# Unit 1b-Multiplication Facts Using Patterns 

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