

K-5 Mathematics Vertical Articulation Document

Depending on the mathematical aspect of a standard, there is flexibility in the way content may appear to progress across grades. As a result, there is more value in educators making decisions related to vertical articulation and then using this document as a comparison tool and a basis for discussion. This document is provided merely as a tool. Professional judgment should dictate the value of its use in guiding instructional decisions across grades.

The major headings under which the standards are grouped/clustered are only subjective, organizational concepts/headings. Due to the mathematical aspects embedded in certain standards, standards may appear in more than one group/cluster heading. In most cases within this document a “Note” alerts readers to the fact that a standard (or parts of a standard) appear elsewhere in the document. Certain portions of a standard may be underlined to emphasize the mathematical aspect that resulted in alignment to similar standards at other grades. Therefore, professional judgment, instructional materials and needs of students should be considered when making decisions about which standards are related.

In order to avoid any potential errors or oversights that might occur in support resources, the original *College- and Career-Ready Standards for Mathematics* document should be referenced when preparing curriculum support materials and when making instructional decisions.

This vertical articulation document groups/clusters standards by the following major concepts/headings. The concepts/headings and the standards under each are not in a teaching sequence.

- Count, Read and Write
- Quantity and Numerical Comparisons
- Place Value – Compose/Decompose
- Addition and Subtraction (Including Rounding for Estimation Purposes)
- Multiplication and Division
- Numerical Expressions and Exponents (While a part of the 4 operations, separated for emphasis)
- Geometry – Plane
- Geometry – Dimensional (2-D and 3-D)
- Patterns
- Measurement (Including angle measurement)
- Perimeter (While an aspect of “Measurement”, separated for emphasis)
- Area (While an aspect of “Measurement”, separated for emphasis)
- Volume (While as aspect of “Measurement”, separated for emphasis)
- Time (While an aspect of “Measurement”, separated for emphasis)
- Money (While an aspect of “Measurement”, separated for emphasis)
- Data
- Sort Classify

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Count, Read and Write	K	1	2	3	4	5
	K.NS.2 Count forward by ones beginning from any number less than 100.	1.NSBT.1 Extend the number sequence to: a. count forward by ones to 120 starting at any number; (see “b-d” below)				
	K.NS.1 Count forward by ones and tens to 100.	1.NSBT.1 (see “a” above and c and d below) b. count by fives and tens to 100, starting at any number;	2.NSBT.2 Count by tens and hundreds to 1,000 starting with any number.			
	K.NS.5 Count a given number of objects from 1-20 and connect this sequence in a one-to-one manner.					
	K.NS.6 Recognize a quantity of up to ten objects in an organized arrangement (subitizing).					
	K.NS.3 Read and write numerals from 0-20 and represent a number of objects 0-20 with a written numeral.	1.NSBT.1 (see a and b above) c. read, write and represent numbers to 100 using concrete models, standard form,	2.NSBT.3 Read, write and represent numbers through 999 using concrete models, standard form, and equations in expanded form.	3.NSBT.4 Read and write numbers through 999,999 in standard form and equations in expanded form.	4.NSBT.2 Recognize math periods and number patterns within each period to read and write in standard form large numbers through 999,999,999.	5.NSBT.3 <u>Read and write</u> decimal numbers in standard and expanded form. Compare two decimal numbers to thousandths using $>$, $=$ or

		and equations in expanded form; d. read and write in word form numbers zero through nineteen and multiples of ten through ninety.				<. NOTE: Repeated under the Numerical Quantity Comparison concept
	K.NS.4 Understand the relationship between number and quantity. Connect counting to cardinality by demonstrating an understanding that: a. the last number said tells the number of objects in the set (cardinality); b. the number of objects is the same regardless of their arrangement or the order in which they are counted (conservation of number); c. each successive number name refers to a quantity that is one more and each previous number name refers to a quantity that is one less.			3.NSF.1 Develop an understanding of fractions (i.e., denominators limited to 2, 3, 4, 6, 8, 10) as numbers. a. A fraction $1/b$ (called a unit fraction) is the quantity formed by one part when a whole is partitioned into b equal parts; b. A fraction a/b is the quantity formed by a parts of size $1/b$; c. A fraction is a number that can be represented on a number line based on counts of a unit fraction; d. A fraction can be represented using set, area, and linear models.	4.NSF.6 Write a fraction with a denominator of 10 or 100 using decimal notation, and read and write a decimal number as a fraction.	
				3.NSF.3 Develop an understanding of mixed		

				numbers (i.e., denominators 2, 3, 4, 6, 8, 10) as iterations of unit fractions on a number line.		
	K.NS.9 Identify first through fifth and last positions in a line of objects.					

