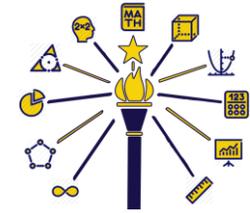




Indiana Academic Standards for Mathematics – Grade 4 Mathematics Standards Resource Guide Document



This Teacher Resource Guide, revised in July 2018, provides supporting materials to help educators successfully implement the Indiana Academic Standards for Fourth Grade. This resource guide is provided to help ensure all students meet the rigorous learning expectations set by the academic standards. Use of this guide and the resources on the web page is optional – teachers should decide which resources will work best for their students. However, all guidance contained in this document and on the website has been chosen to best support effective teaching practices and promote the Mathematics Process Standards.

With an increased emphasis on content area literacy, academic vocabulary has been noted. Additionally, necessary vocabulary that should be prior knowledge has also been listed. Best practices should be utilized when teaching students academic vocabulary. Please see the Literacy Framework for examples of best practices.

Examples have been removed from the document as they tend to limit interpretation and classroom application. Rather, success criteria, in the form of “I can” statements, have been included. According to Hattie (2017), success criteria is specific, concrete and measurable, describing what success looks like when a learning goal is reached. Additionally, success criteria contributes to teacher clarity, which has a 0.75 effect size! An effect size of 0.40 reportedly indicates one year of growth. Utilizing success criteria in the classroom allows students to monitor their own learning and increases motivation (Hattie, p. 57). **It is important to note that the success criteria provided here are not intended to be limiting. Teachers may have additional success criteria for their students.**

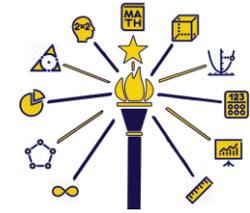
Guidance around vertical articulation has been provided in the last two columns. Knowing what was expected of students at previous grade levels will help teachers connect new learning to prior knowledge. Additionally, understanding what a student will be expected to learn in the future provides the teacher a context for the current learning. This information is not exhaustive; rather it is provided to give teachers a quick understanding of how the work builds from previous grade levels into subsequent courses. The Indiana Department of Education (IDOE) math team recommends teachers further study this vertical articulation to situate their course objectives in the broader math context.

If you have any questions, please do not hesitate to reach out to the IDOE math team. Contact information for the Elementary and Secondary Math Specialists can be found on the website: <https://www.doe.in.gov/standards/mathematics>. If you have suggested resources for the website, please share those as well.

Hattie, J., Fisher, D., Frey, N., Gojak, L. M., Moore, S. D., & Mellman, W. (2017). *Visible learning for mathematics: What works best to optimize student learning, grades K-12*. Thousand Oaks, CA: Corwin Mathematics.

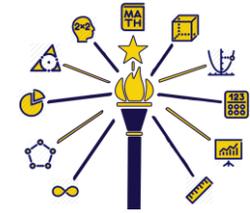


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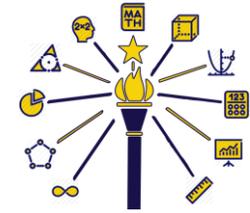


Number Sense

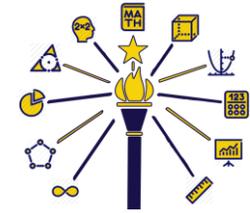
Number Sense					
Grade 4 Mathematics Standards	Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead	
4.NS.1	<p>Read and write whole numbers up to 1,000,000. Use words, models, standard form and expanded form to represent and show equivalent forms of whole numbers up to 1,000,000.</p>	<p>I can read and write numbers written in both standard and word form up to 1,000,000.</p> <p>I can represent whole numbers to 1,000,000 in standard, word, and expanded form, and by using models.</p> <p>I can show that numbers are equivalent in standard, word, and expanded form.</p>	<p>Word Form</p> <p>Standard Form</p> <p>Expanded Form</p> <p>Equivalent</p>	<p>Read and write whole numbers up to 10,000. (MA.3.NS.1)</p>	<p>Explain patterns in the number of zeros of the product when multiplying a number by powers of 10. (MA.5.NS.4)</p>
4.NS.2	<p>Compare two whole numbers up to 1,000,000 using $>$, $=$, and $<$ symbols.</p>	<p>I can compare numbers up to 1,000,000 using greater than, less than, and equal to symbols.</p>	<p>Compare</p> <p>Greater Than</p> <p>Less Than</p> <p>Equal</p> <p>Whole Number</p>	<p>Compare two whole numbers up to 10,000. (MA.3.NS.2)</p>	<p>Use a number line to compare and order fractions, mixed numbers, and decimals to thousandths. (MA.5.NS.1)</p>
4.NS.3	<p>Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. Name and write mixed numbers using objects or pictures. Name and write mixed numbers</p>	<p>I can express whole numbers as fractions.</p> <p>I can use objects and pictures to name and write mixed numbers.</p>	<p>Fractions</p> <p>Whole Number</p> <p>Mixed Number</p> <p>Improper Fraction</p>	<p>Recognize and generate simple equivalent fractions. (MA.3.NS.7)</p>	<p>Explain different interpretations of fractions. (5.NS.2)</p>



