

STUDY LINK
1.1

Unit 1: Family Letter



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 described below are 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 making connections between their own knowledge and experience and mathematics concepts.

Frequent practice of basic skills Students practice basic skills in a variety of engaging ways. In addition to completing daily review exercises covering a variety of topics and working with multiplication and division fact families in different formats, students play games that are specifically designed to develop basic skills.

An instructional approach that revisits concepts regularly Lessons are designed 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 around the world indicate that basic arithmetic skills are only the beginning of the mathematical knowledge students will need as they develop critical-thinking skills. In addition to basic arithmetic, *Everyday Mathematics* develops concepts and skills in the following topics—number and numeration; operations and computation; data and chance; geometry; measurement and reference frames; and patterns, functions, and algebra.

Everyday Mathematics provides you with ample opportunities to monitor your child's progress and to 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. Each letter includes a vocabulary list, suggested Do-Anytime Activities for you and your child, and an answer guide to selected Study Link (homework) activities.

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



Fifth Grade Everyday Mathematics **emphasizes the following content:**

Number and Numeration Understand the meanings, uses, and representations of numbers; equivalent names for numbers, and common numerical relations.

Operations and Computation Make reasonable estimates and accurate computations; understand the meanings of operations.

Data and Chance Select and create appropriate graphical representations of collected or given data; analyze and interpret data; understand and apply basic concepts of probability.

Geometry Investigate characteristics and properties of 2- and 3-dimensional shapes; apply transformations and symmetry in geometric situations.

Measurement and Reference Frames Understand the systems and processes of measurement; use appropriate techniques, tools, units, and formulas in making measurements; use and understand reference frames.

Patterns, Functions, and Algebra Understand patterns and functions; use algebraic notation to represent and analyze situations and structures.

Unit 1: Number Theory

In Unit 1, students study properties of whole numbers by building on their prior work with multiplication and division of whole numbers.

Students will collect examples of arrays to form a class Arrays Museum. To practice using arrays with your child at home, use any small objects, such as beans, macaroni, or pennies.

Building Skills through Games

In Unit 1, your child will practice operations and computation skills by playing the following games.

Detailed instructions for each game are in the *Student Reference Book*.

Factor Bingo This game involves 2 to 4 players and requires a deck of number cards with 4 each of the numbers 2–9, a drawn or folded 5-by-5 grid and 12 pennies or counters for each player.

The goal of the game is to practice the skill of recognizing factors.

Factor Captor See *Student Reference Book*, page 306. This is a game for 2 players. Materials needed include a *Factor Captor Grid*, 48 counters the size of a penny, scratch paper, and a calculator. The

goal of the game is to strengthen the skill of finding the factors of a number.

Multiplication Top-It See *Student Reference Book*, page 334. This game requires a deck of cards with 4 each of the numbers 1–10 and can be played by 2–4 players. *Multiplication Top-It* is used to practice the basic multiplication facts.

Name That Number See *Student Reference Book*, page 325. This game involves 2 or 3 players and requires a complete deck of number cards. *Name That Number* provides practice with computation and strengthens skills related to number properties.

Vocabulary

Important terms in Unit 1:

composite number A counting number greater than 1 that has more than two *factors*. For example, 4 is a composite number because it has three factors: 1, 2, and 4.

divisible by If the larger of two counting numbers can be divided by the smaller with no remainder, then the larger is divisible by the smaller. For example, 28 is divisible by 7 because $28 \div 7 = 4$ with no remainder.

exponent The small, raised number in exponential notation that tells how many times the base is used as a *factor*.

Example:

$$5^2 \leftarrow \text{exponent} \quad 5^2 = 5 * 5 = 25.$$

$$10^3 \leftarrow \text{exponent} \quad 10^3 = 10 * 10 * 10 = 1,000.$$

$$2^4 \leftarrow \text{exponent} \quad 2^4 = 2 * 2 * 2 * 2 = 16.$$

factor One of two or more numbers that are multiplied to give a *product*.

$$\begin{array}{c} 3 * 5 = 15 \\ \swarrow \quad \searrow \\ \text{Factors} \quad \text{Product} \end{array}$$

$$\begin{array}{c} 15 * 1 = 15 \\ \swarrow \quad \searrow \\ \text{Factors} \quad \text{Product} \end{array}$$

factor rainbow A way to show factor pairs in a list of all the factors of a number. A factor rainbow can be used to check whether a list of factors is correct.

