Unit 1b-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.

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 $6 \times 4 = 24$ 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 8×7 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.