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 $4 \times \triangle = 16$, $\triangle = 4$).
- 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.
### 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
- 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.

### Resources Used
- [http://nlvm.usu.edu/en/nav/category_g_2_t_1.html](http://nlvm.usu.edu/en/nav/category_g_2_t_1.html)

Code: 3OA3
### Assessment Tasks Used

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