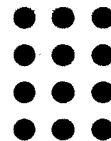
Factor rainbow for 16: 1 2 4 8 16

number model A number sentence or expression that models a number story or situation. For example, a number model for the array below is $4 * 3 = 12$.

prime number A whole number that has exactly two factors: itself and 1. For example, 5 is a prime number because its only factors are 5 and 1.

product The result of multiplying two or more numbers, called *factors*.

rectangular array A rectangular arrangement of objects in rows and columns such that each row has the same number of objects and each column has the same number of objects.



square number A number that is the product of a counting number multiplied by itself. For example, 25 is a square number, because $25 = 5 * 5$.

As You Help Your Child with Homework

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

Study Link 1•2

1. $\begin{array}{cccccccc} \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet \end{array}$ 2. $1 * 14 = 14; 14 * 1 = 14$
 $2 * 7 = 14; 7 * 2 = 14$
 $5 * 1 = 5; 1 * 5 = 5$
3. $1 * 18 = 18; 18 * 1 = 18; 2 * 9 = 18;$
 $9 * 2 = 18; 3 * 6 = 18; 6 * 3 = 18$
4. 795 5. 271 6. 98 7. 984 8. 5

Study Link 1•3

1. $\begin{array}{cccc} \bullet & \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet & \bullet \end{array}$ 24; 24
3. $\begin{array}{cccccccc} \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet \\ \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet & \bullet \end{array}$ 24; 3, 8; 24
6. $\bullet \bullet \bullet \bullet \bullet$ $1 * 5 = 5; 1, 5$
7. 4 8. 3,919 9. 2,763 10. 159

Study Link 1•4

1. The next number to try is 5, but 5 is already listed as a factor. Also, any factor greater than 5 would already be named because it would be paired with a factor less than 5.
2. 1, 5, 25 3. 1, 2, 4, 7, 14, 28
4. 1, 2, 3, 6, 7, 14, 21, 42
5. 1, 2, 4, 5, 10, 20, 25, 50, 100
6. 9,551 7. 48 8. 41,544 9. 441 10. 7

Study Link 1•5

1. Divisible by 2: 998,876; 5,890; 36,540; 1,098
 Divisible by 3: 36,540; 33,015; 1,098
 Divisible by 9: 36,540; 1,098
 Divisible by 5: 5,890; 36,540; 33,015
2. Divisible by 4: 998,876; 36,540
3. 1,750 4. 8,753 5. 250 6. 13

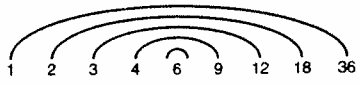
Study Link 1•6

1. 11; 1, 11; p
 2. 18; 1, 2, 3, 6, 9, 18; c
 3. 24; 1, 2, 3, 4, 6, 8, 12, 24; c
 4. 28; 1, 2, 4, 7, 14, 28; c
 5. 36; 1, 2, 3, 4, 6, 9, 12, 18, 36; c
 6. 49; 1, 7, 49; c
 7. 50; 1, 2, 5, 10, 25, 50; c
 8. 70; 1, 2, 5, 7, 10, 14, 35, 70; c
 9. 100; 1, 2, 4, 5, 10, 20, 25, 50, 100; c
 10. 9,822 11. 234 12. 21,448 13. 9 R3

Study Link 1•7

1. 16 2. 49 3. 6 4. 64 5. 25
6. 81 7. $4 * 9 = 36$ 8. $5 * 5 = 25$
9. a. $5 * 5 = 25$
 b. $5 * 5 = 25$ shows a square number because there are the same number of rows and columns. A square can be drawn around this array.

Study Link 1•8

1. 36: 1, 2, 3, 4, 6, 9, 12, 18, 36; $6^2 = 36$ The square root of 36 is 6.
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3. $11^2 = 121$; the square root of 121 is 11.
5. 6,219 6. 3,060 8. 8 R2 9. 42

Study Link 1•9

1. b. $7^2 = 7 * 7 = 49$
 c. $20^3 = 20 * 20 * 20 = 8,000$
2. a. 11^2 b. 9^3 c. 50^4
3. a. $2 * 3^3 * 5^2 = 2 * 3 * 3 * 3 * 5 * 5 = 1,350$
 b. $2^4 * 4^2 = 2 * 2 * 2 * 2 * 4 * 4 = 256$
4. a. $40 = 2 * 2 * 2 * 5 = 2^3 * 5$
 b. $90 = 2 * 3 * 3 * 5 = 2 * 3^2 * 5$
5. 5,041 6. 720 7. 50 R4 8. 99,140
9. 12 10. 47,668