State: **NC**
Subject: **Math**
Grade Level: **3**

North Carolina Standard	Study Island Topic	Common Core Standard
Competency Goal 1 The learner will model, identify, and compute with whole numbers through 9,999.		

1.01 - Develop number sense for whole numbers through 9,999.
 	
  a. Connect model, number word, and number using a variety of representations.
  b. Build understanding of place value (ones through thousands).
  c. Compare and order.
	• **Compare & Order Numbers**
	• **Place Value**
		3.NBT.1. Use place value understanding to round whole numbers to the nearest 10 or 100.
		
		Representations of Numbers and Compare and Order: Covered by Fourth Grade Common Core

1.02 - Develop fluency with multi-digit addition and subtraction through 9,999 using:
 	
  a. Strategies for adding and subtracting numbers.
  b. Estimation of sums and differences in appropriate situations.
  c. Relationships between operations.
	• **Addition & Subtraction**
	• **Estimate Solutions**
	• **Fact Families**
	• **Real World Problems**
		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.
		
		3.NBT.2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

1.03 - Develop fluency with multiplication from 1x1 to 12x12 and division up to two-digit by one-digit numbers using:
 	
  a. Strategies for multiplying and dividing numbers.
  b. Estimation of products and quotients in appropriate situations.
	• **Estimate Solutions**
	• **Fact Families**
	• **Multiplication & Division Facts**
	• **Real World Problems**
		3.OA.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 a context in which a total number of objects can be expressed as 5 × 7.*
		
		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

c. Relationships between operations.		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.* **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.* **3.OA.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. **3.NBT.3.** Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.
1.04 - Use basic properties (identity, commutative, associative, order of operations) for addition, subtraction, multiplication, and division.	• **Number Properties** • **Order Of Operations**	**3.OA.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.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.

1.05 - Use area or region models and set models of fractions to explore part-whole relationships.
 	
  a. Represent fractions concretely and symbolically (halves, fourths, thirds, sixths, eighths).
  b. Compare and order fractions (halves, fourths, thirds, sixths, eighths) using models and benchmark numbers (zero, one-half, one); describe comparisons.
  c. Model and describe common equivalents, especially relationships among halves, fourths, and eighths, and thirds and sixths.
  d. Understand that the fractional relationships that occur between zero and one also occur between every two consecutive whole numbers.
  e. Understand and use mixed numbers and their equivalent fraction forms.
	• **Fractional Parts of Objects**	**3.NF.1.** Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a/b* as the quantity formed by *a* parts of size 1/*b*.
		
		3.NF.2. Understand a fraction as a number on the number line; represent fractions on a number line diagram.
		
		  a. Represent a fraction 1/*b* on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size 1/*b* and that the endpoint of the part based at 0 locates the number 1/*b* on the number line.
		
		  b. Represent a fraction *a/b* on a number line diagram by marking off *a* lengths 1/*b* from 0. Recognize that the resulting interval has size *a/b* and that its endpoint locates the number *a/b* on the number line.
		
		3.NF.3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
		
		  a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
		
		  b. Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model.
		
		  c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole

		numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.* d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. **3.G.2.** Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.*
1.06 - Develop flexibility in solving problems by selecting strategies and using mental computation, estimation, calculators or computers, and paper and pencil.	**Embedded**	**3.OA.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.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.

Competency Goal 2

The learner will recognize and use standard units of metric and customary measurement.

2.01 - Solve problems using measurement concepts and procedures involving:
 	
  a. Elapsed time.
  b. Equivalent measures within the same measurement system.
	• **Convert Similar Units**
	• **Time Elapsed**
	• **Units of Measurement**
		3.MD.1. Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.
		
		Equivalent Measures: Covered by Fourth Grade Common Core

2.02 - Estimate and measure using appropriate units.
 	
  a. Capacity (cups, pints, quarts, gallons, liters).
  b. Length (miles, kilometers)
  c. Mass (ounces, pounds, grams, kilograms).
  d. Temperature (Fahrenheit, Celsius).
	• **Units of Measurement**	**3.MD.2.** Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.
		
		Temperature is not covered by Common Core

Competency Goal 3

The learner will recognize and use basic geometric properties of two- and three-dimensional figures.

3.01 - Use appropriate vocabulary to compare, describe, and classify two- and three-dimensional figures.	• **2- & 3-Dimensional Shapes**	**3.G.1.** Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.
3.02 - Use a rectangular coordinate system to solve problems. a. Graph and identify points with whole number and/or letter coordinates.	• **Grids**	**Covered by Fifth Grade Common Core**

b. Describe the path between given points on the plane.		

Competency Goal 4

The learner will understand and use data and simple probability concepts.

4.01 - Collect, organize, analyze, and display data (including circle graphs and tables) to solve problems.	• **Interpret Graphs**	**3.MD.3.** Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*
4.02 - Determine the number of permutations and combinations of up to three items.	• **Possible Outcomes**	**Covered by High School Statistics Common Core**
4.03 - Solve probability problems using permutations and combinations.	• **Probability**	**Covered by High School Statistics Common Core**

Competency Goal 5

The learner will recognize, determine, and represent patterns and simple mathematical relationships.

5.01 - Describe and extend numeric and geometric patterns.	• **Geometric Patterns** • **Number Patterns**	**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.*
5.02 - Extend and find missing terms of repeating and growing patterns.	• **Geometric Patterns** • **Number Patterns**	**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.*
5.03 - Use symbols to represent unknown quantities in number sentences.	• **Number Sentences**	**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.
5.04 - Find the value of the unknown in a number sentence.	• **Number Sentences**	**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 × ? = 48, 5 = · ÷ 3, 6 × 6 = ?.*

Third Grade Common Core Standards Not Covered in North Carolina Third Grade

3.MD.4. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

3.MD.5. Recognize area as an attribute of plane figures and understand concepts of area measurement.

   a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.

   b. A plane figure which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units.

3.MD.6. Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

3.MD.7. Relate area to the operations of multiplication and addition.

   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.

   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.

   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* × *b* and *a* × *c*. Use area models to represent the distributive property in mathematical reasoning.

   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.

3.MD.8. Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.