	as improper fractions using objects or pictures.	<p>I can recognize fractions equivalent to whole numbers.</p> <p>I can use objects and pictures to name and write mixed numbers as improper fractions.</p>			
4.NS.4	<p>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. [In grade 4, limit denominators of fractions to 2, 3, 4, 5, 6, 8, 10, 25, 100.]</p>	<p>I can use visual fraction models to explain why one fraction is equivalent to another.</p> <p>I can show that even though the number and size of the parts of two fractions may differ, the fractions themselves are the same size.</p> <p>I can generate and recognize equivalent fractions.</p>	<p>Equivalent Fractions</p> <p>Numerator</p> <p>Denominator</p>	<p>Understand two fractions as equivalent (MA.3.NS.6)</p> <p>Recognize and generate simple equivalent fractions (MA.3.NS.7)</p>	<p>Explain different interpretations of fractions, including: as parts of a whole, parts of a set, and division of whole numbers by whole numbers. (MA.5.NS.2)</p>
4.NS.5	<p>Compare two fractions with different numerators and different denominators (e.g., by creating common denominators or numerators, or by comparing to a benchmark, such as 0, $1/2$, and 1). Recognize comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the</p>	<p>I can explain that comparing two fractions must refer to the same whole.</p> <p>I can compare two fractions by reasoning about their size.</p> <p>I can compare two fractions by creating</p>	<p>Numerator</p> <p>Denominator</p> <p>Benchmark</p> <p>Common Denominator</p> <p>Unlike Fractions</p> <p>Greater Than</p>	<p>Compare two fractions with the same numerator or the same denominator. (MA.3.NS.8)</p>	<p>Use a number line to compare and order fractions, mixed numbers, and decimals to thousandths. (MA.5.NS.1)</p>



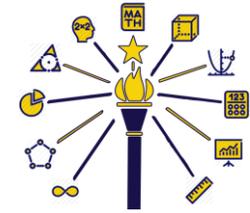
	conclusions (e.g., by using a visual fraction model).	<p>equivalent fractions with a common denominator.</p> <p>I can compare two fractions by creating equivalent fractions with common numerators.</p> <p>I can order fractions using $<$, $>$, and $=$ and justify the comparison.</p>	<p>Less Than</p> <p>Equal</p>		
4.NS.6	<p>Write tenths and hundredths in decimal and fraction notations. Use words, models, standard form and expanded form to represent decimal numbers to hundredths. Know the fraction and decimal equivalents for halves and fourths (e.g., $1/2 = 0.5 = 0.50$, $7/4 = 1 \frac{3}{4} = 1.75$).</p>	<p>I can write tenths and hundredths as fractions and decimals.</p> <p>I can show decimals to the hundredths place in word form, expanded form, and standard form.</p> <p>I can use models to represent decimals to the hundredths.</p> <p>I can recall fraction and decimal equivalents for halves and fourths.</p>	<p>Standard Form</p> <p>Word Form</p> <p>Equivalent</p>	<p>Recognize and generate simple equivalent fractions. (MA.3.NS.7)</p>	<p>Understand, interpret, and model percents as part of a hundred. (MA.5.NS.6)</p>
4.NS.7	<p>Compare two decimals to hundredths by reasoning about their size based on the same whole. Record the results of</p>	<p>I can compare two decimal numbers using reasoning about their size when based on</p>	<p>Greater Than</p> <p>Less Than</p>	<p>Compare two fractions with the same numerator or the same</p>	<p>Use a number line to compare and order fractions, mixed numbers, and</p>



	comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions (e.g., by using a visual model).	the same whole (In 4 th Grade, students are only expected to work with tenths and hundredths). I can compare two decimals using $<$, $>$, and $=$, and can justify my comparison.	Equal Compare	denominator by reasoning about their size based on the same whole. (MA.3.NS.8)	decimals to thousandths. (MA.5.NS.1)
4.NS.8	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.	I can find all factor pairs for whole numbers from 1-100. I can explain the relationship between factors and multiples. I can decide whether or not one number from 1-100 is a multiple of another one-digit number.	Factor Factor Pair Whole Number Multiple	Represent the concept of multiplication of whole numbers with models. (MA.3.C.2)	Compare the size of a product to the size of one factor on the basis of the size of the other factor. (MA.5.C.3)
4.NS.9	Use place value understanding to round multi-digit whole numbers to any given place value.	I can round whole numbers to any given place value. I can use place value understanding to round multi-digit whole numbers to any given place value.	Round Place Value	Use place value understanding to round 2- and 3-digit whole numbers to the nearest 10 or 100. (MA.3.NS.9)	Use place value understanding to round decimal numbers up to thousandths to any given place value. (MA.5.NS.5)

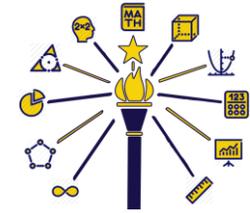


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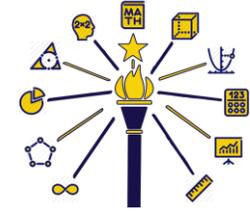


Computation

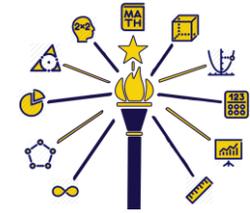
Grade 4 Mathematics Standards		Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
4.C.1	Add and subtract multi-digit whole numbers fluently using a standard algorithmic approach.	<p>I can fluently add multi-digit whole numbers using a standard algorithm.</p> <p>I can fluently subtract multi-digit whole numbers using a standard algorithm.</p>	Algorithm	Add and subtract whole numbers fluently within 1000. (MA.3.C.1)	Add, subtract, multiply, and divide decimals to hundredths. (MA.5.C.8)
4.C.2	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. Describe the strategy and explain the reasoning.	<p>I can multiply two, two digit whole numbers using appropriate strategies.</p> <p>I can multiply a four digit number by a one digit number using appropriate strategies.</p> <p>I can describe and explain my method of solving multiplication problems.</p>	<p>Whole Number</p> <p>Product</p> <p>Place Value</p>	Multiply and divide within 100. (MA.3.C.5)	Multiply multi-digit whole numbers fluently using a standard algorithmic approach. (MA.5.C.1)
4.C.3	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,	I can solve division problems with up to four-digit dividends and one-digit divisors that have whole number	<p>Quotient</p> <p>Remainder</p> <p>Dividend</p>	Represent the concept of division of whole numbers with the following models: partitioning, sharing,	Find whole-number quotients and remainders with up to four-digit dividends



	and/or the relationship between multiplication and division. Describe the strategy and explain the reasoning.	<p>quotients and remainders.</p> <p>I can use strategies based on place value and properties of operations to solve division problems.</p> <p>I can use the relationship between multiplication and division problems to solve division problems.</p> <p>I can explain my strategy and method of solving division problems.</p>	Divisor	<p>and an inverse of multiplication. (MA.3.C.3)</p> <p>Interpret whole-number quotients of whole numbers. (MA.3.C.4)</p>	and two-digit divisors. (MA.5.C.2)
4.C.4	Multiply fluently within 100.	I can select appropriate strategies to multiply numbers within 100.	<p>Product</p> <p>Multiple</p> <p>Factor</p>	Demonstrate fluency with multiplication facts and corresponding division facts of 0 to 10. (MA.3.C.6)	Multiply multi-digit whole numbers fluently using a standard algorithmic approach. (MA.5.C.1)
4.C.5	Add and subtract fractions with common denominators. Decompose a fraction into a sum of fractions with common denominators. Understand addition and subtraction of fractions as combining and	<p>I can add fractions that have common denominators.</p> <p>I can subtract fractions that have common denominators.</p>	<p>Common Denominator</p> <p>Denominator</p> <p>Numerator</p> <p>Decompose</p>	Represent a fraction, $\frac{1}{b}$, on a number line by defining the interval from 0 to 1 as the whole, and partitioning it into b equal parts. (MA.3.NS.4)	Add and subtract fractions with unlike denominators, including mixed numbers. (MA.5.C.4)



