

Core Content

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

Standard 1: Interpret products of whole numbers (e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each). For example, describe a context (story situation) in which a total number of objects can be expressed as 5×7 .

MASTERY Patterns of Reasoning:

Conceptual:

Students will understand that multiplication is combining equal groups of objects.

Students will understand that multiplication is repeated addition.

Students will understand that skip counting can be used to solve multiplication.

Students will understand that in a multiplication equation, the first factor equals the number of groups and the second factor equals the number in each group.

Procedural:

Students can find the total number of objects within equal groups (e.g., $5 \times 7 = 35$).

Students can use repeated addition to find the product of equal groups.

Students can use skip counting to find the product of equal groups.

Representational:

Students can model equal groups of objects.

Students can draw equal groups of objects (e.g., an array).

Students can write repeated addition expressions and multiplication expressions that represent their pictures.

Students can draw pictures that represent the multiplication expression.

Students can model skip counting on a number line.

Supports for Teachers

Critical Background Knowledge	
<p>Conceptual: Students will understand repeated addition can find the total number of items in equal groups. Students will understand grouping of objects. Students understand the meaning of skip counting.</p> <p>Procedural: Students can solve repeated addition problems.</p> <p>Representational: Students can connect equal groups to the operation of repeated addition.</p>	
Academic Vocabulary and Notation	
<p>factor, array, product, multiple, equation, multiplication, equal groups, x (multiplication symbol), row, column</p>	
Instructional Strategies Used	Resources Used
<p>Read a book to help students understand skip counting.</p> <p>Have students skip count on a number line to show adding of equal groups.</p> <p>List real-life situations where items come in equal groups.</p> <p>Model equal groups by putting the same number of objects in each group.</p> <p>Link number of objects in each group to repeated addition.</p> <p>Link repeated addition to multiplication equation.</p> <p>Associate that the first factor is the number of equal groups and the second factor is the number of objects in each group.</p>	<p>Aker, Suzanne. <i>What Comes in 2's, 3's, and 4's?</i> Aladdin, 1992.</p> <p>Fosnot and Uittenbogaard. <i>Minilessons for Early Multiplication and Division</i>. Heinemann, 2008.</p> <p>Hamm and Palmer. <i>How Many Feet in the Bed?</i> Alladin/Simon and Schuster, 1994.</p> <p>Neuschwander, Cindy. <i>Amanda Bean's Amazing Dream</i>. Scholastic Press, 1998.</p> <p>Warburton, Tom, Director. <i>Schoolhouse Rock: Multiplication Classroom Edition Interactive DVD</i>. Disney Educational Products, 2008.</p> <p>Math Vocabulary Word Wall Cards that show</p>

	vocabulary, picture, and definition: http://www.graniteschools.org/depart/teachinglearning/curriculuminstruction/math/Pages/MathematicsVocabulary.aspx
Assessment Tasks Used	
<p>Skill-Based Task:</p> <p style="text-align: center;"></p> <p>Write an equation that can help you find the total number of points on the above stars.</p> <p>Teacher note: Make sure students can show the number of groups vs. the number of items in the group ($3 \times 5 = 15$).</p>	<p>Problem Task:</p> <p>Frank bought twelve boxes of crayons. Each box of crayons had 8 crayons in it. How many boxes of crayons does he have?</p> <ul style="list-style-type: none"> • Solve the problem. • Write a repeated addition equation. • Write the multiplication equation. • Draw a visual representation of the equation.