3rd Grade
Mathematics Alignment—Common Core State Standards and CT Frameworks

NOTE: CCSS standards shown in blue do not equivalent CT standards.

CCSS Standards	CT Framework Grade Level Expectations
3.OA – Operations and Algebraic Thinking :	
Represent and solve problems involving multiplication and division:	
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).	CT.2.2.1.3: Represent multiplication and division with factors of one, two, five and ten using a variety of models and strategies such as arrays, pictures, skip counting, extending number patterns, and repeated addition and subtraction, describe the connection between addition and subtraction.
	CT.4.2.2.17: Recall the multiplication and division facts one through 10.
	CT.3.2.2.14: Solve problems involving the multiplication and division of two- and three-digit numbers by one digit with models, arrays and pictures of sets.
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.	CT.2.2.1.3: Represent multiplication and division with factors of one, two, five and ten using a variety of models and strategies such as arrays, pictures, skip counting, extending number patterns, and repeated addition and subtraction, describe the connection between addition and subtraction.
	CT.4.2.2.17: Recall the multiplication and division facts one through 10.
	CT.3.2.2.14: Solve problems involving the multiplication and division of two- and three-digit numbers by one digit with models, arrays and pictures of sets.
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).	CT.3.1.2.4: Describe mathematical relationships and situations involving computation of whole numbers (addition, subtraction, multiplication, division) using words, symbols, open number sentences and equations.
	CT.4.2.2.17: Recall the multiplication and division facts one through 10.

	CT.3.2.2.14: Solve problems involving the multiplication and division of two- and three-digit numbers by one digit with models, arrays and pictures of sets.
3.OA.4: Determine the unknown whole number in a multiplication or division equation relating three whole numbers.	CT.3.1.2.4: Describe mathematical relationships and situations involving computation of whole numbers (addition, subtraction, multiplication, division) using words, symbols, open number sentences and equations.
	CT.3.1.3.5: Demonstrate understanding of equivalence as balanced relationships of quantities by using the equals sign to relate two quantities that are equivalent and the inequality symbols, < and >, to relate two quantities that are not equivalent.
	CT.4.2.2.17: Recall the multiplication and division facts one through 10.
Understand Properties of Multiplication and the Relationship Between Multiplication and Division: *Multiply and Divide within 100:*	
3.OA.5: Apply properties of operations as strategies to multiply and divide. (Students need not use formal terms for these properties).	CT.3.1.2.4: Describe mathematical relationships and situations involving computation of whole numbers (addition, subtraction, multiplication, division) using words, symbols, open number sentences and equations.
	CT.3.1.3.6: Solve problems and demonstrate an understanding of equivalence using the equals sign in number sentences that reflect the commutative and associative properties of addition and multiplication of whole numbers such as 3 x 5 = 5 x 3.
	CT.4.1.3.4: Represent possible values by using symbols (variables) to represent quantities in expressions and number sentences. Use number sentences (equations) to model and solve word problems.
	CT.4.1.3.5: Solve problems and demonstrate an understanding of equivalence in mathematical situations that reflect the commutative and associative properties of addition and multiplication of whole numbers and the distributive property.
3.OA.6: Understand division as an unknown-factor problem.	CT.3.1.2.4: Describe mathematical relationships and situations involving computation of whole numbers (addition, subtraction, multiplication, division) using words, symbols, open number sentences and equations.

	CT.3.1.3.6: Solve problems and demonstrate an understanding of equivalence using the equals sign in number sentences that reflect the commutative and associative properties of addition and multiplication of whole numbers such as 3 x 5 = 5 x 3.
	CT.4.1.3.4: Represent possible values by using symbols (variables) to represent quantities in expressions and number sentences. Use number sentences (equations) to model and solve word problems.
	CT.4.1.3.5: Solve problems and demonstrate an understanding of equivalence in mathematical situations that reflect the commutative and associative properties of addition and multiplication of whole numbers and the distributive property.
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 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.	CT.4.2.2.17: Recall the multiplication and division facts one through 10.
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).	CT.3.1.2.4: Describe mathematical relationships and situations involving computation of whole numbers (addition, subtraction, multiplication, division) using words, symbols, open number sentences and equations.
	CT.3.2.2.13: Create and solve addition and subtraction word problems by using place value patterns and algebraic properties (commutative and associative for addition).
	CT.3.2.2.14: Solve problems involving the multiplication and division of two- and three-digit numbers by one digit with models, arrays and pictures of sets.
	CT.3.2.2.16: Use a variety of estimation strategies to determine and justify the reasonableness of an answer to a computation or word problem involving addition and subtraction of two- and three-digit whole numbers and money amounts up to $100.00.
	CT.4.1.3.4: Represent possible values by using symbols (variables) to represent quantities in expression and number sentences. Use number sentences (equations) to model and solve word problems.

