Domain: Operations and Algebraic Thinking Grade: 3

Core Content

Cluster Title: Represent and solve problems involving multiplication and division.

Standard 3: Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).

MASTERY Patterns of Reasoning:

Conceptual:

Students will understand that word problems can be represented in multiple ways (e.g., equation, array, equal groups, repeated addition, repeated subtraction, number line, table).
Students will understand what a symbol represents in an equation (e.g., in 4 x △ = 16, △ = 4).
Students will understand that the symbol can represent a different component of the equation.

Procedural:

Students can create and solve a multiplication or division word problem.
Students can create and solve a word problem using a symbol to represent the unknown number.

Representational:

Students can model objects in an array.
Students can model objects in groups.
Students can model using equal jumps on a number line.
Students can model using repeated addition (multiplication) or subtraction (division).
Students can write an equation that represents the word problem.

Supports for Teachers

Critical Background Knowledge

Conceptual:

Students will understand the meaning of multiplication.
Students will understand the meaning of division.
Students will understand how to write an equation for multiplication and division.
Students will understand how to solve a word problem.

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Procedural:

Students can find out what operation the problem is asking them to perform.
Students can solve multiplication problems.
Students can solve division problems.

Representational:

Students can write an equation that matches the word problem.
Students can model a variety of strategies.

Academic Vocabulary and Notation

array, area model, equal groups, multiply, divide, product, factor, quotient, divisor, dividend, row, column, symbol

Instructional Strategies Used	Resources Used
Use trade books to present real-world problems and have students model, write, and solve. The students will solve their own story problems and solve other students' problems. Find the array that matches given expressions. Analyze another student's word problem for viability.	Giganti, Paul. *Each Orange Had 8 Slices.* Greenwillow, 1999. Pinczes, Elinor J. *One Hundred Hungry Ants.* Houghton Mifflin, 1993. Tang, Greg. *Best of Times.* Scholastic Press, 2002. http://nlvm.usu.edu/en/nav/category_g_2_t_1.html http://www.ixl.com/math/grade-3/division-word-problems-facts-to-10

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Assessment Tasks Used	
Skill-Based Task: Maya had 4 bunnies. Each bunny had 8 babies. How many babies were there in all? Solve. Maya had 40 carrots. She gave 5 bunnies the same number of carrots. How many carrots did each bunny get?	**Problem Task:** 72 ÷ 9 = ___ Write a word problem that represents this equation, then solve. Show your thinking in pictures, words, and numbers. 7 x ____ = 21 Write a word problem that represents this equation, then solve. Show your thinking in pictures, words, and numbers.

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