

Unit 2 - Multiplication: An Array of Strategies

Overview

In Unit 2, students begin to develop a conceptual understanding of multiplication. Investigations begin with contexts and problems that invite students to think about equal groups and multiplicative comparisons. Students are introduced to one-on-one counting, skip-counting and repeated addition as they develop a basic understanding of multiplication. They make use of a variety of models for multiplication, including equal groups, arrays, the number line, and ratio tables to develop strategies for multiplication. They apply what they have learned by solving problems that involve graphs and story problems with multiple steps.

21st Century Capacities: Analyzing, Product Creation

Stage 1 - Desired Results

ESTABLISHED GOALS/ STANDARDS

MP 3 Construct viable arguments and critique the reasoning of others
 MP4 Model with Mathematics
 MP8 Look for and express regularity in repeated reasoning

3.OA.1 Interpret products of whole numbers.
 3.OA.2 Interpret quotients of whole numbers.
 3.OA.3 Solve multiplication story problems with products to 100 involving situations of equal groups, arrays and measurement quantities.
 3.OA.4 Solve for the unknown in a multiplication equation involving three whole numbers.
 3.OA.5 Multiply using the commutative

Transfer:

Students will be able to independently use their learning in new situations to...

1. Represent and interpret patterns in numbers (analyzing).
2. Justify reasoning using clear and appropriate mathematical language (product creation)
3. Demonstrate fluency with math facts, computation and concepts. (multiplication)

Meaning:

UNDERSTANDINGS: *Students will understand that:*

1. Multiplication allows us to count groups as units (unitizing)
2. Tools and visual models help us to problem solve and explain our thinking
3. Patterns and strategies help us to recognize relationships between numbers to develop fact fluency

ESSENTIAL QUESTIONS: *Students will explore & address these recurring questions:*

- A. How do multiplicative and additive comparisons differ?
- B. How can I use models and strategies help me to solve this problem? How do I know if it's right?
- C. What pattern(s) do I see in the numbers or how is this problem like another we have solved?
- D. What is the best way to show my thinking?

Acquisition:

Grade 3 Math Curriculum

<p>property. 3.OA.6 Solve division problems by finding an unknown factor 3.OA.7 Fluently multiply with products to 100 using strategies. 3.OA.8 Solve two-step story problems using addition, subtraction and multiplication 3.OA.9 Identify patterns among basic multiplication facts, including patterns in the multiplication table and explain them by referring to properties of the operation 3.MD.3 Make a scaled pictograph and a scaled bar graph to represent a data set with several categories; solve one-step comparison problems using data on a scaled bar graph with several categories 3.MD.7b Represent the product of two numbers as the area of a rectangle with side lengths equal to those two numbers and find the area of the rectangle by multiplying the side lengths 3.MD.7c Use the area model for multiplication to illustrate the distributive property.</p>	<p><i>Students will know...</i></p> <ol style="list-style-type: none"> 1. That multiplication is repeated addition 2. That some groups remain constant 3. Strategies for multiplying fluently 4. Partial products can help solve multiplication and division problems 5. The commutative, zero, identity, distributive and associative properties of multiplication 6. Problems can be approached from a range of perspectives 7. <u>Vocabulary</u>: columns, rows, product, factor, multiple, array, ratio table, variable, commutative property of multiplication, 	<p><i>Students will be skilled at...</i></p> <ol style="list-style-type: none"> 1. Using additive strategies such as skip counting and repeated addition to solve multiplication problems 2. Finding factors and multiples of numbers to 100 3. Using an open number line, ratio table and array to solve a multiplication 4. Doubling and halving strategies 5. Interpreting multiplication equations as statements of multiplicative comparisons 6. Solve equations with unknown product, group size unknown, or number of groups unknown
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