	CT.4.1.3.5: Solve problems and demonstrate an understanding of equivalence in mathematical situations that reflect the commutative and associative properties of addition and multiplication of whole numbers and the distributive property.
	CT.4.2.2.14: Develop and use a variety of computation strategies, including place value concepts, number lines and the commutative and associative properties, to add and subtract three- and four-digit numbers and money amounts up to $1,000.00.
	CT.4.2.2.15: Solve contextual problems involving addition and subtraction of whole numbers using a variety of methods, including writing appropriate number sentences (equations) and explaining the strategies used.
	CT.5.2.2.14: Write and solve multistep problems for all four operations involving multi-digit whole numbers and money amounts and explain how answers were determined orally and in writing.
	CT.5.2.2.19: Use estimation to predict results and to recognize when an answer is or is not reasonable or will result in an overestimate or underestimate and explain the reasoning used orally and in writing.
3. OA.9: Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.	CT.3.1.1.2: Create and construct numerical and spatial patterns and sequences that repeat and grow.
	CT.3.1.2.4: Describe mathematical relationships and situations involving computation of whole numbers (addition, subtraction, multiplication, and division) using words, symbols, open number sentences and equations.
	CT.3.2.2.13: Create and solve addition and subtraction word problems by using place value patterns and algebraic properties (commutative and associative for addition).
	CT.4.1.1.2: Develop and test generalizations based on observable patterns and relationships and describe the rules for number patterns using equations.
3.NBT - Number and Operations in Base Ten:	
Use place value understanding and properties of operations to perform multi-digit arithmetic:	
3. NBT.1: Use place value understanding to round whole numbers to the nearest 10 or 100.	--Use place value understanding to round whole numbers to the nearest 10 or 100.

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.	CT.3.2.1.4: Represent three- and four-digit numbers up to ten thousand in expanded forms and regrouped forms. Use the forms to support computations strategies.
	CT.3.2.2.12: Solve problems involving addition and subtraction of two- and three-digit whole numbers and money amounts up to $100.00 with and without regrouping using a variety of strategies, including models.
	CT.3.2.2.13: Create and solve addition and subtraction word problems by using place value patterns and algebraic properties (commutative and associative for addition).
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.	CT.3.2.2.14: Solve problems involving the multiplication and division of two- and three-digit numbers by one digit (two, three, four, five or ten) with models, arrays and pictures of sets.
	CT.5.2.2.11: Estimate products and missing factors using multiples of ten, one hundred and one thousand.
	--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.
3.NF - Number and Operations – Fractions:	
Develop understanding of fractions as numbers.	
3.NF.1: Understand a fraction 1/*b* as the quantity formed by one 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*.	--Understand a fraction 1/*b* as the quantity formed by one 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 on 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 located the number *a/b* on the number line.	--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 on 0 locates the number 1/*b* on the number line. --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 located the number *a/b* on the number line.
	CT.4.2.1.10: Construct and use models, pictures and number lines, including rulers, to identify wholes and parts of a whole, including a part of a group or groups, as simple fractions and mixed numbers.
	CT.5.2.1.7: Choose and use benchmarks to approximate locations of fractions, mixed numbers and decimals, on number lines and coordinate grids.

