



Introduction to Fifth Grade Everyday Mathematics

Welcome to *Fifth Grade Everyday Mathematics*. It is part of an elementary school mathematics curriculum developed by the University of Chicago School Mathematics Project. *Everyday Mathematics* offers students a broad background in mathematics.

Several 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

By making connections between their own knowledge and their experiences, both in school and outside of school, students learn basic math skills in meaningful contexts so that the mathematics becomes “real.”

Frequent practice of basic skills Instead of practice presented in a single, tedious drill format, students practice basic skills in a variety of more engaging ways. In addition to completing daily review exercises covering a variety of topics, patterning on the number grid, and working with multiplication and division fact families in different formats, students will play games that are specifically designed to develop basic skills.

An instructional approach that revisits concepts regularly

To enhance the development of basic skills and concepts, students regularly revisit previously learned concepts and repeatedly practice skills encountered earlier. The lessons are designed to take advantage of previously learned concepts and skills and to build on them throughout the year instead of treating them as isolated bits of knowledge.

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—numeration; operations and computation; data and chance; geometry; measurement and reference frames; and patterns, functions, and algebra.



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

Fifth Grade Everyday Mathematics emphasizes the following content:

Numeration Recognizing place value in numerals for whole numbers and decimals, expressing numbers in scientific notation; finding factors of numbers; comparing properties of prime and composite numbers; representing rates and ratios with fraction notation

Operations and Computation Extending whole-number facts with addition, subtraction, multiplication, and division to fractions and decimals; evaluating symbolic expressions

Data and Chance Collecting, organizing, and analyzing data using bar graphs, line graphs, circle graphs, and stem-and-leaf plots

Geometry Investigating angles and rotations; calculating area and volume; drawing to scale; introducing relationships of 2- and 3-dimensional figures; exploring new transformations that affect attributes of geometric shapes

Measurement Using linear, area, capacity, and personal reference measures

Reference Frames Locating items with reference to an origin or zero point; for example, ordinal numbers, times of day, dates, and temperatures

Patterns, Functions, and Algebra Determining divisibility; exploring number patterns; applying formulas to geometric figures; creating number models; working with scientific calculators; squaring and unquaring numbers; exploring variables in formulas

Everyday Mathematics will provide you with ample opportunities to monitor your child's progress and to participate in your child's mathematics experiences.

Throughout the year, you will receive Family Letters to keep you informed of the mathematical content your child will be studying in each unit. Each letter will include a vocabulary list, suggested Do-Anytime Activities for you and your child, and an answer guide to selected Study Link (homework) activities.

You will enjoy seeing your child's confidence and comprehension soar as he or she connects mathematics to everyday life. We look forward to an exciting year!

Unit 1: Number Theory

During the next 2 or 3 weeks, students will study properties of whole numbers. Unit 1 sets up procedures for review and practice of the multiplication facts. The new material in this unit builds on students' prior work with multiplication and division of whole numbers.

In Unit 1, students will be asked to collect pictures of arrays to form a class Arrays Museum. Pictures may include objects such as floor tiles, windows, and checkerboards. You may want to help your child find pictures to contribute. To practice using arrays with your child at home, use any small objects, such as beans, macaroni, or pennies.

Finally, you may want to help your child memorize the basic multiplication facts found in the multiplication table. You can work together using the Fact Triangles, or you may play *Beat the Calculator*, *Multiplication Top-It*, or *Baseball Multiplication*. These are games that were introduced in previous grades of *Everyday Mathematics*.

Vocabulary

Important terms in Unit 1:

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

divisible by One whole number is *divisible by* another whole number if there is no remainder when you divide.

exponent The small, raised number in *exponential notation* that tells how many times the base is to be multiplied by itself.

Examples

5^2 ← exponent 5^2 means $5 * 5$, which is 25.

10^3 ← exponent 10^3 means $10 * 10 * 10$,
which is 1,000.

2^4 ← exponent 2^4 means $2 * 2 * 2 * 2$, which is 16.

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

$3 * 5 = 15$	$15 * 1 = 15$
\swarrow \searrow Factors Product	\swarrow \searrow Factors Product

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.

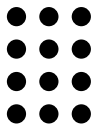
Factor rainbow for 16: 1 2 4 8 16

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

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 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 whole number multiplied by itself. For example, 25 is a square number, because $25 = 5 * 5$.

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*.