Quantity and Numerical Comparisons	K	1	2	3	4	5
	K.NS.8 Compare two written numerals up to 10 using <i>more than</i> , <i>less than</i> or <i>equal to</i> .	1.NSBT.3 Compare two two-digit numbers based on the meanings of the tens and ones digits, using the words <i>greater than</i> , <i>equal to</i> , or <i>less than</i> .	2.NSBT.4 Compare two numbers with up to three-digits using words and symbols (i.e., >, =, or <).	3.NSBT.5 Compare and order numbers through 999,999 and represent the comparison using the symbols (i.e., >, =, or <).	4.NSF.7 Compare and order decimal numbers to hundredths, and justify using concrete and visual models.	5.NSBT.3 Read and write decimal numbers in standard and expanded form. <u>Compare</u> two decimal numbers to thousandths using >, = or <. NOTE: Repeated under Read, Write and Count concept.
					4.NSF.2 Compare two given fractions (i.e., denominators 2, 3, 4, 5, 6, 8, 10, 12, 25, 100), by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$, and represent the comparison using the symbols >, =, or <.	
	K.NS.7 Determine whether the number of up to ten objects in one group is more than, less than, or equal to the number of up to ten objects in another group using matching and counting strategies.		2.ATO. 3 Determine whether a number through 20 is odd or even using pairings of objects, counting by twos, or finding two equal addends to represent the number (e.g., $3 + 3 = 6$).			

				<p>3.NSF.2 Explain fraction equivalence (denominators limited to 2, 3, 4, 6, 8, 10) by demonstrating an understanding that:</p> <ul style="list-style-type: none"> a. two fractions are equal if they are the same size, based on the same whole, or at the same point on a number line; b. fraction equivalence can be represented using set, area, and linear models; c. whole numbers can be written as fractions (e.g., $4 = 4/1$ and $1 = 4/4$); d. fractions with the same numerator or same denominator can be compared by reasoning about their size based on the same whole. 	<p>4.NSF.1 Explain why a fraction (i.e., denominators 2, 3, 4, 5, 6, 8, 10, 12, 25, 100), a/b, is equivalent to a fraction, $(nxa)/(nxb)$, 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.</p>	
					<p>4.NSF.5 Express a fraction with a denominator of 10 as an equivalent fraction with a denominator of 100 and use this technique to add two fractions with respective denominators 10 and 100.</p>	

Place Value – Compose/ Decompose	K	1	2	3	4	5
	<p>K.NSBT.1 Compose and decompose numbers from 11-19 separating ten ones from the remaining ones using objects and drawings.</p>	<p>1.NSBT.2 Understand place value through 99 by demonstrating that:</p> <ul style="list-style-type: none"> a. ten ones can be thought of as a bundle (group) called a “ten”; b. the tens digit in a two-digit number represents the number of tens and the ones digit represents the number of ones; c. two-digit numbers can be decomposed in a variety of ways (e.g., 52 can be decomposed as 5 tens and 2 ones or 4 tens and 12 ones, etc.) and record the decomposition as an equation. 	<p>2.NSBT.1 Understand place value through 999 by demonstrating that:</p> <ul style="list-style-type: none"> a. 100 can be thought of as a bundle (group) of ten tens called a “hundred”; b. the hundreds digit in a three-digit number represents the number of hundreds, the tens digit represents the number of tens, and the ones digit represents the number of ones; c. three-digit numbers can be decomposed in multiple ways (e.g., 524 can be decomposed as 5 hundreds, 2 tens and 4 ones or 4 hundreds, 12 tens, and 4 ones etc.) 		<p>4.NSBT.1 Understand that, in a multi-digit whole number, a digit represents ten times what it represents in the place to its right.</p>	<p>5.NSBT.1 Understand that, in a multi-digit whole number, a digit in one place represents 10 times what it represents in the place to its right, and represents 1/10 times what the same digit represents in the place to its left.</p>
	<p>K.ATO.3 Compose and decompose numbers up to 10 using objects, drawings, and equations.</p>					
		<p>1.NSBT.5 Determine the number that is 10 more or 10 less than a given number through 99 and explain the</p>	<p>2.NSBT.8 Determine the number that is 10 or 100 more or less than a given number through 1,000 and explain the reasoning</p>			

