Name _____ Date _____

1. The carnival is in town for 21 days. How many weeks is the carnival in town? (There are 7 days in 1 week). Write an equation and solve.

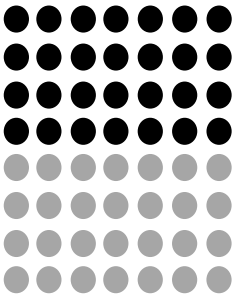
2. There are 48 liters needed to finish filling the dunk tank at the carnival. Each container holds 8 liters. How many containers are needed to finish filling the dunk tank? Represent the problem using multiplication and division sentences and a letter for the unknown. Solve.

   _____ × _____ = _____

   _____ ÷ _____ = _____

3. There are 4 rows of 7 chairs setup for the Magic Show. A worker sees the large number of people lined up and doubles the number of rows of chairs. They are shown below.

   Explain and label to show how the array represents both 8 × 7 and 2 × (4 × 7).



4.

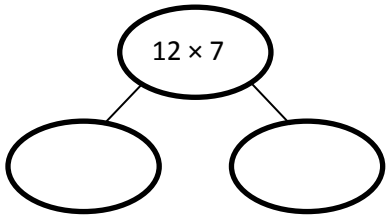
a. Fabrizio wins a bumble-bee doll with 6 stripes. He notices that 5 other children in line for the Magic Show won the same doll. How many stripes are on 6 bumble-bee dolls? Write an equation using a letter to represent the unknown. Solve.

b. The magician uses a magic box. Every time he puts an object in, it gets multiplied. Fabrizio writes down what happens to try and find a pattern. Look at his notes to the right.

- Use the pattern to fill in the number of bean bags.
- What does the magic box do? Explain how you know.

In	Out
2 Feathers	14 Feathers
3 Marbles	21 Marbles
4 Dice	28 Dice
5 Wands	35 Wands
6 Bean bags	___ Bean bags

c. The magician puts 12 rings into the magic box. Fabrizio draws a number bond to find the total number of rings that come out. Use the number bond to show how Fabrizio solved the problem.



d. After the show, Fabrizio and 5 friends equally share the cost of a $54 magic set. They use the equation 6 × n = $54 to figure out how much each person pays. How much does Fabrizio pay?

Mid- Module Assessment Task **Topics A–C**
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. (See Glossary, Table 2.)

3.OA.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 × ? = 48, 5 = _ ÷ 3, 6 × 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 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 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 × 5 = 40, one knows 40 ÷ 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 each student is to achieve Step 4 mastery. These steps are meant to help teachers and students identify and celebrate what the student 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. (1 Point)**	**STEP 2 Evidence of some reasoning without a correct answer. (2 Points)**	**STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 Points)**	**STEP 4 Evidence of solid reasoning with a correct answer. (4 Points)**
1 **3.OA.3** **3.OA.4**	Student is unable to write an equation for the problem. The attempt shows the student may not understand the meaning of the question.	The student mixes up the order of numbers in the division sentence (e.g., 21 ÷ 3 = ?).	The student writes the correct equation, but divides incorrectly (e.g., 21 ÷ 7 = wrong answer).	The student correctly: ▪ Writes 21 ÷ 7 = 3 ▪ Identifies that the answer represents the number of weeks.
2 **3.OA.3** **3.OA.4**	Student is unable to answer any part of the question correctly. The attempt shows the student may not understand the meaning of the questions.	The student gives an incorrect answer with reasonable attempt that must include: ▪ Attempt to represent the problem with multiplication and division equations. ▪ Use of a letter to represent the unknown.	Student provides partially correct answer. Student must: ▪ Write $n \times 8$ liters = 48 liters. ▪ Write 48 liters ÷ 8 liters = n.	The student correctly: ▪ Writes $n \times 8$ liters = 48 liters. ▪ Writes 48 liters ÷ 8 liters = n. ▪ Solves to find 6 containers.
3 **3.OA.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 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				
4 **3.OA.3** **3.OA.4** **3.OA.5** **3.OA.9**	Student answers one question correctly.	Student answers two questions correctly.	Student answers three questions correctly. Mistakes may include: ▪ Completing the number sentence in Part (a) incorrectly (e.g. 6 × 6 = *n*; *n* = wrong answer). ▪ Providing inaccurate explanation in Part (b). ▪ Providing incorrect total in Part (c) (e.g., 12 × 7 = wrong total).	The student correctly: ▪ Writes and solves an equation using a letter to represent the total number of stripes in Part (a) (6 × 6 = *b*; *b* = 36). ▪ Accurately explains how the magic box multiplies objects by 7 in Part (b). ▪ Fills in 42 bean bags in the chart in Part (b). ▪ Uses a number bond to break apart the 12 × 7 and distribute to find the total number of rings, 84 in Part (c). ▪ Writes *n* = $9 in Part (d).

