MP1b-Multiplication Facts Using Patterns

Content Area: **Mathematics**
Course(s): **Math 3**
Time Period: **Marking Period 1**
Length: **MP1 Topic 2 2-1 to 2-6**
Status: **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.

Technology Connection

8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.

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 × 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 × 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 × 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.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 × 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.

Mathematical Practices Focus

4. Model with mathematics.