



Course Title: Fourth Grade Math		
<p>Description: In fourth grade, the content focuses on procedures, concepts, and applications in three critical areas:</p> <ul style="list-style-type: none"> • Understanding and demonstrating how to multiply large numbers, as well as how to divide large numbers that may have a remainder. • Recognizing and creating fractions that are equal; add and subtract fractions that have the same denominator; multiply a fraction by a whole number. • Identifying and describing geometric figures based on their properties, such as having parallel sides, perpendicular sides, certain angle measures, or lines of symmetry 		
<i>Number and Quantity</i>		
<u>Reporting Topic</u>	<u>Grade Level Standards</u>	<u>Competency Statement</u>
<u>Place Value</u>	<ul style="list-style-type: none"> • Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. <i>For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division.</i> (4.NBT.A.1) • Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons. (4.NBT.A.2) • Use place value understanding to round multi-digit whole numbers to any place. (4.NBT.A.3) 	<p>Students will: Round multi-digit numbers up to millions. Convert from standard to expanded form and compare using $<$, $>$, or $=$</p>
<u>Comparing Fractions</u>	<ul style="list-style-type: none"> • Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. (4.NF.A.1) • Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same 	<p>Students will: Compare two fractions with different numerators and denominators, and, generate equivalent fractions.</p>



	whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model. (4.NF.A.2)	
<u>Adding and Subtracting Fractions</u>	<ul style="list-style-type: none"> Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. (4.NF.A.3) Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. (3.NF.C.5) 	Students will: <ul style="list-style-type: none"> Add and subtract mixed numbers with common denominators. Add and subtract fractions with common or uncommon denominators
<u>Multiplying Fractions</u>	A. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. (4.NF.B.4)	Students will: <ul style="list-style-type: none"> Multiply a fraction by a whole number up to ten
<u>Decimal Concepts</u>	<ul style="list-style-type: none"> Use decimal notation for fractions with denominators 10 or 100. <i>For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.</i> (4.NF.C.6) <i>Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model.</i> (4.NF.C.7) 	Students will: <ul style="list-style-type: none"> Compare and justify two decimals up to hundredths using $<$, $>$, and $=$.
<i>Operations and Algebra</i>		
<u>Reporting Topic</u>	<u>Grade Level Standards</u>	<u>Competency Statement</u>
<u>Addition and Subtraction</u>	<ul style="list-style-type: none"> Fluently add and subtract multi-digit whole numbers using the standard algorithm (4.NBT.B.4) 	Students will: <ul style="list-style-type: none"> Fluently add and subtract multi-digit numbers using the standard algorithm.
	<ul style="list-style-type: none"> Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (4.NBT.B.5) 	Students will: <ul style="list-style-type: none"> Multiply 4 digit by 1 digit and 2 digit by 2 digit numbers. Divide 4 digit by



<p><u>Multiplication and Division</u></p>	<ul style="list-style-type: none"> Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (4.NBT.B.6) Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. (4.OA.A.1) 	<p>1 digit with remainders.</p>
<p><u>Expressions and Equations</u></p>	<ul style="list-style-type: none"> Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. (4.OA.A.2) Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. 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. (4.OA.A.3) Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. <i>4.NF.4c</i> Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. (4.NF.3c) 	<p>Students will:</p> <ul style="list-style-type: none"> Solve word problems involving addition, subtraction, and multiplication of fractions.
<p><u>Factors and Multiples</u></p>	<ul style="list-style-type: none"> Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite. (4.OA.B.4) 	<p>Students will:</p> <ul style="list-style-type: none"> Find all factor pairs for a whole number in the range of 1 - 100.
<p><u>Patterns</u></p>	<ul style="list-style-type: none"> Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. <i>For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate</i> 	<p>Students will:</p> <ul style="list-style-type: none"> Generate a number or shape pattern that follows a given rule.



between odd and even numbers. Explain informally why the numbers will continue to alternate in this way. (4.OA.C.5)

Geometry

Reporting Topic	Grade Level Standards	Competency Statement
<u>Geometric Shapes</u>	<ul style="list-style-type: none"> Classify two–dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. (4.G.A.2) 	Students will: <ul style="list-style-type: none"> Classify two dimensional figures based on presence or absence of types lines or angles. Recognize right triangles
<u>Lines and Symmetry</u>	<ul style="list-style-type: none"> Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two–dimensional figures. (4.G.A.1) Recognize a line of symmetry for a two–dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line–symmetric figures and draw lines of symmetry. (4.G.A.3) 	Students will: <ul style="list-style-type: none"> Draw points, lines, segments, rays, angles, perpendicular lines, and parallel lines and identify them.
<u>Area</u>	<ul style="list-style-type: none"> Apply the area and perimeter formulas for rectangles in real world and mathematical problems. <i>For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.</i> (4.MD.A.3) 	Students will: <ul style="list-style-type: none"> Apply area formulas in real world problems using rectangles.
<u>Perimeter</u>	<ul style="list-style-type: none"> Apply the area and perimeter formulas for rectangles in real world and mathematical problems. <i>For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.</i> (4.MD.A.3) 	Students will: <ul style="list-style-type: none"> Apply perimeter formulas in real world problems using rectangles.
	<ul style="list-style-type: none"> Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement (4.MD.C.5) Measure angles in whole–number degrees using a protractor. Sketch 	Students will: <ul style="list-style-type: none"> Solve addition and subtraction problems to find unknown angles



<p>Angles</p>	<p>angles of specified measure. (4.MD.C.6)</p> <ul style="list-style-type: none"> Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure. (4.MD.C.7) 	
<p><i>Measurement, Data, Statistics, and Probability</i></p>		
<p>Reporting Topics</p>	<p>Grade Level Standards</p>	<p>Competency Statement</p>
<p>Measurement</p>	<ul style="list-style-type: none"> Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. (4.MD.A.1) Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. (4.MD.A.2) 	<p>Students will:</p> <ul style="list-style-type: none"> Use the four operations to solve word problems involving measurements of various types
<p>Represent and Interpret Data</p>	<ul style="list-style-type: none"> Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. (4.MD.B.4) 	<p>Students will:</p> <ul style="list-style-type: none"> Make line plots to display data of measurements in fractions of a unit.