K.CC Counting and Cardinality	Grade K

Cluster: Know number names and the count sequence.

Essential Questions	Enduring Understandings
How do we count?	Numbers have names and we can use them to count.

Standards	Classroom Applications
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).	**Instructional Guidance** • Sing and clap to counting songs and chants • Listen to counting stories read aloud • Count by rote in groups and individually • Calendar activities • Use number line and one hundreds chart to count by ones and tens **Measures of Understanding** *To show evidence of meeting this standard, students will:* By the end of Kindergarten, students will count (independently and orally) to 100 by ones and tens Benchmarks: • By the end of the first marking period, students will count to 30 by ones • By the end of the second marking period, students will count to 50 by ones and tens • By the end of the first 100 days, students will count to 100 by tens **Resources** http://illuminations.nctm.org/ActivityDetail.aspx?ID=75 http://www.kidport.com/GradeK/Math/NumberSense/MathKNumbers.htm http://www.thinkfinity.org
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).	**Instructional Guidance** *To assist in meeting this standard, students may:* • Write numerals from 0 to 9 (constructing left-to-right, top-to-bottom; given the same attention as letter formation) • Write numbers from 0 to 20 • Count objects in the classroom (chairs, children, fingers, floor tiles, etc.) to establish one-to-one correspondence and write number to represent total • Represent up to 20 objects with numbers: orally, in writing, or through matching

Measures of Understanding
To show evidence of meeting this standard, students will:
By the end of Kindergarten, students will independently write the numbers from 0 to 20 and use them to represent up to 20 objects
Benchmarks:
- By mid-year, students write the numerals 0-9 and represent their quantities

Resources
http://www.songsforteaching.com/numberscounting.htm

http://www.mathworksheetwizard.com/kindergarten-math.html

http://resources.kaboose.com/games/math2.html

Cluster: Count to tell the number of objects.

Essential Questions	Enduring Understandings
Why do we count?	Everything can be counted. Number names tell us how many objects are in groups and allow us to count in order and compare groups of objects.

Standards	Classroom Applications

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.
	Instructional Guidance
	To assist in meeting this standard, students may:
	• Count objects in the classroom (chairs, children, fingers, floor tiles, etc.) to establish one-to-one correspondence and write number to represent total
	• Represent up to 20 objects with numbers: orally, in writing, or through matching
	• Use manipulatives to count
	• Use number lines, calendar, 100 chart, manipulatives
	
	Measures of Understanding
	To show evidence of meeting this standard, students will:
	• By mid-year students will count up to 9 objects and know that the last number stated names the number of objects in the counted group
	• By mid-year students will rearrange and see that regardless of the arrangement the count stays the same
	• By the end of the year students will understand the relationships among a number, the number that proceeds it and the number that follows it, up to 20
	• Given up to 20 items arranged in an organized pattern, or up to 10 items in a scattered pattern, students will count to answer "How many?"
	
	Resources
	http://www.bbc.co.uk/schools/ks1bitesize/numeracy/ordering/index.shtml
	
	http://www.internet4classrooms.com/skill_builders/beginning_counting_math_kindergarten_k_grade.

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.	htm http://www.internet4classrooms.com/skill_builders/number_recognition_math_kindergarten_k_grade.htm

Cluster: Compare numbers

Essential Questions	Enduring Understandings
How can we compare numbers?	Sets of objects can be grouped and counted so that we can compare them in terms of greater than, less than, or equal to. Number names help us identify the amount of objects in a set or group.

Standards	Classroom Applications
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. *[include groups with up to ten objects.]* 7. Compare two numbers between 1 and 10 presented as written numerals.	**Instructional Guidance** *To assist in meeting this standard, students may:* • Sort objects by attributes (color, size, shape etc). Determine which group has the greatest number of objects, the least number of objects • Count groups of students by attribute—i.e. students with brown hair compared with students with blonde hair • Compare amounts in each group using the terms greater than, less than or equal to • Match number cards or written numbers to sets of objects. State which number represents the greatest or least amount • Recognize number cards that represent greater, less than or equal to by playing card games or working with number cards **Measures of Understanding** *To show evidence of meeting this standard, students will:* • By mid-year, students will be able to count multiple sets of objects up to ten and compare the quantities using the terms greater than, less than or equal to • By the end of the year, students will be able to use numerical symbols up to ten (written numbers or number cards) to state which quantity is greater, less than or equal to **Resources** http://www.internet4classrooms.com/skill_builders/comparing_numbers_kindergarten_kgrade.htm

K.OA Operations and Algebraic Thinking

Cluster: Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

Essential Questions	Enduring Understandings
What happens when we combine groups and what happens when we take groups apart?	Adding is putting groups together and making more; subtracting is taking groups apart and making less.

