

Course Guide to Essential Outcomes

3rd Grade Mathematics

Course Description: 3rd Grade Mathematics utilizes Common Core State Standards for Mathematics, employs *Ready Classroom Math* as a resource, and infuses identified effective math practices to meet student needs.

Adopted Course Primary Resource	Supplementary Resources
<ul style="list-style-type: none"> <i>Ready Classroom Math</i> (Curriculum Associates) 	<ul style="list-style-type: none"> i-Ready Online Instruction - Math (Curriculum Associates) Building Fact Fluency Toolkit (Stenhouse)

Red indicates a course essential standard.

Domain	Cluster	Code	Common Core State Standard
Operations and Algebraic Thinking	Represent and solve problems involving multiplication and division.	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 $56 \div 8$ 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 $56 \div 8$.
		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 $8 \times ? = 48$, $5 = \underline{\quad} \div 3$, $6 \times 6 = ?$.
	Understand properties of multiplication and the relationship between multiplication and division.	3.OA.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 multiplying $3 \times 5 = 15$ then multiplying $15 \times 2 = 30$, or by multiplying $5 \times 2 = 10$ then multiplying $3 \times 10 = 30$. (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.) (Students need not use formal terms for these properties.)
	Multiply and divide within 100.	3.OA.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 one-digit numbers.
	Solve problems involving the four operations, and identify and explain patterns in arithmetic.	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.)
		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.
	Number and Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	3.NBT.1
		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. (A range of algorithms may be used.)
		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. (A range of algorithms may be used.)
Number and Operations: Fractions	Develop understanding of fractions as numbers.	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.

			<p>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.</p> <p>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.</p> <p>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.</p>
Measurement and Data	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	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.
		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. (Excludes compound units such as cm^3 and finding the geometric volume of a container.)
	Represent and interpret data.	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.
		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.
	Geometric measurement-- A. understand concepts of area and relate area to multiplication and to addition. B. recognize perimeter as an attribute of plane figures and distinguish between linear and area measures	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 $a \times b$ and $a \times c$. 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
Geometry	Reason with shapes and their attributes.	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.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 is $1/4$ of the area of the shape.
Mathematical Practices			<ul style="list-style-type: none"> (MP1) Make sense of problems and persevere in solving them. (MP2) Reason abstractly and quantitatively. (MP3) Construct viable arguments and critique the reasoning of others. (MP4) Model with Mathematics (MP5) Use appropriate tools strategically. (MP6) Attend to precision. (MP7) Look for and make use of structure. (MP8) Look for and express regularity in repeated reasoning.

Units of Study	Learning Targets Working Toward	Essential Vocabulary	Unit I Can Statements	Common Assessments & Pacing
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<p>Unit 1 Three-Digit Numbers: Place Value, Addition, and Subtraction</p>	<p>3.NBT.A.1 3.NBT.A.2</p>	<p>Sum Difference Place value Number line Regroup</p>	<ul style="list-style-type: none"> • Use place value to round numbers to the nearest ten and to the nearest hundred, for example: 315 rounded to the nearest ten is 320. 826 rounded to the nearest hundred is 800 • Use place value to add and subtract, for example: $329 + 148 = (300 + 100) + (20 + 40) + (9 + 8)$ $= 400 + 60 + 17$ $= 477$ • Solve word problems by adding and subtracting using place value 	<p>-Approx. 21 days</p> <p>-Pre-Assessments</p> <p>-Formative Assessments</p> <p>-Summative Assessments</p>
<p>Unit 2 Multiplication and Division: Concepts, Relationships, and Patterns</p>	<p>3.OA.A.4 3.OA.C.7 3.OA.D.9</p>	<p>Array Sum Even number Odd number</p>	<ul style="list-style-type: none"> • Explain multiplication using equal groups and arrays • Break apart numbers to make multiplying easier, for example: 3×8 is equal to $(3 \times 4) + (3 \times 4)$ • Use order and grouping to make multiplying easier, for example: 2×10 is equal to $6 \times (2 \times 5)$ • Use place value to multiply, for example: 3×40 is equal to $3 \times 4 \times 10$ • Explain division using equal groups and arrays • Understand division as a multiplication problem, for example: $10 \div 2 = ?$ can be shown as $2 \times ? = 10$ • Find the rule for a pattern and explain it 	<p>-Approx. 42 days</p> <p>-Pre-Assessments</p> <p>-Formative Assessments</p> <p>-Summative Assessments</p>
<p>Unit 3 Multiplication: Finding Area, Solving Word Problems, and Using Scaled Graphs</p>	<p>3.MD.B.3 3.MD.C.5a 3.MD.C.5b 3.MD.C.6 3.MD.C.7c 3.MD.C.7d 3.OA.A.3 3.OA.D.8</p>	<p>Bar graph Measure Unit Length Picture graph</p>	<ul style="list-style-type: none"> • Understand area and find area by tiling and by multiplying • Find the area of a combined rectangle or a non-rectangular shape by adding the areas of the rectangles that make up the shape • Use multiplication or division to solve one-step word problems • Use addition, subtraction, multiplication, or division to solve two-step word problems • Solve problems using picture graphs and bar graphs • Draw picture graphs and bar graphs to show data 	<p>-Approx. 30 days</p> <p>-Pre-Assessments</p> <p>-Formative Assessments</p> <p>-Summative Assessments</p>