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., ½ = 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).	--Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. --Recognize and generate simple equivalent fractions (e.g., ½ = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent (e.g., by using a visual fraction model). --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. --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).
	CT.3.2.1.7: Determine equivalence of and compare and order fractions through the construction and use of models, pictures and number lines with like and unlike denominators of two, three, four, five, six, and eight, including identifying a whole object or a whole set of objects as a fraction with the same numerator and denominator.
	CT.4.2.1.7: Construct and use number lines, pictures and models, including rulers, to determine and identify equivalent ratios and fractions.
	CT.4.2.1.9: Construct and use models, pictures and number lines, including rulers, to compare and order fractional parts of a whole and mixed numbers with like and unlike denominators of two, three, four, six, eight and ten.
3.MD – 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 subtractions of time intervals in minutes (e.g., by representing the problem on a number line diagram).	--Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtractions of time intervals in minutes (e.g., by representing the problem on a number line diagram).
	CT.3.3.3.7: Use calendar and clocks to plan and sequence events and to identify events and times as occurring in the am. and p.m.

	CT.3.3.8: Solve problems involving telling time to the nearest quarter hour, five minutes and minute using analog and digital clocks.
	CT.4.3.3.6: Use calendars and clocks to solve problems and schedule events involving elapsed time.
3. MD.2: Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). (Excludes compound units such as cm^3 and finding the geometric volume of a container) Add, subtract, multiply and divide to solve one-step word problems involving masses or volumes that are given in the same units (e.g., by using drawings to represent the problem). (Excludes multiplicative comparison problems, e.g., problems involving notions of "times as much.")	CT.3.3.3.9: Develop an understanding of and describe the relationships between and among appropriate units of measure through concrete experiences (ounces and pounds; gram and kilograms; inches, feet and yards; meters and kilometers; cups, pints and quarts; and milliliters and liters).
	CT.3.3.3.11: Describe and use estimation strategies that can identify a reasonable answer to a measurement problem when an estimate is appropriate.
	CT.4.3.3.8: Use customary and metric tools and units and non-standard units to estimate, measure and solve problems involving length and perimeter to the nearest quarter-inch or half-centimeter, area, capacity, weight, mass, temperature and volume.
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.	--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.
	CT.3.4.1.2: Collect and organize data that answer questions using diagrams, charts, tables, lists, pictographs, bar graphs and line plots.
	CT.3.4.2.3: Analyze data that have been collected and organized in order to draw and defend conclusions based on the data.
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.	--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.
	CT.3.4.1.2: Collect and organize data that answer questions using diagrams, charts, tables, lists, pictographs, bar graphs and line plots.
	CT.4.3.1.8: Use customary and metric tools and units and non-standard units to estimate, measure and solve problems involving length and perimeter to the nearest quarter-inch or half-centimeter, area, capacity, weight, mass, temperature and volume.

Geometric Measurement: Understand concepts of area and relate area to multiplication and to addition:	
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.	--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).	--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* x *b* and *a* x *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.	--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* x *b* and *a* x *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.
	CT.6.3.3.8: Select and use appropriate strategies, tools and units to estimate and solve measurement problems involving length, perimeter, area, volume, capacity, mass and weight.
Geometric Measurement: Recognize perimeter as an attribute of plane figures and distinguish between linear and area measures:	
3.MD.8: Solve real world and mathematical problems involving perimeters of polygons, including find the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or within the same area and different perimeters.	--Solve real world and mathematical problems involving perimeters of polygons, including find the perimeter given the side lengths, finding a unknown side length, and exhibiting rectangles with the same perimeter and different areas or within the same area and different perimeters.
	CT.5.3.1.2: Develop formulas for finding the perimeter and area of squares, rectangles and triangles and use them to solve problems.

	CT.5.3.2.6: Analyze and describe the effect that changing the dimensions (perimeter) of a polygon has on its area and vice versa.
3.G – Geometry	
Reason with shapes and their attributes.	
3.G.1: Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributed (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.	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributed (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.
	CT.3.3.1.1: Identify, describe, construct and draw two-dimensional shapes such as quadrilaterals (including parallelograms), pentagons and hexagons.
	CT.3.3.1.3: Compare and classify polygons and solids by using attributes such as the number and length of sides, faces and edges and the number and kinds of angles (acute, right and obtuse) and determine congruence of polygons.
3.G.2: Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. Examples: Partition a shape into 4 parts with equal area, and describe the area of each part as ¼ of the area of the shape.	--Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. Examples: Partition a shape into 4 parts with equal area, and describe the area of each part as ¼ of the area of the shape.
The following CT standard(s) are not matched to the CCSS and should not be addressed by instruction at this level:	
	3.3.2.6: Investigate ways to tile or tessellate a shape or region using a variety of polygons.