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North Carolina Extended Common Core State Standards
Mathematics K-5

The *Alternate Achievement Standards for Students With the Most Significant Cognitive Disabilities Non-Regulatory Guidance* states, "...materials should show a clear link to the content standards for the grade in which the student is enrolled, although the grade-level content may be reduced in complexity or modified to reflect pre-requisite skills." Throughout the Standards descriptors such as, describe, count, identify, etc, should be interpreted to mean that the students will be taught and tested according to their mode of communication.

Kindergarten Mathematics Counting and Cardinality			
Common Core State Standards		**Essence**	**Extended Common Core**
Know number names and the count sequence.		Number names and counting sequence	Know number names and the count sequence.
Cluster	1. Count to 100 by ones and by tens. 2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1). 3. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).		Cluster	1. Understand number words as representing a quantity. 2. Understand the concept of "one" and "more". 3. Count forward using the 1-10 sequence. 4. Write or use an alternative pencil to write numbers 0-10.

	Count to tell the number of objects.	Count to tell "how many"/ quantity		Count to tell the number of objects.
Cluster	4. Understand the relationship between numbers and quantities; connect counting to cardinality. 　a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. 　b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. 　c. Understand that each successive number name refers to a quantity that is one larger. 5. Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle; or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.		**Cluster**	5. Understand the relationship between numbers and quantities (0-10); connect counting to cardinality. 　a. When counting objects, indicate the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. 　b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. 　c. Understand that each successive number name refers to a quantity that is one larger. 6. Count to answer "how many?" questions about as many as 10 things arranged in a line or a rectangular array; given a number from 1-10, count out that many objects or indicate the number of objects.
	Compare numbers.	**Compare numbers to determine more, less or equal**		**Compare numbers.**
	6. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. 7. Compare two numbers between 1 and 10 presented as written numerals.			7. Identify whether the number of objects in one group is more, less, or equal to the number of objects in another group, e.g., by using matching and counting strategies.

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Kindergarten Mathematics Measurement and Data			
Common Core State Standards		**Essence**	**Extended Common Core**
Describe and compare measurable attributes.		**Measureable attributes of length**	**Describe and compare measurable attributes.**
Cluster	1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. 2. Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*		**Cluster** ‖ 1. Compare the length of two objects using direct comparison. 2. Use appropriate vocabulary to describe differences in length (e.g., longer/ shorter). *Concepts added at this grade to begin development of background knowledge for concepts developed in later grades.* 3. Use the words, before/after, now/later, soon/never to refer to personal activities and events (time concepts). 4. Understand first-then schedule (time concepts).
Classify objects and count the number of objects in each category.		**Sort objects by attribute and count "how many" in set.**	**Sort objects and count the number of objects in each category.**
Cluster	3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.		**Cluster** ‖ 5. Identify objects as "same" or "different." 6. Recognize similarities and differences between objects (attribute). 7. Sort objects according to attribute and count "how many" in sets (1-5 objects per set).

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Kindergarten Mathematics Geometry			
Common Core State Standards	**Essence**	**Extended Common Core**	
Identify and describe shapes (such as squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).	**Identify shapes and describe positions**	**Identify and describe shapes (squares and circles).**	
Cluster	1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*. 2. Correctly name shapes regardless of their orientations or overall size. 3. Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").		**Cluster**	1. Describe objects in the environment using names of shapes. 2. Describe the relative position of objects using terms such as in, on, out, under, off to locate objects.
Analyze, compare, create, and compose shapes.	**Understand shapes can be different sizes**	**Compare shapes.**	
Cluster	4. Analyze and compare a variety of two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length). 5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes. 6. Compose simple shapes to form larger shapes.		**Cluster**	3. Compare a variety of two-dimensional shapes, in different sizes to describe differences (big/little, small/medium/large).

