



## Topic C

# Multiplication Using Units of 2 and 3

**3.OA.1, 3.OA.5, 3.OA.3, 3.OA.4**

<b>Focus Standards:</b>	3.OA.1	Interpret products of whole numbers, e.g., interpret $5 \times 7$ as the total number of objects in 5 groups of 7 objects each. <i>For example, describe a context in which a total number of objects can be expressed as <math>5 \times 7</math>.</i>
	3.OA.5	Apply properties of operations as strategies to multiply and divide. <i>Examples: If <math>6 \times 4 = 24</math> is known, then <math>4 \times 6 = 24</math> is also known. (Commutative property of multiplication.) <math>3 \times 5 \times 2</math> can be found by <math>3 \times 5 = 15</math>, then <math>15 \times 2 = 30</math>, or by <math>5 \times 2 = 10</math>, then <math>3 \times 10 = 30</math>. (Associative property of multiplication.) Knowing that <math>8 \times 5 = 40</math> and <math>8 \times 2 = 16</math>, one can find <math>8 \times 7</math> as <math>8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56</math>. (Distributive property.)</i>
<b>Instructional Days:</b>	4	
<b>Coherence</b>	<b>-Links from:</b>	G2–M6 Foundations of Multiplication and Division
	<b>-Links to:</b>	G4–M3 Multi-Digit Multiplication and Division

In Topic C, students begin building fluency with facts of 2 and 3 using the array model and familiar skip-counting strategies.

Lessons 7 and 8 introduce the new complexity of manipulating arrays to study the commutative property. Students learn to distinguish rows from columns as they rotate arrays 90 degrees, noticing that the meaning of the factors changes depending on the orientation of the array. Students write two different multiplication sentences to interpret the same array. These lessons emphasize the equivalence of facts by demonstrating, for example, that 2 groups of 8 and 8 groups of 2 have the same product. Students observe the pattern and begin to recognize commutativity as a strategy for solving twice as many facts.

Lessons 9 and 10 introduce the distributive property as a strategy for multiplication. In Lesson 9, students use arrays to decompose unknown facts as the sum or difference of two known facts. For example, they analyze an array to see that  $7 \times 3$  can be decomposed as 2 rows of 3 + 5 rows of 3. In Lesson 10, students learn to write the decomposition as  $(5 \times 3) + (2 \times 3) = 21$ . They explain each step of the solving process in anticipation of the work they are expected to complete independently on the Mid-Module Assessment.

**A Teaching Sequence Toward Mastery of Multiplication Using Units of 2 and 3**

- Objective 1:** Demonstrate the commutativity of multiplication, and practice related facts by skip-counting objects in array models.  
(Lessons 7–8)
- Objective 2:** Find related multiplication facts by adding and subtracting equal groups in array models.  
(Lesson 9)
- Objective 3:** Model the distributive property with arrays to decompose units as a strategy to multiply.  
(Lesson 10)