		reasoning verbally and with multiple representations, including concrete models.	verbally and in writing.			
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Addition and Subtraction	K	1	2	3	4	5
(Rounding)				3.NSBT.1 Use place value understanding to round whole numbers to the nearest 10 or 100.	4.NSBT.3 Use rounding as one form of estimation and round whole numbers to any given place value.	5.NSBT.4 Round decimal numbers to any given place value within thousandths.
		1.ATO.5 Recognize how counting relates to addition and subtraction.				
		1.NSBT.6 Subtract a multiple of 10 from a larger multiple of 10, both in the range 10 to 90, using concrete models, drawings, and strategies based on place value.				
		1.ATO.4 Understand subtraction as an unknown addend problem.				
		1.ATO.8 Determine the missing number in addition and subtraction equations within 20.				
	K.ATO.1 Model situations that involve addition and subtraction within 10 using objects, fingers, mental images, drawings, acting out situations, verbal explanations,	1.NSBT.4 Add through 99 using concrete models, drawings, and strategies based on place value to: a. add a two-digit number and a one-digit number, understanding that sometimes it is necessary to compose a	2.NSBT.7 Add and subtract through 999 using concrete models, drawings, and symbols which convey strategies connected to place value understanding.			

	expressions, or equations.	ten (regroup); b. add a two-digit number and a multiple of 10.				
	K.ATO.2 Solve real-world/story problems using objects and drawings to find sums up to 10 and differences within 10.	1.ATO.1 Solve real-world/story problems using addition (as a joining action and as a part-part-whole action) and subtraction (as a separation action, finding parts of the whole, and as a comparison) through 20 with unknowns in all positions.	2.ATO.1 Solve one- and two-step real-world/story problems using addition (as a joining action and as a part-part-whole action) and subtraction (as a separation action, finding parts of the whole, and as a comparison) through 99 with unknowns in all positions.	3.ATO.8 Solve two-step real-world problems using <u>addition</u> , <u>subtraction</u> , multiplication and division of whole numbers and having whole number answers. Represent these problems using equations with a letter for the unknown quantity. NOTE: REPEATED under multiplication and division.	4.ATO.3 Solve multi-step real-world problems using the four operations. Represent the problem using an equation with a variable as the unknown quantity. NOTE: Repeated below under Multiplication and Division concept.	
		1.ATO.2 Solve real-world/story problems that include three whole number addends whose sum is less than or equal to 20.				
	K.ATO.4 Create a sum of 10 using objects and drawings when given one of two addends 1-9.	1.ATO.3 Apply Commutative and Associative Properties of Addition to find the sum (through 20) of two or three addends.	2.NSBT.6 Add up to four two-digit numbers using strategies based on knowledge of place value and properties of operations.			
			2.ATO. 4 Use repeated addition to find the total number of objects arranged in a rectangular array with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.			

	K.ATO.5 Add and subtract fluently within 5.	1.ATO.6 Demonstrate a. addition and subtraction through 20; b. fluency with addition and related subtraction facts through 10.	2.ATO.2 Demonstrate fluency with addition and related subtraction facts through 20.			
			2. NSBT.5 Add and subtract fluently through 99 using knowledge of place value and properties of operations.	3.NSBT.2 Add and subtract whole numbers fluently through 1,000 using knowledge of place value and properties of operations.	4.NSBT.4 Fluently add and subtract multi-digit whole numbers using multiple strategies to include a standard algorithm.	5.NSBT.7 <u>Add, subtract, multiply, and divide</u> decimal numbers to hundredths using concrete area models and drawings. NOTE: Repeated below under Multiplication and Division concept.
					4.NSF.3 Develop an understanding of addition and subtraction of fractions (i.e., denominators 2, 3, 4, 5, 6, 8, 10, 12, 25, 100), based on unit fractions. a. Compose and decompose a fraction in more than one way, recording each composition and decomposition as an addition or subtraction equation; b. Add and subtract mixed numbers with like denominators; c. Solve real-world problems involving addition and subtraction of fractions referring to the same whole and having like denominators.	5.NSF.1 Add and subtract fractions with unlike denominators (including mixed numbers) using a variety of models including an area model and number line.
		1.ATO.7 Understand the				