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1st Grade Mathematics Operations and Algebraic Thinking		
Common Core State Standards	**Essence**	**Extended Common Core**
Represent and solve problems involving addition and subtraction.	**Joining and separating can be used to make two sets have equal quantity.**	**Solve problems involving joining and separating.**
Cluster 1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. 2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, *e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.*		**Cluster** 1. Use informal language (take away, give, add, more, same quantity) to describe the joining situations (putting together) and separating situations (breaking apart). 2. Use joining and separating to solve problems (to at least 10) using objects, representations and numbers using only two sets. 3. Describe equal sets as same quantity after counting objects (up to ten). 4. Use objects and representations to make two sets equal.

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1st Grade Mathematics Number and Operations in Base Ten				
Common Core State Standards		**Essence**	**Extended Common Core**	
Extend the counting sequence.		Continue to learn counting sequence and understand the magnitude of the number	**Extend the counting sequence.**	
Cluster	1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.		Cluster	1. Count forward using the 1-20 sequence. 2. Write or use an alternative pencil to write numbers 0-20. 3. Illustrate whole numbers to 20 using objects, representations and numbers. 4. Use number word (0-20) of last object counted in a set, to name the total number of objects in the set when asked, "How many?" (cardinality) 5. Use zero to indicate no objects when asked, "How many?" 6. Compare objects, representations and numbers (1-20) using words "more" and "less". 7. Use a set of objects and separate set into smaller sets (number partners). 8. Understand a set has smaller quantities within the whole set (inclusion). 9. Illustrate the relationship between subsets and the whole (part-part-whole) using objects.

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1st Grade Mathematics Measurement and Data			
Common Core State Standards	**Essence**	**Extended Common Core**	
Measure lengths indirectly and by iterating length units.	**Measurement of length**	**Describe similarities and differences in length when measuring objects directly and indirectly.**	
Cluster 1. Order three objects by length; compare the lengths of two objects indirectly by using a third object. 2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*		**Cluster** 1. Describe length of an object (long/short, big/small). 2. Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute.	
Tell and write time.	**Time Concepts**	**Use the concept of time as it relates to sequences.**	
Cluster 3. Tell and write time in hours and half-hours using analog and digital clocks.		**Cluster** 3. Use the words "today, tomorrow and yesterday" to refer to personal activities and events. 4. Use a schedule to keep track of events with modeling. 5. Remember, in order, the names of the days of the week.	
Represent and interpret data.	**Represent and Interpret data**	**Represent and interpret data.**	
Cluster 4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.		**Cluster** 6. Collect and categorize objects or pictures to answer questions about topics relevant to student. 7. Use data to answer questions about the total number of data points and whether there are more or less in one category than in another.	

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1st Grade Mathematics Geometry		
Common Core State Standards	**Essence**	**Extended Common Core**
Reason with shapes and their attributes	**Understanding shapes and their attributes**	**Compare shapes and their attributes (circles, rectangles, squares and triangles).**
Cluster 1. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size) for a wide variety of shapes; build and draw shapes to possess defining attributes. 2. Compose two-dimensional shapes (such as rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (such as cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. 3. Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.		**Cluster** 1. Describe attributes of the shape. 2. Correctly name shapes regardless of their orientations or overall size. 3. Partition circles and rectangles into two and four equal shares or recognize when circles and squares have been partitioned equally. 4. Identify congruent two-dimensional shapes.

2nd Grade Mathematics Operations and Algebraic Thinking		
Common Core State Standards	**Essence**	**Extended Common Core**
Represent and solve problems involving addition and subtraction.	**Use addition and subtraction to solve problems**	**Represent and solve problems involving addition and subtraction (0-30).**
Cluster 1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.		Cluster 1. Use objects and representations to add and subtract groups of objects. 2. Use objects, representations and numerals to add and subtract within real life one-step story problems to at least 30.
Work with equal groups of objects to gain foundations for multiplication.	**Share fairly to create equal groups**	**Work with equal groups of objects to gain foundations for multiplication.**
Cluster 2. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends. 3. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.		Cluster 3. Share fairly collections of up to 20 items between 2-4 people. 4. Describe set as "same quantity" after breaking apart and reassembling a given quantity (up to ten). 5. Determine whether two or more groups of objects (up to 20) has an odd or even number of members, e.g., by pairing objects; determine equivalent relationships, using the equal symbol (=).

