



## FOURTH GRADE MATHEMATICS – Unit 2

Dear Parents,

In this unit, the students will build on their work with multiplication and division from grade 3. In the first part of the unit, they will extend their understanding of the base-ten system by recognizing that the value of each place is ten times the value of the place to the immediate right. Students will develop understanding of multiples and factors, applying their understanding of multiplication from grade 3. This understanding lays a strong foundation for generalizing strategies learned in previous grades to develop, discuss, and use efficient, accurate, and generalizable computational strategies involving multi-digit numbers. These concepts and the terms "prime" and "composite" are new to grade 4, so they are introduced early in the year to give students ample time to develop and apply this understanding. Students will focus on building conceptual understanding of multiplication of larger numbers and division with remainders. Area of rectangles provides a context for further developing this understanding.

### MULTIPLICATION AND DIVISION

#### Students need to:

- Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that  $700 \div 70 = 10$  by applying concepts of place value and division.
- Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors.
- Determine whether a given whole number in the range 1-100 is prime or composite.
- Generate a number pattern that follows a given rule.
- Solve word problems posed with whole numbers, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
- Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations.
- Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.
- Apply the area formula for rectangles in real-world and mathematical problems.

### KEY VOCABULARY

Commutative property	Odd	Value
Composite	Pattern	Variable
Dividend	Place value	
Divisor	Prime	
Equation	Product	
Even	Quotient	
Expression	Remainder	
Factor	Rule	
Factor pairs	Sequence	
Multiple	Term	

### WAYS PARENTS CAN HELP

- Encourage your child to regularly practice basic multiplication and division facts. The Internet has many free fact practice sites available.
- Extend multiplication fact practice to include multiples of 10 and 100. Have your child try to solve them mentally!

*Examples:*  $20 \times 4 = 80$ ;  $7 \times 300 = 2,100$

- Look for opportunities for your child to apply multiplication and division to solve real-life problems. Discuss how to interpret the "leftover," or remaining, amount in a division situation.

*For example:* If party plates come in packages of 8, and you are having 75 people for a party, how many packages of plates would you need to buy?

Would there be any plates leftover?

## BACKGROUND INFORMATION AND EXAMPLES FOR PARENTS

CCPS Grade 4 Math Videos

<http://video.carrollk12.org/ElementaryMath/Grade4>

Finding Factor Pairs

<https://learnzillion.com/lessons/780-find-all-the-factor-pairs-of-a-number-using-area-models>

Determining Multiples

<https://learnzillion.com/lessons/781-determine-multiples-of-a-number-using-area-models>

Prime and Composite Numbers

<https://learnzillion.com/lessons/786-determine-if-a-number-is-prime-or-composite-using-area-models>

Multiplication using an Area Model

<https://learnzillion.com/student/lessons/24-solve-2-by-2-digit-multiplication-problems-using-area-model>

Dividing Using Friendly Multiples

<https://learnzillion.com/student/lessons/1482>

<https://learnzillion.com/student/lessons/1483-divide-threedigit-dividends>

<https://learnzillion.com/student/lessons/1484-divide-fourdigit-dividends>

Area and Perimeter

<https://learnzillion.com/student/lessons/3744>

<https://learnzillion.com/student/lessons/3745-find-a-missing-rectangle-side-length-using-formulas>

<https://learnzillion.com/student/lessons/3746-find-the-area-of-a-figure-by-decomposing-it>

In grade 4, students explore a variety of strategies for multiplying and dividing numbers. Some examples are shown below.

### Multiplication Using an Area Model

Example:  $6 \times 325$

<b>300</b>	<b>+</b>	<b>20</b>	<b>+</b>	<b>5</b>	
<b>6</b> $6 \times 300 =$ 1,800	$6 \times 20 =$ 120	$6 \times 5 =$ 30			

$1,800 + 120 + 30 = 1,950$

Example:  $13 \times 24$

<b>20</b>	<b>+</b>	<b>4</b>		
<b>10</b> $10 \times 20 =$ 200	$10 \times 4 =$ 40	$3 \times 20 =$ 60	$3 \times 4 =$ 12	200 60 40 + 12 312
<b>+</b>		<b>3</b>		

### Division Strategies

<b>8</b> ) <b>537</b>	$8 \times 50$	}	<b>67 8's</b>
$- \underline{400}$ 137	$8 \times 10$		
$- \underline{80}$ 57	$8 \times 7$		
$- \underline{56}$ 1			<b>67 r 1</b>

Example:  $924 \div 6$

<b>100</b>	<b>+</b>	<b>50</b>	<b>+</b>	<b>4</b>
<b>6</b> $924$ $- \underline{600}$ 324	$324$ $- \underline{300}$ 24	$24$ $- \underline{24}$ 0		