Grade 5 Math

Unit 4: Building Conceptual Understanding of Multiplication and Division with Whole Numbers

Dear Families,

We want to make sure that you understand the mathematics your child will be learning this year. Below you will find the standards we will be learning in Unit 4.

Each standard is in bold print, and below each one is an explanation with student examples. Please let your teacher know if you have any questions. We appreciate your partnership and support.

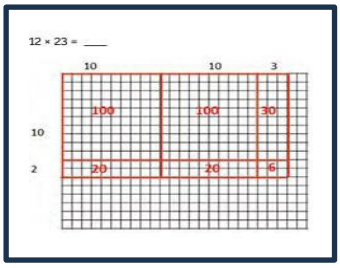
5.NR.2.1: Fluently multiply multi-digit (up to 3-digit by 2-digit) whole numbers to solve authentic problems.

Students should be able to:

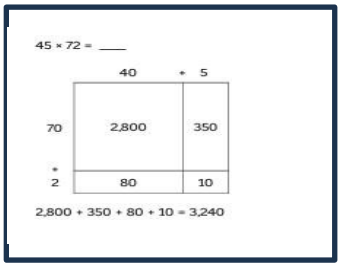
- multiply multi-digit numbers up to 3-digit by 2-digit.
- fluently (flexibly, accurately, and efficiently) multiply to solve practical, mathematical problems using efficient strategies that are based on knowledge of place value and properties of operations.
- choose a strategy that makes sense to them based on the problem.

Examples of multiplication strategies:

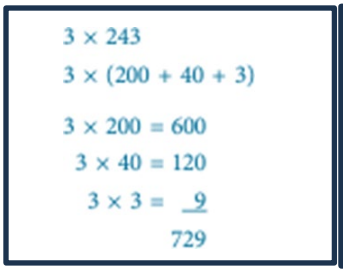
Area model:



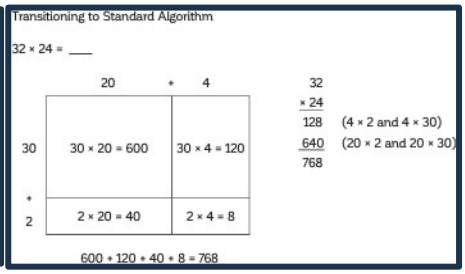
Rectangular model:



Decomposing:



Standard Algorithm:



Examples:

1. Eric works in a deli making sandwiches. Each day, he makes exactly 249 sandwiches. At the end of 58 days, how many total sandwiches has Eric made at the deli?
2. Chris has 46 employees. He gave each employee a bonus of $727. How much did Chris spend on bonuses for his employees?

Answers:

1. 14,442 sandwiches (249 x 58 = 14, 442)
2. $33,442 ($727 x 46 = $33,442)

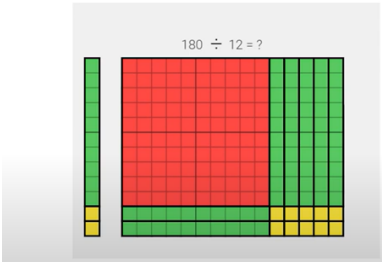
5.NR.2.2: Fluently divide multi-digit whole numbers (up to 4-digit by 2-digit divisors no greater than 25) to solve real-life problems.

Students should be able to…

- divide multi-digit whole numbers up to 4-digit dividends and 2-digit divisors no greater than 25.
- explain partial quotients prior to beginning to use a more formal algorithm.
- solve problems using an efficient algorithm and flexible strategies, based on knowledge of place value and properties of operations.

Examples of division strategies:

Alexis is organizing some school supplies for her teacher. She counted 180 pencils that she wants to place in 12 pencil boxes. How many pencils should she place in each pencil box if she wants them all to be equal?



Area Model with Base-Ten Blocks

10 + 5 = 15

	10	5
12	180 -120 60	60 -60 0

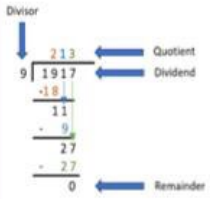
Area Model

12	180	10
	-120	+
	60	5
	-60	15
	0	

Partial Quotients

Division Example: 1917 ÷ 9

US Traditional Algorithm:



Description:

As students make sense of and use division strategies and algorithms, it is important for them to demonstrate a deep understanding of the relationship between the quantities. Students are encouraged to use strategies such as partial quotients, friendly numbers, and repeated subtraction to determine solutions to new problems. It is also important for students to maintain the ability to choose which strategy is best to communicate their mathematical thinking. Flexibility in thinking is key!

Place Value Algorithm:

9	1917	
	-1800	200
	117	
	-90	+ 10
	27	
	-27	+ 3
	0	213

Examples:

1. Solve. 9,440 ÷ 80 = _____
2. Mrs. Carroll's garden has a total of 448 flowers arranged with 28 flowers in each row. How many rows are there in Mrs. Carroll's garden?

Answers:

1. 118 (9,440 ÷ 80 = 118)
2. 16 rows (448 ÷ 28 = 16)

5.NR.5.1: Write, interpret, and evaluate simple numerical expressions involving whole numbers with or without grouping symbols to represent actual situations.

Students will be able to …

- write and solve numerical expressions involving whole numbers.

Examples:

1. Karl brought 3 ten packs of juice boxes to the class party. Joshua brought 4 six-packs of soda to the party. How many drinks did they bring altogether?
2. Which expression has a total value of 36?
   a. 3 x 10 + 2
   b. 2 + 2 x 9
   c. 3 (10 + 2)
   d. 2 (2+9)

Answers:

1. (3 x 10) + (4 x 6) = 54 drinks
2. c. 3(10+2) = 36