2nd Grade Mathematics Number and Operations in Base Ten		
Common Core State Standards	**Essence**	**Extended Common Core**
Understand place value.	Understand place value in base ten	Understand place value.
Cluster 1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens — called a "hundred." b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones). 2. Count within 1000; skip-count by 5s, 10s, and 100s. 3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. 4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.		**Cluster** 1. Count (0-30) by indicating one object at a time (one-to-one tagging) using one counting word for every object (synchrony), while keeping track of objects that have and have not been counted. 2. Write or use an alternative pencil to write numbers 0-30. 3. Use a number line (0-30) to determine the number before and after (1 more and 1 less). 4. Use number word (0-30) of last object counted in a set, to name the total number of objects in the set when asked, "How many?" (Cardinality). 5. Illustrate whole numbers to 30 using objects, representations and numbers. 6. Compare sets of objects and numbers using appropriate vocabulary (more, less, equal, one more, one less, etc.). 7. Determine how many more to ten.

Use place value understanding and properties of operations to add and subtract.	Adding and subtracting	Use place value understanding to add and subtract.
Cluster	5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. 6. Add up to four two-digit numbers using strategies based on place value and properties of operations. 7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. 8. Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900. 9. Explain why addition and subtraction strategies work, using place value and the properties of operations.	**Cluster**	8. Use part-part-whole relationships (including 2 or more parts) to compose and decompose numbers. 9. Compare numbers (0-30) in relationship to benchmark number 10. 10. Use objects, representations and numbers (0-30) to add and subtract. 11. Use objects and representations (0-30) to add and subtract groups using real life story problems.

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2nd Grade Mathematics Measurement and Data			
Common Core State Standards		**Essence**	**Extended Common Core**
Measure and estimate lengths in standard units.		**Measure using nonstandard units**	**Measure lengths in non-standard units.**
Cluster	1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. 2. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen. 3. Estimate lengths using units of inches, feet, centimeters, and meters. 4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.		Cluster: 1. Use nonstandard units to compare length of objects.
Relate addition and subtraction to length.		**Relate addition to length**	**Relate addition to length.**
Cluster	5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem. 6. 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 on a number line diagram.		Cluster: 2. Add the number of same units to determine the length of a given object.

Work with time and money.	Use of time and money concepts	Work with time and money.
Cluster		**Cluster**
7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. 8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*		3. Use the names of the days of the week to describe when personal activities will occur. 4. Use a calendar to mark differences between a day and a week. 5. Use a half day schedule to keep track of events with modeling. 6. Solve word problems using one dollar bills or pennies.
Represent and interpret data.	**Represent and interpret data**	**Represent and interpret data.**
Cluster		**Cluster**
9. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units. 10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems10 using information presented in a bar graph.		7. Organize and represent data using concrete objects to create picture graphs. 8. Interpret collected data to determine the answer to the question posed.

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2nd Grade Mathematics Geometry			
Common Core State Standards		**Essence**	**Extended Common Core**
Reason with shapes and their attributes.		**Measure using nonstandard units**	**Reason with shapes and their attributes (circles, rectangles, squares and triangles).**
Cluster	1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. 2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them. 3. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves*, *thirds*, *half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.		**Cluster** 1. Use shape names to describe shapes. 2. Match same shapes with different orientation. 3. Identify shapes larger and smaller than model as same shape. 4. Use shapes separately, to make a picture. 5. Match 2 halves of a shape to create whole shape.

