



## Topic E

# Multiplication and Division Using Units of 4

3.OA.5, 3.OA.7, 3.OA.1, 3.OA.2, 3.OA.3, 3.OA.4, 3.OA.6

<b>Focus Standard:</b>	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>
	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.
<b>Instructional Days:</b>	4	
<b>Coherence</b>		
-Links from:	G2–M6	Foundations of Multiplication and Division
-Links to:	G4–M3	Multi-Digit Multiplication and Division

Topic E begins by introducing students to multiplication by 4 through skip-counting objects in array models in Lesson 14. Students revisit the commutative property in Lesson 15, this time modeling commutativity using both arrays and tape diagrams. For example, students might initially draw a  $2 \times 4$  array and a  $4 \times 2$  array. Then, they see 2 bars of equal length, one with 4 equal parts and the other with 2 equal parts. Now, they have arrays that show  $(2 \times 4) = (4 \times 2)$ , as well as tape diagrams that reflect the equality. In Lesson 16, students examine the distributive property in greater depth. This lesson introduces the  $5 + n$  pattern as a strategy for finding unknown facts involving 4. For example, students know that  $4 \times 5$  is 20, so  $4 \times 6$  is the same as 20 + 4 more, which totals 24. By Lesson 17, practice of multiplication and division facts is dedicated to modeling the relationship between operations using facts of 4.

**A Teaching Sequence Toward Mastery of Multiplication and Division Using Units of 4**

- Objective 1:** Skip-count objects in models to build fluency with multiplication facts using units of 4.  
(Lesson 14)
- Objective 2:** Relate arrays to tape diagrams to model the commutative property of multiplication.  
(Lesson 15)
- Objective 3:** Use the distributive property as a strategy to find related multiplication facts.  
(Lesson 16)
- Objective 4:** Model the relationship between multiplication and division.  
(Lesson 17)