## Mid-Module Assessment Task Standards Addressed

#### Represent and solve problems involving multiplication and division.

- **3.OA.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.
- **3.0A.4** Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations*  $8 \times ? = 48$ ,  $5 = \_ \div 3$ ,  $6 \times 6 = ?$ .

Understand properties of multiplication and the relationship between multiplication and division.

**3.OA.5** Apply properties of operations as strategies to multiply and divide. (Students need not use formal terms for these properties.) *Examples:* If  $6 \times 4 = 24$  is known, then  $4 \times 6 = 24$  is also known. (Commutative property of multiplication.)  $3 \times 5 \times 2$  can be found by  $3 \times 5 = 15$ , then  $15 \times 2 = 30$ , or by  $5 \times 2 = 10$ , then  $3 \times 10 = 30$ . (Associative property of multiplication.) Knowing that  $8 \times 5 = 40$  and  $8 \times 2 = 16$ , one can find  $8 \times 7$  as  $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$ . (Distributive property.)

### Multiply and divide within 100.

**3.OA.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 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.

#### Solve problems involving the four operations, and identify and explain patterns in arithmetic.

**3.OA.9** Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.* 

# **Evaluating Student Learning Outcomes**

A Progression Toward Mastery is provided to describe steps that illuminate the gradually increasing understandings that students develop on their way to proficiency. In this chart, this progress is presented from left (Step 1) to right (Step 4). The learning goal for students is to achieve Step 4 mastery. These steps are meant to help teachers and students identify and celebrate what the students CAN do now and what they need to work on next.



A Progression Toward Mastery							
Assessment Task Item and Standards Assessed	STEP 1 Little evidence of reasoning without a correct answer.	STEP 2 Evidence of some reasoning without a correct answer.	STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer.	STEP 4 Evidence of solid reasoning with a correct answer.			
	(1 Point)	(2 Points)	(3 Points)	(4 Points)			
1 3.0A.3 3.0A.4	Student is unable to write an equation for the problem. The attempt shows student may not understand the meaning of the question.	Student mixes up the order of numbers in the division equation (e.g., $21 \div 3 = ?$ ).	Student writes the correct equation but divides incorrectly (e.g., 21 ÷ 7 = wrong answer).	<ul> <li>Student correctly:</li> <li>Writes 21 ÷ 7 = 3.</li> <li>Identifies that the answer represents the number of weeks.</li> </ul>			
2 3.0A.3 3.0A.4	Student is unable to write both equations and does not correctly solve the problem. The attempt shows student may not understand the meaning of the questions.	<ul> <li>Student gives an incorrect answer with reasonable attempt that includes:</li> <li>Attempt to represent the problem with multiplication and division equations.</li> <li>Use of a letter to represent the unknown.</li> </ul>	<ul> <li>Student provides a partially correct answer. Student correctly:</li> <li>Writes n × 8 = 48.</li> <li>Writes 48 ÷ 8 = n.</li> </ul>	<ul> <li>Student correctly:</li> <li>Writes n × 8 = 48.</li> <li>Writes 48 ÷ 8 = n.</li> <li>Solves to find 6 containers.</li> </ul>			
3 3.0A.5	Student is unable to explain and label how the array represents both expressions.	Student attempts to explain and label how the array represents one of the expressions.	Student accurately labels how the array represents both expressions, but the explanation lacks clarity.	Student accurately explains and labels how the array represents both expressions, showing understanding of the associative property of multiplication.			



A Progression Toward Mastery							
Assessment Task Item and Standards Assessed	STEP 1 Little evidence of reasoning without a correct answer.	STEP 2 Evidence of some reasoning without a correct answer.	STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer.	STEP 4 Evidence of solid reasoning with a correct answer.			
	(1 Point)	(2 Points)	(3 Points)	(4 Points)			
4 3.0A.3 3.0A.4 3.0A.5 3.0A.9	Student answers one question correctly.	Student answers two questions correctly.	<ul> <li>Student answers three questions correctly.</li> <li>Mistakes may include:</li> <li>Completing the equation in Part (a) incorrectly (e.g., 6 × 6 = n; n = wrong answer).</li> <li>Providing inaccurate explanation in Part (c).</li> <li>Providing incorrect total in Part (d) (e.g., 12 × 7 = wrong total).</li> </ul>	<ul> <li>Student correctly:</li> <li>Writes and solves an equation using a letter to represent the total number of stripes in Part (a) (6 × 6 = b; b = 36).</li> <li>Fills in 42 bean bags in the chart in Part (b).</li> <li>Accurately explains how the magic box multiplies objects by 7 in Part (c).</li> <li>Uses a number bond to break apart the 12 × 7 and distributes to find the total number of rings, 84, in Part (d).</li> <li>Writes n = \$9 in Part (e).</li> </ul>			