

## **Unit 3- Multiplication**

**3.NBT 3-** Multiply one digit whole numbers by multiples of 10 in the range 10-90, using strategies based on place value and properties of operations

**3.OA 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

**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.4-** Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations  $8 \times Y = 48$

**3.OA.5-** Apply properties of operations as strategies to multiply and divide. For example, if  $6 \times 4 = 24$  is known, then  $4 \times 6 = 24$  is also known ( Commutative Property);  $3 \times 5 \times 2$  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). Students need not use formal terms for these properties.

**3.OA.7-** Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division. By the end of grade 3, students should 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 or a symbol, which stands for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. This standard is limited to problems posed with whole numbers and having whole number answers. Students may use parentheses for clarification since algebraic order of operations is not expected

**3.OA 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

## **Unit Vocabulary:**

**Factor-** the numbers being multiplied in a multiplication problem

**Product-** the answer to a multiplication problem

**Equal Groups-** groups that have the same number of items

**Multiples-** the result of a number being multiplied by other numbers

**Column-** items arranged up and down

**Row-** items arranged from left to right

**Repeated Addition-** adding the same number repeatedly

**Array-** a set of objects arranged into rows and columns

**Skip Counting-** counting forward by numbers other than 1

**Multiples of Ten-** the product of a number when multiplied by 10

**Parentheses-** used to group numbers or operations

**Commutative Property-** you can switch the order of the factors without changing the product

**Associative Property-** you can group the factors in any way without changing the product

**Identity Property-** any number multiplied by 1 stays the same

**Zero Property-** when multiplying a number by 0, the product will always be 0

## **The following standards will be ongoing throughout the year:**

**3.OA 8-** Solve two-step word problems using the four operations. Represent these problems using equations with a letter or a symbol, which stands for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. This standard is limited to problems posed with whole numbers and having whole number answers. Students may use parentheses for clarification since algebraic order of operations is not expected

**3.OA 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.NBT 2-** Fluently add and subtract within 1,000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.