# **Unit 1b-Multiplication Facts Using Patterns**

Mathematics
Math 3
Marking Period 1
MP1 Topic 2 2-1 to 2-6
Published

## **Essential Questions**

How can I use what I know about equal groups to help multiply numbers?

#### **Big Ideas**

- Equal Groups: Students interpret multiplication and division as equal groups.
- Diagrams: Students will use bar diagrams to represent both multiplication and division situations.
- **Patterns and Properties**: Students will use patterns in multiplication, focusing on the Identity property and the Zero Property of Multiplication.

# **Diversity Integration**

Objective: Students will be able to create arrays using cultural symbols.

Description of Activity: Students will be able to pick a symbol that illustrates something important in their culture. They will create an array using that symbol to represent a basic multiplication fact.

## **Enduring Understandings**

## **Operations and Algebraic Thinking**

3.OA.A [M] Represent and solve problems involving multiplication and division

**3.OA.A.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. For example, describe and/or represent a context in which a total number of objects can be expressed as  $5 \times 7$ .

**3.OA.A.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.B.5** Apply properties of operations as strategies to multiply and divide.

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.)

**3.OA.D.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.

3.OA.C.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.

## **Mathematical Practices Focus**

4. Model with mathematics.