<p>Unit 4 Fractions: Equivalence and Comparison, Measurement, and Data</p>	<p>3.NF.A.1 3.NF.A.2a 3.NF.A.2b 3.NF.A.3a 3.NF.A.3b 3.NF.A.3c 3.NF.A.3d 3.MD.B.4</p>	<p>Halves Thirds Fourths Whole Greater than (>) Less than (<)</p>	<ul style="list-style-type: none"> • Use a fraction to show equal parts of a whole, for example: when a whole has 4 equal parts, each part is $\frac{1}{4}$ of the whole • Use a number line to show fractions, and find a fraction on a number line • Understand that equivalent fractions show the same amount and name the same point on a number line • Find equivalent fractions • Write whole numbers as fractions, for example: $5 = \frac{5}{1}$ or $\frac{10}{2}$ • Compare fractions with the same numerator or the same denominator, including using $<$, $>$, and $=$ • Measure length to the nearest $\frac{1}{2}$ or $\frac{1}{4}$ inch and show data on a line plot 	<p>-Approx. 28 days</p> <p>-Pre-Assessments</p> <p>-Formative Assessments</p> <p>-Summative Assessments</p>
<p>Unit 5 Measurement: Time, Liquid Volume, and Mass</p>	<p>3.MD.A.1 3.MD.A.2</p>	<p>AM PM Hour hand Minute hand</p>	<ul style="list-style-type: none"> • Tell and write time to the nearest minute on digital clocks with hands and solve problems about time • Estimate liquid volume and solve problems about liquid volume • Estimate mass and solve problems about mass 	<p>-Approx. 16 days</p> <p>-Pre-Assessments</p> <p>-Formative Assessments</p> <p>-Summative Assessments</p>
<p>Unit 6 Shapes: Attributes and Categories, Perimeter and Area, and Partitioning</p>	<p>3.G.A.1 3.MD.D.8 3.G.A.2</p>	<p>Hexagon Pentagon Quadrilateral Rhombus</p>	<ul style="list-style-type: none"> • Describe shapes, compare them, and put them in groups that tell how they are alike, for example: by the number of sides or by whether they have right angles • Compare quadrilaterals and put them in groups based on their attributes, for example: all 4 sides are the same length or there are 2 pairs of parallel sides • Solve problems involving perimeters, including finding an unknown side length, and finding rectangles with the same perimeter and different areas or with the same area and different perimeters • Divide rectangles into parts with equal area and name the area of shaded parts using unit fractions 	<p>-Approx. 18 days</p> <p>-Pre-Assessments</p> <p>-Formative Assessments</p> <p>-Summative Assessments</p>

Reteach & Enrich (Time Dependent)	Re-teach based on concepts students do not show proficiency on at the end of the year. Provide enrichment activities for students showing proficiency.
Semester II Ends	

Requirements:	Other Notes:
<ul style="list-style-type: none"> ● Must have 160 minimum Math lessons in a school year. ● 20 minutes of mental mathematics or number sense weekly (if not embedded in the week's lessons). ● Math talk opportunities weekly. ● Unit/chapter assessments are to be common among the teachers of the same course for discussion and analysis. <ul style="list-style-type: none"> ○ Student proficiency tracked by standard (learning targets/standards). ○ A class should achieve at least 80% proficiency on a standards referenced unit/chapter assessment in order for the teacher to move on to a new unit of learning. Reteaching is in order if this mark is not met. ● Each teacher will communicate to student families what will be covered in the class and how the parent can support the learning at home. 	