3rd Grade Mathematics Operations and Algebraic Thinking		
Common Core State Standards	**Essence**	**Extended Common Core**
Represent and solve problems involving multiplication and division.	**Represent and solve problems**	**Represent and solve problems.**
Cluster 1. Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5 × 7.* 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. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.* 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. 4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 ×? = 48, 5 = □ ÷ 3, 6 × 6 =?*		**Cluster** 1. Compose and decompose numbers on both sides of the equal sign to show equality. 2. Solve addition and subtraction problems when result is unknown (i.e. 8 + 2 =□, 6 – 3 = □).

Understand properties of multiplication and the relationship between multiplication and division.	Build foundation for multiplication through repeated addition.	Represent repeated addition.
Cluster 5. Apply properties of operations as strategies to multiply and divide.2 *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)* 6. Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*		**Cluster** 3. Build models that represent repeated addition. (i.e., 2 groups of 4 is the same quantity as 4 + 4) 4. Share equally collections of up to 30 items between 2 to 4 people to solve real life story problems.

3rd Grade Mathematics Numbers and Operations in Base Ten		
Common Core State Standards	**Essence**	**Extended Common Core**
Use place value understanding and properties of operations to perform multi-digit arithmetic.	Understand place value	Use place value understanding to add and subtract.
Cluster 1. Use place value understanding to round whole numbers to the nearest 10 or 100. 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. 3. Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.		**Cluster** 1. Use a number line (0-30) to determine the number 1 more and 1 less and 2 more and 2 less. 2. Illustrate ten and some more with numbers 11-30 using objects (bundles of ten). 3. Use part-part-whole relationships (including 2 or more parts), to compose and decompose numbers (0-30). 4. Compare numbers (0-30) in relationship to benchmark numbers 5 and 10. 5. Compare sets of objects (0-30) by their relative magnitude (e.g., more, less, equal, one more, one less, bigger, smaller). 6. Use estimation to determine if a set of objects is "more than 10," "less than 10," or "about the same as 10." 7. Use language and symbols (subtract, add, equal) to describe addition and subtraction problems. 8. Use addition and subtraction symbols in solving problems up to 30.

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3rd Grade Mathematics Numbers and Operations - Fractions			
Common Core State Standards		**Essence**	**Extended Common Core**
Develop understanding of fractions as numbers.		**Understand factions**	**Develop understanding of simple fractions.**

Cluster	1. Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.
	2. Understand a fraction as a number on the number line; represent fractions on a number line diagram.
	   a. Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.
	   b. Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.
	3. 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., $1/2 = 2/4$, $4/6 = 2/3$). 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.
		Cluster	1. Identify whole and half using concrete models (use continuous and discrete items).
			2. Use symbolic representation for each equal part.

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3rd Grade Mathematics Measurement and Data			
Common Core State Standards		**Essence**	**Extended Common Core**
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.		Solve problems involving measurement	Solve problems with measurements involving time and length.
Cluster	1. Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram. 2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).6 Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.		**Cluster**	1. Recall names of the months. 2. Use a full day schedule to order the events of the day. 3. Compare two objects using direct comparison of length. 4. Solve problems using appropriate vocabulary to describe differences in length (e.g. more, less, same). 5. Use standard customary unit to measure length (inch).
Represent and interpret data.		Represent and interpret data.	Represent and interpret data.
Cluster	3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.* 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.		**Cluster**	6. Organize and represent data using a line plot. 7. Title and label axis of graph. 8. Answer questions posed about the collected data.

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3rd Grade Mathematics Geometry		
Common Core State Standards	**Essence**	**Extended Common Core**
Reason with shapes and their attributes.	**Reason with shapes and their attributes.**	**Reason with shapes and their attributes.**
Cluster 1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories. 2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.*		**Cluster** 1. Recognize the attributes of a rhombus and other quadrilaterals. 2. Partition shapes into equal halves. Express the area of each part as the fraction ½. Demonstrate understanding that this is 1 or 2 parts.

