

## Core Content

**Cluster Title: Multiply and divide within 100.**

**Standard 7:** Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that  $8 \times 5 = 40$ , one also knows  $40 \div 5 = 8$ ) or properties of operations. By the end of grade 3, know from memory all products of two one-digit numbers.

**MASTERY Patterns of Reasoning:****Conceptual:**

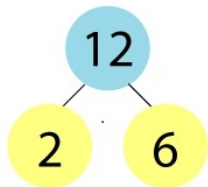
Students will understand the inverse relationship of multiplication and division.  
Students will know from memory all products of two one-digit numbers.  
Students will understand commutative and distributive properties.

**Procedural:**

Students can apply a strategy to solve multiplication and division equations.  
Students can solve multiplication and division problems fluently (i.e., flexibly, accurately, efficiently, and appropriately).  
Students can show how a problem was solved using commutative/distributive properties.

**Representational:**

Students can illustrate multiplication number bonds as a means of developing fluency.



## Supports for Teachers

**Critical Background Knowledge****Conceptual:**

Students will know multiplication fact families.  
Students will understand the commutative, associative, and distributive properties of multiplication.  
Students will understand the identity and zero properties of multiplication.

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| <p><b>Procedural:</b><br/>Students can solve multiplication and division equations using a variety of strategies.</p> <p><b>Representational:</b><br/>Students can show how a problem was solved using commutative/distributive properties.</p>  |   |
| <p><b>Academic Vocabulary and Notation</b></p>   |   |
| <p>product, factor, dividend, divisor, quotient, fact family, related facts, <math>\times</math>, <math>\div</math>, commutative property, distributive property</p>   |   |
| <p><b>Instructional Strategies Used</b></p>  | <p><b>Resources Used</b></p>  |
| <p>Note: Fluency in mathematics means solving problems flexibly, accurately, efficiently, and appropriately. Be certain that students have conceptual understanding of multiplication before they begin to commit the products of two one-digit numbers to memory.</p> <ul style="list-style-type: none"> <li>• Doubles (<math>2 \times 2 = 2 + 2</math>)</li> <li>• Double and double again (<math>4 \times 2 = (2 \times 2) \times 2</math>)</li> <li>• Halve, then double (<math>6 \times 8 = (3 \times 8) + (3 \times 8)</math>)</li> <li>• Doubles plus one more set (<math>3 \times 7 = (2 \times 7) + 7</math>)</li> <li>• Add one more set (<math>6 \times 7 = (5 \times 7) + 7</math>)</li> <li>• Decomposing into known facts (i.e., use facts you know to solve the ones you don't)</li> <li>• Halves (<math>12 \div 2 = 6</math>)</li> <li>• Doubles and halving (<math>36 \div 4 = 72 \div 2 = 144 \div 1</math>)—you double the dividend and halve the divisor to make a simpler problem</li> <li>• Multiplying by zero and one</li> <li>• Patterns in 9's</li> <li>• Fact families</li> <li>• Number bonds</li> </ul> | <p>Tang, Gregory. <i>Best of Times</i>. Scholastic Press, 2002.</p> <p>Pinczes, Elinor J. <i>My Full Moon Is Square</i>. Scholastic Press, 2002.</p> <p>Literature resources:<br/><a href="http://www.graniteschools.org/depart/teachinglearning/curriculuminstruction/math/elementarymathematics/Pages/default.aspx">http://www.graniteschools.org/depart/teachinglearning/curriculuminstruction/math/elementarymathematics/Pages/default.aspx</a></p> <p>Multiplication chart</p> |

| <b>Assessment Tasks Used</b>  |   |
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| <b>Skill-Based Task:</b><br>$4 \times 6 = \underline{\quad}$<br>$7 \times 9 = \underline{\quad}$<br>$9 \times 10 = \underline{\quad}$<br>$56 \div 8 = \underline{\quad}$<br>$72 \div 9 = \underline{\quad}$ | <b>Problem Task:</b><br>There are 5 tables in the lunchroom. Six students sit at each table. How many students are in the lunchroom?<br><br>Mari has 48 crayons. She knows that 8 crayons can fit in a box. How many boxes will she need? |