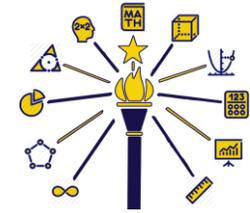
	separating parts referring to the same whole.	<p>I can decompose a fraction into a sum of fractions having common denominators.</p> <p>I can show that when I add or subtract fractions, I am actually combining or taking apart pieces of a whole.</p>			
4.C.6	Add and subtract mixed numbers with common denominators (e.g. by replacing each mixed number with an equivalent fraction and/or by using properties of operations and the relationship between addition and subtraction).	<p>I can add and subtract mixed numbers with common denominators.</p> <p>I can use properties of operations to add and subtract mixed numbers with common denominators.</p> <p>I can add and subtract mixed numbers with common denominators by replacing the mixed numbers with equivalent fractions.</p> <p>I use the relationship between addition and subtraction to add and subtract mixed numbers with common denominators.</p>	<p>Common Denominator</p> <p>Denominator</p> <p>Numerator</p> <p>Equivalent Fraction</p>	Recognize and generate simple equivalent fractions. (MA.3.NS.7)	Add and subtract fractions with unlike denominators, including mixed numbers. (MA.5.C.4)



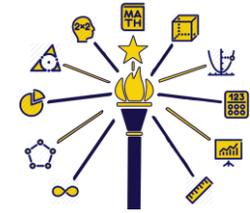
4.C.7	Show how the order in which two numbers are multiplied (commutative property) and how numbers are grouped in multiplication (associative property) will not change the product. Use these properties to show that numbers can be multiplied in any order. Understand and use the distributive property.	<p>I can show that multiplying numbers in any order will produce the same product.</p> <p>I can show that grouping numbers in any order and then multiplying them will produce the same product.</p> <p>I can use and explain the distributive property.</p>	<p>Commutative Property of Multiplication</p> <p>Associative Property of Multiplication</p> <p>Distributive Property</p>	Show that the order in which two numbers are added and how the numbers are grouped in addition will not change the sum. (MA.2.CA.6)	Evaluate expressions with parentheses or brackets involving whole numbers using the commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property. (MA.5.C.9)
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Algebraic Thinking

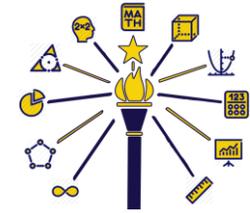
Grade 4 Mathematics Standards	Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
4.AT.1	<p>Solve real-world problems involving addition and subtraction of multi-digit whole numbers (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).</p> <p>I can use drawings to solve real-world problems that involve adding or subtracting multi-digit whole numbers.</p> <p>I can solve real world problems involving addition and subtraction of multi-digit whole numbers</p>	<p>Variable</p> <p>Equation</p>	Solve real-world problems involving addition and subtraction of whole numbers within 1000. (MA.3.AT.1)	Solve real-world problems involving addition, subtraction, multiplication, and division with decimals to hundredths. (MA.5.AT.5)



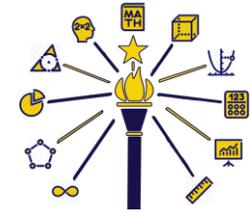
		using various strategies.			
4.AT.2	Recognize and apply the relationships between addition and multiplication, between subtraction and division, and the inverse relationship between multiplication and division to solve real-world and other mathematical problems.	<p>I can use what I know about the relationship between adding and multiplying to solve real-world problems.</p> <p>I can use what I know about the relationship between subtracting and division to solve real-world problems.</p> <p>I can use what I know about the relationship between multiplication and division to solve real-world problems.</p>		Solve real-world problems involving whole number multiplication and division. (MA.3.AT.2)	Solve real-world problems involving multiplication and division of whole numbers. (MA.5.AT.1)
4.AT.3	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.	<p>I can interpret a multiplication equation as a comparison. (See example in standard)</p> <p>I can represent verbal statements of multiplicative comparisons as multiplication equations.</p>	<p>Product</p> <p>Multiplicative Comparison</p> <p>Factor</p>	Interpret a multiplication equation as equal groups. (MA.3.AT.4)	Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. (MA.5.C.3)
4.AT.4	Solve real-world problems with whole numbers involving multiplicative comparison (e.g., by using drawings and equations with	I can use drawings or symbols to help me solve real-world problems that involve	<p>Equation</p> <p>Variable</p>	Solve two-step real-world problems using the four operations. (MA.3.AT.3)	Solve real-world problems involving multiplication and division of whole