4th Grade Mathematics Operations and Algebraic Thinking		
Common Core State Standards	**Essence**	**Extended Common Core**
Use the four operations with whole numbers to solve problems.	**Use operations to solve problems**	**Use the two operations with whole numbers to solve problems (up to 50).**
Cluster 1. Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 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. 2. 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. 3. 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.		**Cluster** 1. Solve addition and subtraction problems when change is unknown (i.e. 8 + ☐ = 10, 6 – ☐ = 3). 2. Use part-part-whole problem, to combine two parts into one whole when whole is unknown.
Gain familiarity with factors and multiples.	**Build understanding of multiplication and division**	**Understand relationship between multiplication and division.**
Cluster 4. 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.		**Cluster** 3. Illustrate multiplication and division by making equal sized groups using models. 4. Understand that even numbers are sets that can be shared equally between 2 people and odd sets cannot. 5. Use the symbolic representation of multiplication and division to write a number sentence.

Generate and analyze patterns.	Analyze patterns	Analyze patterns.
Cluster — 5. 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. *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 between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*		**Cluster** — 6. Use repeating shape patterns to make predictions and extend simple repeating patterns. 7. Understand the concept of counting by 2's.

4th Grade Mathematics Number and Operations in Base Ten		
Common Core State Standards	**Essence**	**Extended Common Core**
Generalize place value understanding for multi-digit whole numbers.	**Place value understanding whole numbers.**	**Generalize place value understanding for multi-digit whole numbers.**
Cluster 1. 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. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.* 2. 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. 3. Use place value understanding to round multi-digit whole numbers to any place.		**Cluster** 1. Illustrate whole numbers to 50 by composing and decomposing numbers. 2. Use a number line or hundreds chart to compare numbers greater than, less than or equal to.
Use place value understanding and properties of operations to perform multi-digit arithmetic.	**Place value and properties of operations**	**Use place value understanding and properties of operations to perform multi-digit arithmetic.**
Cluster 4. Fluently add and subtract multi-digit whole numbers using the standard algorithm. 5. 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. 6. 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.		**Cluster** 3. Illustrate multiplication and division by making 2 equal sized groups up to 10.

4th Grade Mathematics Number and Operations - Fractions			
Common Core State Standards		**Essence**	**Extended Common Core**
Extend understanding of fraction equivalence and ordering.		**Extend understanding of fractions**	**Develop understanding of fractions as numbers.**
Cluster	1. 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. 2. 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 whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	**Cluster**	1. Identify whole, half, and fourth using concrete models (use continuous and discrete items). 2. Use symbolic representation for each fractional part. 3. Use a number line to identify the half between each number.

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4th Grade Mathematics Measurement and Data			
Common Core State Standards		**Essence**	**Extended Common Core**
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.		**Solve problems involving measurement**	**Solve problems involving measurement time and mass.**
Cluster	1. 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. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), …* 2. 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. 3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *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.*		**Cluster**	1. Tell time to the nearest hour. 2. Compare two objects using direct comparison of mass. 3. Solve problems using appropriate vocabulary to describe differences in weight (e.g. more, less, same). 4. Use customary unit to measure weight (ounces and pounds).

Represent and interpret data.	Represent and interpret data.	Represent and interpret data.
Cluster 4. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*		**Cluster** 4. Organize and represent data using bar graphs. 5. Title and label axis of graph. 6. Answer questions posed about the collected data.

4th Grade Mathematics Geometry		
Common Core State Standards	**Essence**	**Extended Common Core**
Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	**Identify lines, angles, and properties of shapes**	**Identify lines, angles, and properties of a shape (circle, square, rectangle, triangle, and rhombus).**
Cluster 1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. 2. 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. 3. 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.		**Cluster** 1. Identify angles in each shape. 2. Describe the attributes of two-dimensional shapes (i.e., number sides and angles, straight vs curved lines).