		meaning of the equal sign as a relationship between two quantities (sameness) and determine if equations involving addition and subtraction are true.				
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Multiplication and Division	K	1	2	3	4	5
				3.ATO.1 Use concrete objects, drawings and symbols to represent multiplication facts of two single-digit whole numbers and explain the relationship between the factors (i.e., 0-10) and the product.	4.ATO.1 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.ATO.4 Recognize that a whole number is a multiple of each of its factors. Find all factors for a whole number in the range 1-100 and determine whether the whole number is prime or composite.	
				3.NSBT.3 Multiply one-digit whole numbers by multiples of 10 in the range 10-90, using knowledge of place value and properties of operations.	4.NSBT.5 Multiply up to a four-digit number by a one-digit number and multiply a two-digit number by a two-digit number using strategies based on place value and the properties of operations. Illustrate and explain the calculations by using rectangular arrays, area models and/or equations.	5.NSBT.5 Fluently multiply multi-digit whole numbers using strategies to include a standard algorithm.
				3.ATO.2 Use concrete objects, drawings and symbols to represent division without remainders and explain the	4.NSBT.6 Divide up to a four-digit dividend by a one-digit divisor using strategies based on place value, the properties of	5.NSBT.6 Divide up to a four-digit dividend by a two-digit divisor, using strategies based on place

				relationship among the whole-number quotient (i.e., 0-10), divisor (i.e., 0-10), and dividend.	operations, and/or the relationship between multiplication and division.	value, the properties of operations, and the relationship between multiplication and division.
				3.ATO.6 Understand division as a missing factor problem.		
				3.ATO.3 Solve real-world problems involving equal groups, area/array, and number line models using basic multiplication and related division facts. Represent the problem situation using an equation with a symbol for the unknown.	4.ATO.2 Solve real world problems using multiplication (product unknown) and division (group size unknown, number of groups unknown).	
				3.ATO.4 Determine the unknown whole number in a multiplication or division equation relating three whole numbers when the unknown is a missing factor, product, dividend, divisor, or quotient.		
				3.ATO.5 Apply properties of operations (i.e., Commutative Property of Multiplication, Associative Property of Multiplication, Distributive Property) as strategies to multiply and divide and explain the reasoning.		
				3.ATO.7 Demonstrate fluency with basic multiplication and related		

				division facts of products and dividends through 100.		
				3.ATO.8 Solve two-step real-world problems using addition, subtraction, <u>multiplication and division</u> of whole numbers and having whole number answers. Represent these problems using equations with a letter for the unknown quantity. NOTE: REPEATED under addition and subtraction concept.	4.ATO.3 Solve multi-step real-world problems using the four operations. Represent the problem using an equation with a variable as the unknown quantity. NOTE: Repeated above under Addition and Subtraction concept.	
						5.NSBT.7 Add, subtract, <u>multiply, and divide</u> decimal numbers to hundredths using concrete area models and drawings. NOTE: Repeated above under Addition and Subtraction concept.
					4.NSF.4 Apply and extend an understanding of multiplication by multiplying a whole number and a fraction (i.e., denominators 2, 3, 4, 5, 6, 8, 10, 12, 25, 100), a. Understand a fraction a/b as a multiple of $1/b$; b. Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number;	5.NSF.4 Extend the concept of multiplication to multiply a fraction or whole number by a fraction. a. Recognize the relationship between multiplying fractions and finding the areas of rectangles with fractional side lengths; b. Interpret