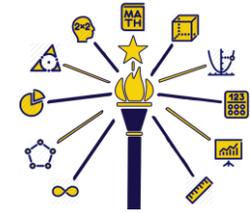
	a symbol for the unknown number to represent the problem), distinguishing multiplicative comparison from additive comparison. [In grade 4, division problems should not include a remainder.]	<p>multiplicative comparison.</p> <p>I can tell the difference between multiplicative comparison and additive comparison.</p>	<p>Multiplicative Comparison</p> <p>Additive Comparison</p>	<p>Solve real-world problems involving whole number multiplication and division. (MA.3.AT.2)</p>	<p>numbers. (MA.5.AT.1)</p>
4.AT.5	Solve real-world problems involving addition and subtraction of fractions referring to the same whole and having common denominators (e.g., by using visual fraction models and equations to represent the problem).	<p>I can use fraction models and equations to add fractions with common denominators in real-world problems.</p> <p>I can use fraction models and equations to help me subtract fractions with common denominators in real-world problems.</p>	<p>Common Denominator</p> <p>Denominator</p> <p>Numerator</p>	<p>Explain why the fractions are equivalent (e.g., by using a visual fraction model). (MA.3.NS.7)</p>	<p>Solve real-world problems involving addition and subtraction of fractions referring to the same whole. (MA.5.AT.2)</p>
4.AT.6	Understand that an equation, such as $y = 3x + 5$, is a rule to describe a relationship between two variables and can be used to find a second number when a first number is given. Generate a number pattern that follows a given rule.	<p>I can create a number pattern that follows a given rule.</p> <p>I can show that an equation with two variables is a rule that describes the relationship between the variables.</p> <p>When given one variable in a two-variable equation, I can solve the equation for the second variable.</p>	<p>Equation</p> <p>Variable</p> <p>Number Pattern</p>	<p>Create, extend, and give an appropriate rule for number patterns. (MA.3.AT.6)</p>	<p>Define and use up to two variables to write linear expressions that arise from real-world problems, and evaluate them for given values. (MA.5.AT.8)</p>



Geometry					
Grade 4 Mathematics Standards	Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead	
4.G.1	Identify, describe, and draw parallelograms, rhombuses, and trapezoids using appropriate tools (e.g., ruler, straightedge and technology).	I can use tools and technology to draw parallelograms, rhombi, and trapezoids. I can describe and identify parallelograms, rhombi, and trapezoids.	Parallelogram Rhombus Trapezoid Straightedge	Recognize and draw rhombuses, rectangles and squares as examples of quadrilaterals. (MA.3.G.2)	Identify, describe, and draw triangles and circles using appropriate tools. (MA.5.G.1)
4.G.2	Recognize and draw lines of symmetry in two-dimensional figures. Identify figures that have lines of symmetry.	I can draw lines of symmetry on a two-dimensional figures. I can recognize a line of symmetry on a two-dimensional figure. I can identify figures that have lines have symmetry.	Lines of Symmetry Two-Dimensional Symmetry	Partition shapes into parts with equal areas. (MA.3.G.4)	Understand the relationship between radius and diameter. (MA.5.G.1) Identify types of symmetry of polygons, including line, point, rotational, and self-congruencies. (G.QP.4)
4.G.3	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint.	I can show that angles are shapes which are made when two rays have the same endpoint. I can identify angles within a given figure.	Angle Ray Vertex Endpoint	Identify, describe and draw points, lines and line segments. (MA.G.3)	Identify, describe and draw triangles and circles using appropriate tools. (MA.5.G.1) Know that the sum of the interior angles of any triangle is 180° and that the



