Topic F

Distributive Property and Problem Solving Using Units of 2–5 and 10

3.OA.3, 3.OA.5, 3.OA.7, 3.OA.8, 3.OA.1, 3.OA.2, 3.OA.4, 3.OA.6

Focus Standard:	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.OA.5	Apply properties of operations as strategies to multiply and divide. *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.)*
	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.
	3.OA.8	Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
Instructional Days:	4	
Coherence -Links from:	G2–M6	Foundations of Multiplication and Division
-Links to:	G4–M3	Multi-Digit Multiplication and Division

Topic F introduces the factors 5 and 10, familiar from skip-counting in Grade 2. Students apply the multiplication and division strategies they have learned to mixed practice with all of the factors included in Module 1. Students model relationships between factors and decompose numbers as they further explore the relationship between multiplication and division. This culminates in Lessons 18 and 19 as students decompose the dividend in a division sentence to practice the distributive property with division. For example, students decompose 28 ÷ 4 as (20 ÷ 4) + (8 ÷ 4) = 5 + 2 = 7. In the final lessons of the module, students apply the tools, representations, and concepts they have learned to solve multi-step word problems. They demonstrate the flexibility of their thinking as they assess the reasonableness of their answers for a

variety of problem types. Lesson 20 focuses on word problems involving multiplication and division, while Lesson 21 increases the complexity of problem solving by including word problems involving all four operations.

A Teaching Sequence Towards Mastery of Distributive Property and Problem Solving Using Units of 2–5 and 10	
Objective 1:	**Apply the distributive property to decompose units. (Lesson 18–19)**
Objective 2:	**Solve two-step word problems involving multiplication and division, and assess the reasonableness of answers. (Lesson 20)**
Objective 3:	**Solve two-step word problems involving all four operations, and assess the reasonableness of answers. (Lesson 21)**