					<p>c. Solve real-world problems involving multiplication of a fraction by a whole number (i.e., use visual fraction models and equations to represent the problem).</p>	<p>multiplication of a fraction by a whole number and a whole number by a fraction and compute the product;</p> <p>c. Interpret multiplication in which both factors are fractions less than one and compute the product.</p>
						<p>5.NSF.5 Justify the reasonableness of a product when multiplying with fractions.</p> <p>a. Estimate the size of the product based on the size of the two factors;</p> <p>b. Explain why multiplying a given number by a number greater than 1 (e.g., improper fractions, mixed numbers, whole numbers) results in a product larger than the given number;</p> <p>c. Explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number;</p> <p>d. Explain why multiplying the numerator and denominator by the same number has the same effect as multiplying the fraction by 1.</p>
						5.NSF.6 Solve real-world

						problems involving multiplication of a fraction by a fraction or a mixed number.
						5.NSF.3 Understand the relationship between fractions and division of whole numbers by interpreting a fraction as the numerator divided by the denominator (i.e., $a/b = a \div b$).
						5.NSF.7 Extend the concept of division to divide unit fractions and whole numbers by using visual fraction models and equations. <ul style="list-style-type: none"> a. Interpret division of a unit fraction by a non-zero whole number and compute the quotient; b. Interpret division of a whole number by a unit fraction and compute the quotient.
						5.NSF.8 Solve real-world problems involving division of unit fractions and whole numbers using visual fraction models and equations.

Numerical Expressions and Exponents	K	1	2	3	4	5
						5.ATO.1 Evaluate numerical expressions involving grouping symbols (i.e., parentheses, brackets, braces).
						5.ATO.2 Translate verbal phrases into numerical expressions and interpret numerical expressions as verbal phrases.
						5.NSBT.2 Use whole number exponents to explain: <ul style="list-style-type: none"> a. patterns in the number of zeroes of the product when multiplying a number by powers of 10; b. patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10.

Geometry - Plane	K	1	2	3	4	5
	<p>K.G.1 Describe positions of objects by appropriately using terms including <i>below</i>, <i>above</i>, <i>beside</i>, <i>between</i>, <i>inside</i>, <i>outside</i>, <i>in front of</i>, or <i>behind</i>.</p>					<p>5.G.1 Define a coordinate system.</p> <ul style="list-style-type: none"> a. The x- and y- axes are perpendicular number lines that intersect at 0 (the origin); b. Any point on the coordinate plane can be represented by its coordinates; c. The first number in an ordered pair is the x-coordinate and represents the horizontal distance from the origin; d. The second number in an ordered pair is the y-coordinate and represents the vertical distance from the origin.
						<p>5.G.2 Plot and interpret points in the first quadrant of the coordinate plane to represent real-world and mathematical situations.</p>
						<p>5.ATO.3 Investigate the relationship between two numerical patterns.</p> <ul style="list-style-type: none"> a. Generate two numerical patterns given two rules and organize in tables;

						<p>b. Translate the two numerical patterns into two sets of ordered pairs;</p> <p>c. Graph the two sets of ordered pairs on the same coordinate plane;</p> <p>d. Identify the relationship between the two numerical patterns.</p> <p>NOTE: The whole standard is repeated above under patterns to emphasize the importance of connecting the pattern to the coordinate plane.</p>
Geometry – (Dimensional) 2-D and 3-D	K	1	2	3	4	5
	K.G.2 Identify and describe a given shape and shapes of objects in everyday situations to include two-dimensional shapes (i.e., triangle, square, rectangle, hexagon, and circle) and three-dimensional shapes (i.e., cone, cube, cylinder, and sphere).	1.G.4 Identify and name two-dimensional shapes (i.e., square, rectangle, triangle, hexagon, rhombus, trapezoid, and circle).	2.G.1 Identify triangles, quadrilaterals, hexagons, and cubes. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.	3.G.4 Identify a three-dimensional shape (i.e., right rectangular prism, right triangular prism, pyramid) based on a given two-dimensional net and explain the relationship between the shape and the net.		
	K.G.3 Classify shapes as two-					