Standards	Classroom Applications
1. Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations. *[Drawings need not show details, but should show the mathematics in the problem.]* 2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem. 3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g.,	**Instructional Guidance** *To assist in meeting this standard, students may:* • Combine two sets of objects in the classroom (chairs, children, fingers, floor tiles, etc.) to find the total (of up to 10) • Use manipulatives, drawings, sounds, and mental images to add and subtract, and solve word problems within 10 • Use number lines, calendar, 100 chart, and manipulatives to add or subtract by counting on or counting back • Tell and write number stories to illustrate and solve number problems using verbal explanations, expressions, and equations within 10 • Show two or more ways to create the same total up to 10 with two addends using objects or drawings, and record the equations • Use objects or drawings to find the addend that will make ten when added to a given number, and record the answer with a drawing or equation • Use ten frames to find the addend that will make ten when added to the given number, and record the answer with a drawing or equation • Practice (both orally and in writing) facts for addition and subtraction within 5 • Use fact families and/or fact triangles to practice facts for addition and subtraction within 5 **Measures of Understanding** *To show evidence of meeting this standard, students will:* • By the end of the year, students will decompose 10 into all possible pairs using fingers, objects, or drawings, and record each decomposition

$5 = 2 + 3$ and $5 = 4 + 1$).

4. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

5. Fluently add and subtract within 5.

by a drawing or equation (e.g., $10 = 2 + 8$ and $10 = 4 + 6$, etc.)
- By the end of the year, students will master addition and subtraction within 5
- By the end of the year, students will solve addition and subtraction word problems, and add and subtract within 10, by using objects or drawings to represent the problem
- By the end of the year, given any number from 1 to 9, students will find the number that makes 10 when added to the given number, by using objects, drawings, ten frames, etc., and record the answer with a drawing or equation

Resources
Ten frames
<mark>Fact triangles</mark>
Learn with Math Games:
http://www.learn-with-math-games.com/index.html
http://illuminations.nctm.org/activitydetail.aspx?id=75

http://illuminations.nctm.org/ActivityDetail.aspx?ID=75

http://www.thinkfinity.org

http://www.kidport.com/GradeK/Math/NumberSense/MathK_BasicAdd.htm

National Library of Virtual Manipulatives
http://nlvm.usu.edu/en/nav/category_g_1_t_1.html

(http://www.helpingwithmath.com/) in the works… standards with direct links

K.NBT Number & Operations in Base Ten

Cluster: Work with numbers 11-19 to gain foundations for place value.

Essential Questions	Enduring Understandings
Why do we break numbers apart into tens and ones? Why do we break numbers apart into tens and ones?	We can break numbers apart by groups of tens and ones to help us understand larger numbers. Knowing the value of numbers in each place will help us add and subtract.

Standards	Classroom Applications
1. Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such	**Instructional Guidance** *To assist in meeting this standard, students may:* • Use daily Calendar Math to represent tens and ones with bundles and cubes • Use unifix cubes to break apart numbers into tens and ones • Draw pictures representing numbers 11-19 using one set of ten and ___ **Measures of Understanding**

as 18 = 10 + 8);
understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

To show evidence of meeting this standard, students will:
- By the end of the year, students will represent numbers 11-19 pictorially or by a written equation that model one set of ten and the remaining "ones"

Resources

http://nlvm.usu.edu/en/nav/category_g_1_t_1.html

http://www.internet4classrooms.com/grade_level_help/number_operations_kindergarten_k.htm

http://www.sheppardsoftware.com/math.htm

http://mitchelljm.us/lz-kindergarten-algebra-printable.htm

http://classroom.jc-schools.net/basic/math-count.html

http://www.zoodles.com/free-online-kids-games/kindergarten_numbers?source=nav_subjects

http://www.zoodles.com/free-online-kids-games/kindergarten_real-world-math?source=nav_subjects

K.MD Measurement and Data

Cluster: Describe and compare measurable attributes.