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5th Grade Mathematics Operations and Algebraic Thinking		
Common Core State Standards	**Essence**	**Extended Common Core**
Write and interpret numerical expressions.	**Write numerical expression**	**Write a simple numerical expression.**
Cluster	1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. 2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.*		Cluster	1. Write and solve a number problem based on a real-word situation.
Analyze patterns and relationships.	**Analyze patterns and relationships**	**Analyze patterns and relationships.**
Cluster	3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*		Cluster	2. Use repeating shape and numerical patterns to identify the unit, correct errors, and extend the pattern. 3. Understand the concept of counting by 2's and 5's. 4. Understand counting by 10's on and off the decade (0-100).

5th Grade Mathematics Number and Operations in Base Ten		
Common Core State Standards	**Essence**	**Extended Common Core**
Understand the place value system.	Understand the place value system	Understand the place value system.

Cluster 1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
3. Read, write, and compare decimals to thousandths.
  a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.
  b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
4. Use place value understanding to round decimals to any place.
		Cluster 1. Understand the sequential order of the counting numbers (0-100) and their relative magnitudes.
		2. Illustrate whole numbers in groups of one's and ten's by composing and decomposing.

Perform operations with multi-digit whole numbers and with decimals to hundredths.	Use four operations with whole numbers	Perform operations with multi-digit whole numbers (0-100).
Cluster 5. Fluently multiply multi-digit whole numbers using the standard algorithm. 6. Find whole-number quotients of whole numbers with up to four-digit dividends and two-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. 7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.		**Cluster** 3. Solve addition and subtraction problems when initial is unknown (i.e. ☐ + 2 = 10; ☐ -2 = 8). 4. Use concrete objects to illustrate the commutative property. 5. Solve single and multi-digit addition and subtraction equations (no regrouping). 6. Illustrate the concept of multiplication by using equal shares to make 1-5 equal groups. 7. Illustrate the concept of division by making 1-5 equal sized groups and count number of groups. 8. Illustrate "left over" using objects and representations (remainder).

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5th Grade Mathematics Number and Operations - Fractions			
Common Core State Standards		**Essence**	**Extended Common Core**
Use equivalent fractions as a strategy to add and subtract fractions.		**Adding fractions**	**Develop an understanding of addition with fractions.**
Cluster	1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)* 2. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.*	**Cluster**	1. Identify whole, half, fourth and third using concrete models (use continuous and discrete items). 2. Use symbolic representation for each fractional part. 3. Understand a set must be divided into equal parts of the whole and when reassembled recreates the whole using a model. 4. Add fractions with like denominators to make a whole (halves, thirds, fourths).

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5th Grade Mathematics Measurement and Data				
Common Core State Standards		**Essence**	**Extended Common Core**	
Convert like measurement units within a given measurement system.		Solve measurement problems	**Solve measurement problems using time, length, and mass (Customary System).**	
Cluster	1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.		Cluster	1. Tell time to the nearest 5 minutes. 2. Compare the weight and length of an object using two different units. 3. Estimate which standard unit will need more or less units to measure same item. 4. Solve problems using appropriate vocabulary to describe differences in length and weight (e.g. more, less, same).
Represent and interpret data.		Represent and interpret data	**Represent and interpret data.**	
Cluster	2. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*		Cluster	5. Collect, organize and display data on a picture, line plot or bar graph. 6. Interpret graphs (more, less, same).

5th Grade Mathematics Geometry		
Common Core State Standards	**Essence**	**Extended Common Core**
Graph points on the coordinate plane to solve real-world and mathematical problems.	**Graph points**	**Graph points on the coordinate plane.**
Cluster 1. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate). 2. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.		**Cluster** 1. Plot points in 1st quadrant.
Classify two-dimensional figures into categories based on their properties.	**Classify two-dimensional figures**	**Classify two-dimensional figures into categories based on their properties.**
Cluster 3. Understand that attributes belonging to a category of two dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles. 4. Classify two-dimensional figures in a hierarchy based on properties.		**Cluster** 2. Classify figures based on angles and parallel sides. 3. Sort figures and describe the common attribute(s).