Baseball Multiplication

See *Student Reference Book*, pages 259 and 260

Two players will need 4 regular dice, 4 pennies, and a calculator to play this game. Practicing the multiplication facts for 1–12 and strengthening mental arithmetic skills are the goals of *Baseball Multiplication*.

Multiplication Top-It

See *Student Reference Book*, page 295

Multiplication Top-It is another game used to practice the basic multiplication facts. This game requires a deck

of cards with 4 each of the numbers 1–10, and can be played by 2–4 players.

Beat the Calculator

See *Student Reference Book*, page 261

This game involves 3 players and requires a calculator and a deck of cards with 4 each of the numbers 1–10. Playing *Beat the Calculator* helps students review basic multiplication facts.

Factor Captor

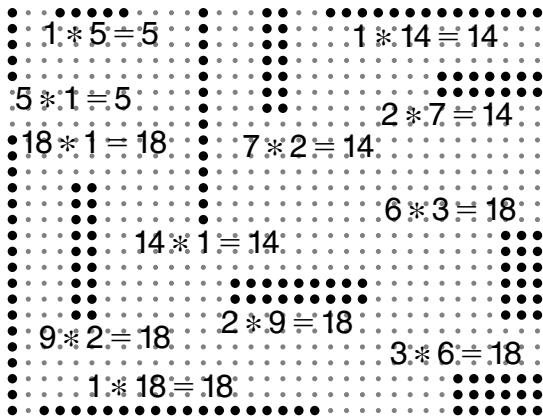
See *Student Reference Book*, page 271

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.

As You Help Your Child with Homework

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

Study Link 1.2



Study Link 1.3

- 2, 4, 6, 8, 10, 12, 14, 16, 18, 20
- Even numbers
- Sample answers: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19
- Odd numbers

Study Link 1.4

- 1, 5, 25
- 1, 2, 4, 7, 14, 28
- 1, 2, 4, 5, 8, 10, 20, 40
- 1, 2, 3, 6, 7, 14, 21, 42
- 1, 2, 3, 4, 6, 8, 12, 16, 24, 48
- 1, 2, 4, 8, 16, 32, 64
- 1, 2, 4, 5, 10, 20, 25, 50, 100

Study Link 1.5

- numbers divisible by 2: 998,876; 5,890; 72,344; 36,540; 1,098

numbers divisible by 3: 36,540; 861; 33,015; 1,098; 45,369

numbers divisible by 6: 36,540; 1,098

numbers divisible by 9: 36,540; 1,098; 45,369

numbers divisible by 5: 5,890; 36,540; 33,015

numbers divisible by 10: 5,890; 36,540
- numbers divisible by 4: 998,876; 72,344; 36,540

Study Link 1.6

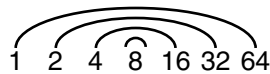
Number	Factors	Prime or Composite?
11	1, 11	P
18	1, 2, 3, 6, 9, 18	C
24	1, 2, 3, 4, 6, 8, 12, 24	C
28	1, 2, 4, 7, 14, 28	C
36	1, 2, 3, 4, 6, 9, 12, 18, 36	C
49	1, 7, 49	C
50	1, 2, 5, 10, 25, 50	C
70	1, 2, 5, 7, 10, 14, 35, 70	C
100	1, 2, 4, 5, 10, 20, 25, 50, 100	C

Study Link 1.7

- 16
- 49
- 6
- 64
- 25
- 81
- $9 * 4 = 36$
- $5 * 5 = 25$
- $5 * 5 = 25$
 - There are the same number of rows and columns.
- 13
- 9
- 113

Study Link 1.8

- 64: 1, 2, 4, 8, 16, 32, 64
- yes



$8^2 = 64$ The square root of 64 is 8.

- 4, 9, 25, 49
 - They are the squares of prime numbers.

Study Link 1.9

- $10^4 = 10 * 10 * 10 * 10 = 10,000$
 - $7^2 = 7 * 7 = 49$
 - $20^3 = 20 * 20 * 20 = 8,000$
- 11^2
 - 9^3
 - 50^4
- $2 * 3^3 * 5^2 = 2 * 3 * 3 * 3 * 5 * 5 = 1,350$
 - $2^4 * 4^2 = 2 * 2 * 2 * 2 * 4 * 4 = 256$
- $36 = 2 * 2 * 3 * 3 = 2^2 * 3^2$
 - $40 = 2 * 2 * 2 * 5 = 2^3 * 5$
 - $90 = 2 * 3 * 3 * 5 = 2 * 3^2 * 5$
- 4^5