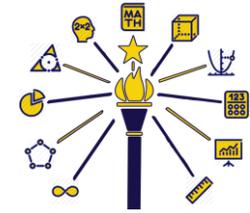
					<p>sum of the interior angles of any quadrilateral is 360°. (MA.6.G.2)</p> <p>Solve real-world and other mathematical problems that involve vertical, adjacent, complementary, and supplementary angles. (MA.7.GM.4)</p>
4.G.4	<p>Identify, describe, and draw rays, angles (right, acute, obtuse), and perpendicular and parallel lines using appropriate tools (e.g., ruler, straightedge and technology). Identify these in two-dimensional figures.</p>	<p>I can use tools and technology to draw rays, angles, perpendicular, and parallel lines.</p> <p>I can describe and identify rays, right, acute, and obtuse angles, and perpendicular and parallel lines.</p> <p>I can find rays, angles, perpendicular, and parallel lines in two-dimensional shapes.</p>	<p>Ray</p> <p>Angle</p> <p>Right Angle</p> <p>Acute Angle</p> <p>Obtuse Angle</p> <p>Parallel Lines</p> <p>Ruler</p> <p>Straightedge</p> <p>Perpendicular Lines</p>	<p>Identify, describe and draw points, lines and line segments. (MA.G.3)</p>	<p>Identify, describe and draw triangles and circles using appropriate tools. (MA.5.G.1)</p> <p>Know that the sum of the interior angles of any triangle is 180° and that the sum of the interior angles of any quadrilateral is 360°. (MA.6.G.2)</p> <p>Solve real-world and other mathematical problems that involve vertical, adjacent,</p>



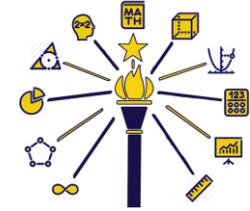
					complementary, and supplementary angles. (MA.7.GM.4)
4.G.5	Classify triangles and quadrilaterals based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles (right, acute, obtuse).	<p>I can classify triangles as right, acute, or obtuse.</p> <p>I can classify quadrilaterals based on the presence or absence of parallel and perpendicular lines and by the presence or absence of right, acute, or obtuse angles.</p>	<p>Triangle</p> <p>Parallel Lines</p> <p>Perpendicular Lines</p> <p>Right Angle</p> <p>Acute Angle</p> <p>Obtuse Angle</p> <p>Quadrilateral</p> <p>Right Triangle</p> <p>Acute Triangle</p> <p>Obtuse Triangle</p> <p>Equilateral Triangle</p> <p>Isosceles Triangle</p> <p>Scalene Triangle</p>	Understand that shapes may share attributes and that the shared attribute can define a larger category. (MA.3.G.2)	<p>Identify and classify polygons including quadrilaterals, pentagons, hexagons, and triangles. (MA.5.G.2)</p> <p>Know that the sum of the interior angles of any triangle is 180° and that the sum of the interior angles of any quadrilateral is 360°. (MA.6.G.2)</p> <p>Solve real-world and other mathematical problems that involve vertical, adjacent, complementary, and supplementary angles. (MA.7.GM.4)</p>

Measurement

Grade 4 Mathematics Standards	Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
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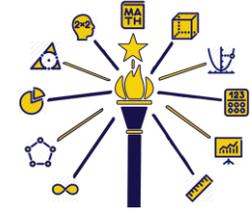
4.M.1	Measure length to the nearest quarter-inch, eighth-inch, and millimeter.	<p>I can measure length to the nearest quarter and eighth of an inch.</p> <p>I can measure length to the nearest millimeter.</p>	System of Measurement	Estimate and measure length to a quarter-inch. (MA.3.M.2)	Convert among different-sized standard measurement units within a given measurement system. (MA.5.M.1)
4.M.2	Know relative sizes of measurement units within one system of units, including km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec. Express measurements in a larger unit in terms of a smaller unit within a single system of measurement. Record measurement equivalents in a two-column table.	<p>I can identify relative sizes of measurements within one system of units.</p> <p>I can identify the relative size of measure of km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec.</p> <p>I can express measurements in a larger unit in terms of a smaller unit within the same system of measurement.</p> <p>I can record equivalent measurements in a two-column table.</p>	<p>Metric System</p> <p>System of Measurement</p> <p>Table</p>	Estimate and measure length to a quarter-inch. (MA.3.M.1)	Convert among different-sized measurement units within a given measurement system. (MA.5.M.1)
4.M.3	Use the four operations (addition, subtraction, multiplication and division) to solve real-world problems involving distances, intervals of time, volumes, masses of objects, and money. Include	<p>I can use the four operations to solve real-world problems that involve distances.</p> <p>I can use the four operations to solve</p>	<p>Intervals</p> <p>Mass</p> <p>Volume</p>	Estimate and measure length to a quarter-inch. (MA.3.M.1)	Convert among different-sized measurement units within a given measurement system. (MA.5.M.1)