	dimensional/flat or three-dimensional/solid and explain the reasoning used.					
	K.G.4 Analyze and compare two- and three-dimensional shapes of different sizes and orientations using informal language.	1.G.1 Distinguish between a two-dimensional shape's defining (e.g., number of sides) and non-defining attributes (e.g., color).		3.G.1 Understand that shapes in different categories (e.g., rhombus, rectangle, square, and other 4-sided shapes) may share attributes (e.g., 4-sided figures) and the shared attributes can define a larger category (e.g., quadrilateral). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.	4.G.3 Recognize right triangles as a category, and identify right triangles.	5.G.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.
					4.G.2 Classify quadrilaterals based on the presence or absence of parallel or perpendicular lines.	5.G.4 Classify two-dimensional figures in a hierarchy based on their attributes.
	K.G.5 Draw two-dimensional shapes (i.e., square, rectangle, triangle, hexagon, and circle) and create models of three-dimensional shapes (i.e., cone, cube,					

	cylinder, and sphere).					
		1.G.2 Combine two-dimensional shapes (i.e., square, rectangle, triangle, hexagon, rhombus, and trapezoid) or three-dimensional shapes (i.e., cube, rectangular prism, cone, and cylinder) in more than one way to form a composite shape.				
			2.G.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of parts.			
		1.G.3 Partition two-dimensional shapes (i.e., square, rectangle, circle) into two or four equal parts.	2.G.3 Partition squares, rectangles and circles into two or four equal parts, and describe the parts using the words <i>halves</i> , <i>fourths</i> , <i>a half of</i> , and <i>a fourth of</i> . Understand that when partitioning a square, rectangle or circle into two or four equal parts, the parts become smaller as the number of parts increases.	3.G.2 Partition two-dimensional shapes into 2, 3, 4, 6, or 8 parts with equal areas and express the area of each part using the same unit fraction. Recognize that equal parts of identical wholes need not have the same shape.		
					4.G.4 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.	
Patterns	K	1	2	3	4	5
	K.ATO.6 Describe simple repeating patterns using AB, AAB, ABB, and ABC type patterns.	1.ATO.9 Create, extend and explain using pictures and words for: a. repeating patterns (AB, AAB, ABB, and ABC type patterns) b. growing patterns (between 2 and 4 terms/figures).		3.ATO.9 Identify a rule for an arithmetic pattern (e.g., patterns in the addition table or multiplication table).	4.ATO.5 Generate a number or shape pattern that follows a given rule and determine a term that appears later in the sequence	5.ATO.3 Investigate the relationship between two numerical patterns. a. Generate two numerical patterns given two rules and organize in tables; b. Translate the two numerical patterns into two sets of ordered pairs; c. Graph the two sets of ordered pairs on the same coordinate plane; d. Identify the relationship between the two numerical patterns. NOTE: The whole standard is repeated below under the concept of Geometry-Plane to emphasize the importance of connecting the pattern to the coordinate plane.

Measurement	K	1	2	3	4	5
	K.MDA.1 Identify measurable attributes (length, weight) of an object.					
	K.MDA2. Compare objects using words such as <i>shorter/longer</i> , <i>shorter/taller</i> , and <i>lighter/heavier</i> .	1.MDA.1 Order three objects by length using indirect comparison.	2.MDA.4 Measure to determine how much longer one object is than another, using standard length units.			
			2.MDA.1 Select and use appropriate tools (e.g., rulers, yardsticks, meter sticks, measuring tapes) to measure the length of an object.			
		1.MDA.2 Use nonstandard physical models to show the length of an object as the number of same size units of length with no gaps or overlaps.	2.MDA.3 Estimate and measure length/distance in customary units (i.e., inch, foot, yard) and metric units (i.e., centimeter, meter).	3.MDA.2 Estimate and measure liquid volumes (capacity) in customary units (i.e., c., pt., qt., gal.) and metric units (i.e., mL, L) to the nearest whole unit.		
			2.MDA.2 Measure the same object or distance using a standard unit of one length and then a standard unit of a different length and explain verbally and in writing how			

			and why the measurements differ.			
			2.MDA.5 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences through 99 on a number line diagram.			
					4.MDA.1 Convert measurements within a single system of measurement, customary (i.e., in., ft., yd., oz., lb., sec., min., hr.) or metric (i.e., cm, m, km, g, kg, mL, L) from a larger to a smaller unit.	5.MDA.1 Convert measurements within a single system of measurement, customary (i.e., in., ft., yd., oz., lb., sec., min., hr.) or metric (i.e., mm, cm, m, km, g, kg, mL, L) from a larger to a smaller unit and a smaller to a larger unit.
					4.MDA.2 Solve real world problems involving distance/length, intervals of time within 12 hours, liquid volume, mass, and money using the four operations.	
				3.G.3 Use a right angle as a benchmark to identify and sketch acute and obtuse angles.	4.G.1 Draw points, lines, line segments, rays, angles (i.e., right, acute, obtuse), and parallel and perpendicular lines. Identify these in two-dimensional figures.	