Name Ging Date _____

1. The carnival is in town for 21 days. How many weeks is the carnival in town? (There are 7 days in 1 week). Write an equation and solve.

7, 14, 21
① ② ③

$21 \div 7 = 3$

The carnival is in town for 3 weeks.

2. There are 48 liters needed to finish filling the dunk tank at the carnival. Each container holds 8 liters. How many containers are needed to finish filling the dunk tank? Represent the problem using multiplication and division sentences and a letter for the unknown. Solve.

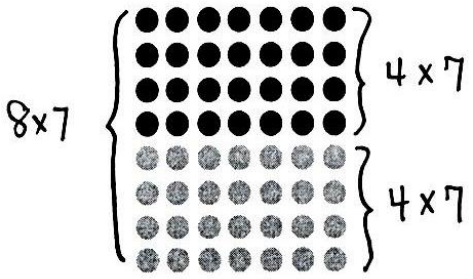
$n \times 8 = 48$

$48 \div 8 = n$

n = the number of containers
n = 6
6 containers are needed to finish filling the dunk tank.

3. There are 4 rows of 7 chairs setup for the Magic Show. A worker sees the large number of people lined up and doubles the number of rows of chairs. They are shown below.

Explain and label to show how the array represents both 8×7 and $2 \times (4 \times 7)$.



You can see the array 2 ways. You can see the total array as 8 rows of 7, or you can see 4 rows of 7 two times (the black rows and gray rows.) They both have the same total of 56 chairs.

4.

a. Fabrizio wins a bumble-bee doll with 6 stripes. He notices that 5 other children in line for the Magic Show won the same doll. How many stripes are on 6 bumble-bee dolls? Write an equation using a letter to represent the unknown. Solve.

$6 \times 6 = b$ b = the total number of stripes.

$b = 36$

There are 36 stripes on 6 bumble-bee dolls.

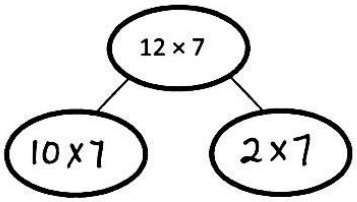
b. The magician uses a magic box. Every time he puts an object in, it gets multiplied. Fabrizio writes down what happens to try and find a pattern. Look at his notes to the right.

- Use the pattern to fill in the number of bean bags.
- What does the magic box do? Explain how you know.

In	Out	
2 Feathers	14 Feathers	
3 Marbles	21 Marbles	+7
4 Dice	28 Dice	+7
5 Wands	35 Wands	+7
6 Bean bags	42 Bean bags	+7

The objects that come out are multiplied by 7. Any time you put in an object, it grows by 7 times. That's how we know 6 bean bags will come out as 42 bean bags.

c. The magician puts 12 rings into the magic box. Fabrizio draws a number bond to find the total number of rings that come out. Use the number bond to show how Fabrizio solved the problem.



$(10 \times 7) + (2 \times 7) = 12 \times 7$

$70 + 14 = 84$

When the magician puts 12 rings into the magic box, 84 rings will come out.

d. After the show, Fabrizio and 5 friends equally share the cost of a $54 magic set. They use the equation $6 \times n = \$54$ to figure out how much each person pays. How much does Fabrizio pay?

$6 \times n = \$54$ is the same as $54 \div 6 = n$,
where n = the amount each person pays.
$n = \$9$

Fabrizio pays $9.