	<p>addition and subtraction problems involving simple fractions and problems that require expressing measurements given in a larger unit in terms of a smaller unit.</p>	<p>real-world problems that involve time intervals.</p> <p>I can use the four operations to solve real world problems that involve volume.</p> <p>I can use the four operations to solve real-world problems that involve money.</p> <p>I can solve real-world problems that involve adding and subtracting simple fractions.</p> <p>I can solve real-world problems that require converting from one unit of measure to another.</p>			<p>Convert between measurement systems given conversion factors. (MA.6.GM.1)</p>
4.M.4	<p>Apply the area and perimeter formulas for rectangles to solve real-world problems and other mathematical problems. Recognize area as additive and find the area of complex shapes composed of rectangles by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts; apply this</p>	<p>I can solve real-world problems by applying the area and perimeter formulas for rectangles.</p> <p>I can explain that the area of a rectangle is additive.</p> <p>I can find the area of complex shapes by</p>	<p>Area</p> <p>Perimeter</p> <p>Complex Shape</p>	<p>Find the area of a rectangle. (MA.3.M.5)</p> <p>Multiply side lengths to find areas of rectangles (MA.3.M.6)</p>	<p>Find the area of a rectangle with fractional side lengths (MA.5.M.2)</p> <p>Solve real-world and other mathematical problems involving scale drawings of geometric figures,</p>



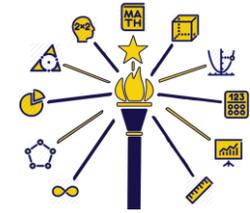
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	technique to solve real-world problems and other mathematical problems.	decomposing them into smaller rectangles, finding their area, and then adding them back together to solve real-world problems.			including computing actual lengths and areas from a scale drawing. (MA.7.GM.3)
4.M.5	Understand that an angle is measured with reference to a circle, with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. Understand an angle that turns through $1/360$ of a circle is called a “one-degree angle,” and can be used to measure other angles. Understand an angle that turns through n one-degree angles is said to have an angle measure of n degrees.	<p>I can explain how angles are measured in reference to a circle, with the endpoint of the rays being at the center of the circle</p> <p>I can describe one degree as the fraction $1/360$ of a circle.</p> <p>I can explain the connection between degrees and angle measures.</p>	<p>Angle</p> <p>Ray</p> <p>Degree</p> <p>Vertex</p>	Identify, describe, and draw points, lines and line segments. (MA.3.G.3)	Identify, describe, and draw triangles and circles using appropriate tools. (MA.5.G.1)
4.M.6	Measure angles in whole-number degrees using appropriate tools. Sketch angles of specified measure.	<p>I can use protractors to help me accurately measure angles.</p> <p>I can draw angles with specific measures.</p>	Protractor	Identify, describe, and draw points, lines and line segments. (MA.3.G.3)	Identify, describe, and draw triangles and circles using appropriate tools. (MA.5.G.1)

Data Analysis

Grade 4 Mathematics Standards	Success Criteria	Academic Vocabulary	Looking Back	Looking Ahead
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4.DA.1	Formulate questions that can be addressed with data. Use observations, surveys, and experiments to collect, represent, and interpret the data using tables (including frequency tables), line plots, and bar graphs.	<p>I can create questions that can be answered using data.</p> <p>I can collect data using surveys, experiments and observations.</p> <p>I can use line plots, data tables and bar graphs to represent and interpret data I have collected.</p>	<p>Survey</p> <p>Line Plot</p> <p>Bar Graph</p> <p>Frequency Table</p>	Create scaled picture graphs, scaled bar graphs and frequency tables to represent a data set. (MA.3.DA.1)	Formulate questions that can be addressed with data and make predictions about the data. (MA.5.DS.1)
4.DA.2	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 data displayed in line plots.	<p>I can make a line plot that displays a data set in fractions of a unit.</p> <p>I can use line plots to solve problems that involve adding and subtracting fractions.</p>	Line Plot	Display data by making a line plot. (MA.3.DA.2)	Represent and interpret data using tables, lines plots, bar graphs and line graphs. (MA.5.DS.1)
4.DA.3	Interpret data displayed in a circle graph.	I can interpret the data that is displayed on a circle graph.	Circle Graph	Create scaled picture graphs, scaled bar graphs and frequency tables to represent a data set. (MA.3.DA.1)	<p>Recognize the differences in representing categorical and numerical data. (MA.5.DS.1)</p> <p>Select, create, and interpret graphical representations of numerical data. (MA.6.DS.3)</p>