					4.MDA.5 Understand the relationship of an angle measurement to a circle.	
					4.MDA.6 Measure and draw angles in whole number degrees using a protractor.	
					4.MDA.7 Solve addition and subtraction problems to find unknown angles in real-world and mathematical problems.	
Time	K	1	2	3	4	5
		1.MDA.3 Use analog and digital clocks to tell and record time to the hour and half hour.	2.MDA.6 Use analog and digital clocks to tell and record time to the nearest five-minute interval using <i>a.m.</i> and <i>p.m.</i>	3.MDA.1 Use analog and digital clocks to determine and record time to the nearest minute, using <i>a.m.</i> and <i>p.m.</i> ; measure time intervals in minutes; and solve problems involving addition and subtraction of time intervals within 60 minutes.		
Money	K	1	2	3	4	5
		1.MDA.6 Identify a penny, nickel, dime and quarter and write the coin values using a ¢ symbol.				
			2.MDA.7 Solve real-world/story problems involving dollar bills using the \$ symbol or involving quarters, dimes, nickels and pennies using the ¢ symbol.		4.MDA.8 Determine the value of a collection of coins and bills greater than \$1.00.	

Perimeter	K	1	2	3	4	5
				3.MDA.6 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.	4.MDA.3 Apply the area and perimeter formulas for rectangles. NOTE: REPEATED under area concept.	5.MDA.4 Differentiate among perimeter, area and volume and identify which application is appropriate for a given situation. NOTE: REPEATED under area concept.
Area	K	1	2	3	4	5
				3.MDA.5 Understand the concept of area measurement. a. Recognize area as an attribute of plane figures; b. Measure area by counting standard unit squares; c. Determine the area of a rectilinear figure and relate to multiplication and addition.	4.MDA.3 Apply the area and perimeter formulas for rectangles. NOTE: REPEATED under perimeter concept.	5.MDA.4 Differentiate among perimeter, area and volume and identify which application is appropriate for a given situation. NOTE: REPEATED under perimeter concept.
Volume	K	1	2	3	4	5
						5.MDA.3 Understand the concept of volume measurement. a. Recognize volume as an attribute of right rectangular prisms; b. Relate volume measurement to the operations of multiplication and addition by packing right rectangular prisms

						<p>and then counting the layers of standard unit cubes;</p> <p>c. Determine the volume of right rectangular prisms using the formula derived from packing right rectangular prisms and counting the layers of standard unit cubes.</p>
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Data	K	1	2	3	4	5
	K.MDA.4 Represent data using object and picture graphs, and draw conclusions from the graphs.	1.MDA.4 Collect, organize, and represent data with up to 3 categories using object graphs, picture graphs, t-charts and tallies.	2.MDA.9 Collect, organize, and represent data with up to four categories using picture graphs and bar graphs with a single-unit scale.	3.MDA.3 Collect, organize, classify, and interpret data with multiple categories and draw a scaled picture graph and a scaled bar graph to represent the data.		
			2.MDA.8 Generate data by measuring objects in whole-unit lengths and organize the data in a line plot using a horizontal scale marked in whole number units.	3.MDA.4 Generate data by measuring length to the nearest inch, half-inch and quarter-inch and organize the data in a line plot using a horizontal scale marked off in appropriate units.	4.MDA.4 Create a line plot to display a data set (i.e., generated by measuring length to the nearest quarter-inch and eighth-inch) and interpret the line plot.	5.MDA.2 Create a line plot consisting of unit fractions and use operations on fractions to solve problems related to the line plot.
		1.MDA.5 Draw conclusions from given object graphs, picture graphs, t-charts, tallies, and bar graphs.	2.MDA.10 Draw conclusions from t-charts, object graphs, picture graphs, and bar graphs.			
Sort and Classify	K	1	2	3	4	5
	K.MDA.3 Sort and classify data into 2 or 3 categories with data not to exceed 20 items in each category.					