Unit	3rd: Unit 4- Multiplication and Division **Math Investigations Book: Equal Groups** **Standards for Grade 3** UNIT 1= Numeration, Operations, and Problem Solving UNIT 2= Estimation, Calculation & Problem Solving UNIT 3= Tables, Bar Graphs, and Pictographs UNIT 4= Mulitiplication and Division UNIT 5= Estimation and Measurement UNIT 6= Fractions and Concepts UNIT 7=Shapes, Area, and Perimeter UNIT 8= Problem Solving, Tables, and Graphs UNIT 9= Measurement, Line Plots, and Graphs
4	**3.OA.1 Interpret products of whole numbers, e.g., interpret 5 x 7 as the total number of objects in 5 groups of 7 objects each.** ***For example, describe a context in which a total number of objects can be expressed as 5 x 7*****.**
4	**3.OA.2 Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.** ***For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8*****.**
4	**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.**
4	**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 x ? = 48, 5 - ? ÷ 3, 6 x 6 = ?*****.**
4	**3.OA.5 Apply properties of operations as strategies to multiply and divide.** ***Examples: If 6 x 4 = 24 is known, then 4 x 6 = 24 is also known. (Commutative property of multiplication.) 3 x 5 x 2 can be found by 3 x 5 = 15, then 15 x 2 = 30, or by 5 x 2 = 10, then 3 x 10 = 30. (Associative property of multiplication.) Knowing that 8 x 5 = 40 and 8 x 2 = 16, one can find 8 x 7 as 8 x (5 + 2) = (8 x 5) + (8 x 2) = 40 find 8 x 7 as 8 x (5 + 2) = (8 x 5) + (8 x 2) = 40 + 16 = 56. (Distributive property.) (Students need not use formal terms for these properties.)***
4	**3.OA.6 Understand division as an unknown-factor problem.** ***For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8*****.**
4	**3.OA.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 x 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.**
4	**3.OA.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing 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 should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations)*.)**
4	**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*****.)**
4	**3.NBT.3 Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 x 80, 5 x 60) using strategies based on place value and properties of operations.**
4	**3.MD.7.a Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.**
4	**3.MD.7.b Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.**
4	**3.MD.7.c Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths *a* and *b + c* is the sum of *a* x *b* and *a* x *c*. Use area models to represent the distributive property in mathematical reasoning.**
4	**3.MD.7.d Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.**