter, *continued*

**expression** A mathematical phrase made up of numbers, operation symbols, and other symbols. An expression does *not* include relation symbols ( $=$ ,  $>$ ,  $<$ , and so on).  $3 + 4$ ;  $5 * (7 - 3)$ ; and  $6 * 9 + 2$  are all expressions.

**grouping symbols** Symbols such as parentheses  $()$ , brackets  $[\ ]$ , and braces  $\{ \}$  that determine the order in which operations in an expression are to be done.

**rectangular prism** A prism with rectangular bases. A shoebox is a rectangular prism.

**square unit** A unit such as square centimeter or square foot used in measuring *area*.

**3-dimensional (3-D)** Having *volume*.

**volume** A measure of how much space something takes up. Volume is often measured in *cubic units*, such as  $\text{cm}^3$ , or other units, such as gallons.

## Do-Anytime Activities

To help your child develop concepts about volume, try these activities:

1. Explore various containers around your home. Ask questions like these: *Which container holds the most? How can you tell?*
2. Find a box and ask your child to show you how to use a formula to calculate its volume.

### Building Skills through Games

In Unit 1 your child will practice operations, computation, and geometric measurement skills by playing the games listed here. Detailed instructions for each game are in the *Student Reference Book*. Many of them can be played at home with a regular deck of playing cards. Just remove the face cards and use the ace to represent 1.

**Baseball Multiplication** See *Student Reference Book*, page 292. Two teams of one or more players need 4 each of number cards 1–10, counters, a game mat, and a calculator to play. *Baseball Multiplication* builds fluency with multiplication facts and strengthens mental arithmetic skills.

**Buzz** See *Student Reference Book*, page 294. This is a game for five to ten players. *Buzz* provides practice finding multiples of a number and common multiples of two numbers.

**Name That Number** See *Student Reference Book*, page 315. Two or three players need a deck of number cards to play. *Name That Number* provides practice with computation and strengthens skills related to number properties.

**Prism Pile-Up** See *Student Reference Book*, page 319. Two players need a set of *Prism Pile-Up* cards to play. *Prism Pile-Up* provides practice calculating and comparing the volumes of rectangular prisms.

## As You Help Your Child with Homework

As your child brings assignments home, you might want to go over the instructions together, clarifying them as necessary. The answers listed below will guide you through this unit's Home Links.

### Home Link 1-2

1.  $8\frac{4}{5}$    2. 13   3. 3   4. 7   5. 10   6. 6

### Home Link 1-3

1.  $3\text{ cm}^2$    2.  $7\frac{1}{2}\text{ cm}^2$   
3. 3   4. 60   5.  $1\frac{1}{2}$    6. 6

### Home Link 1-4

1. 4   2. 9   3. 16   4a. 24   4b.  $1\frac{1}{2}$   
5a. 60   5b. 3   6a. 1   6b. 4,000

### Home Link 1-5

- 1-3. Answers vary.   4. 28   5.  $23\frac{1}{3}$

### Home Link 1-6

1. bar of soap; baseball; empty crayon box;  
bucket; swimming pool; cereal box; kitchen sink  
3. 350   4. 230   5. 604   6. 0

### Home Link 1-7

1. 140; 140   2. 216; 216   3. 120; 120  
4. 88   5. 74   6. 240   7. 20

### Home Link 1-8

- 1a. 96   1b. No.   2a. 108   2b. Yes.  
3a. 105   3b. Yes.   4.  $14 + 2 = 6 + 2 * (3 + 2)$   
5.  $(16 - 5) * 4 = 22 * 2$   
6.  $16 * 10 = (100 + 220) \div 2$   
7.  $3 * (56 - 4) = 128 + 28$

### Home Link 1-9

1. **Set 1:**  $40\text{ units}^3$ ;  $40\text{ units}^3$ ;  $36\text{ units}^3$   
2. **Set 2:**  $16\text{ cm}^3$ ;  $18\text{ cm}^3$ ;  $18\text{ cm}^3$   
3.  $9\text{ cm}^2$    4.  $17\frac{1}{2}\text{ in.}^2$

### Home Link 1-10

1. cubic meters   2. cubic inches  
3. cubic miles   4. cubic meters  
5. Sample answer: The unit that is the longer length is the larger volume unit, because the volume unit is a cube that has the length, width, and height of that length unit.  
6-8. Answers vary.   9. 80   10. 100

### Home Link 1-11

1. 128; Sample answer: a microphone  
2. 270; Sample answers: a couch, two stairs  
3. 122; Sample answers: a cup, a vase

### Home Link 1-12

**Round 1** 25; 50; Sample answer:  
 $20 + 20 + 5 + 5 = 50$

**Round 2** 42; 36; Sample answer:  $2 * 7 * 3 = 42$

**Round 3** 48; 40; Sample answer:  $6 * 4 * 2 = 48$