Essential Questions	Enduring Understandings
How do we tell which object is longer? How do we tell which object is heavier?	When measuring, you start at the beginning of the object and finish measuring at the end of the object. When comparing two lengths, one end of each length must match. The size of an object does not always tell you its weight; for example, larger does not always mean heavier.

Standards	Classroom Applications
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 a taller/shorter.*	**Instructional Guidance** ***To assist in meeting this standard, students may:*** • Take two items such as a feather and a rock and have students compare their attributes, i.e. the feather is lighter than the rock; the feather is longer than the rock • Identify objects around the classroom that are longer and shorter than a given length • Pick two towers of cubes and compare their lengths. • Create a tower based on the number of letters in their names and compare with classmates the length of their names • Define and give examples of heavy and light • Use a scale to measure the weight of different objects to see which is heavier or lighter **Measures of Understanding**

- By the end of the year, given two towers students will identify which is longer and which is shorter
- By the end of the year, students will identify which object is heavier in a given group
- By the end of the year, students will be able to use a nonstandard unit of measure to compare two items in length

Resources

http://www.zoodles.com/free-online-kids-games/kindergarten_measurement?source=nav_subjects

http://pbskids.org/clifford/games/measuring_up.html

Cluster: Classify objects and count the number of objects in each category.

Essential Questions	Enduring Understandings
How do we sort objects? What are attributes?	We can describe all objects by their attributes. We can sort all objects by their attributes.

Standards	Classroom Applications
3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. *[Limit category counts to be less than or equal to 10.]*	**Instructional Guidance** *To assist in meeting this standard, students may:* • Students will classify and sort a random sampling of objects (i.e. by color, shape, thickness, type of object) and count the objects in each group • Students create a train using attribute blocks by putting blocks next to each other that share an attribute. (for example, blue next to blue, thin next to thin, circle next to circle) **Measures of Understanding** *To show evidence of meeting this standard, students will:* • By the end of the year, students will be able to define the attributes by which they classify objects • By the end of the year, students will be able to identify attributes of objects (i.e. color, shape, thickness, etc) **Resources** http://illuminations.nctm.org/LessonDetail.aspx?ID=L20 http://illuminations.nctm.org/LessonDetail.aspx?ID=L128

K.G Geometry

Cluster: Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones cylinders, and spheres).

Essential Questions	Enduring Understandings
What are the different shapes in our world?	All objects have a shape with a specific name.

Standards	Classroom Applications
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").	**Instructional Guidance** *To assist in meeting this standard, students may:* • Using objects in the classroom, show position, such as, the round clock is above the rectangular floor • Using manipulatives and paper and pencil, students will give names to various shapes, regardless of size, orientation or dimension **Measures of Understanding** *To show evidence of meeting this standard, students will:* • By the end of the year, using positional terms, students will be able to identify two and three dimensional geomantic shapes and their location **Resources** http://www.apples4theteacher.com/math.html#geometrygames http://www.zoodles.com/free-online-kids-games/bunnytown_kindergarten_geometry http://kids.aol.com/KOL/2/HomeworkHelp/archive/homework-help-jr-math-shapes

Cluster: Analyze, compare, create, and compose shapes

Essential Questions	Enduring Understandings
How are shapes the same and different?	Objects can be similar to others in one way and different in other ways.

Standards	Classroom Applications
4. Analyze and compare 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. *For*	**Instructional Guidance** *To assist in meeting this standard, students may:* • Draw various geometric shapes and compare them to solid figurers, such as a circle on a piece of paper compared to a tennis ball or a rectangle on paper compared to a tissue box • Using snap logs, show how the size can change when joining two rectangles **Measures of Understanding** *To show evidence of meeting this standard, students will:* • By the end of the year, students will be able to draw different geometric figures and identify three dimensional shapes • By the end of the year, students will use pattern blocks to produce larger and/or different shapes **Resources** www.homeschoolmath.net/online/geometry www.primarygames.com/math/shapeinlay/index.htm www.learningplanet.com www.ed-u-smart.com/kindershape.aspx

example, "Can you join these two triangles with full sides touching to make a rectangle?"