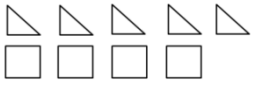
Kindergarten

Instructional Focus:

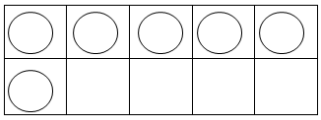
In Kindergarten, instructional time should focus on two critical areas: (1) representing, relating, and operating on whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten should be devoted to number than to other topics.

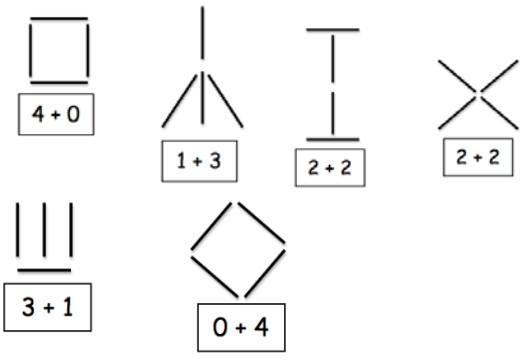
1. Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; counting out a given number of objects; comparing sets or numerals; and modeling simple joining and separating situations with sets of objects, or eventually with equations such as 5 + 2 = 7 and 7 – 2 = 5. (Kindergarten students should see addition and subtraction equations, and student writing of equations in kindergarten is encouraged, but it is not required.) Students choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.
2. Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary. They identify, name, and describe basic two-dimensional shapes, such as squares, triangles, circles, rectangles, and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes such as cubes, cones, cylinders, and spheres. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

Standard	Objective	Examples
Counting & Cardinality		
Know number names and the count sequence.		
K.CC.1. Count to 100 by ones and by tens.	• Count by ones to 100 • Count by tens to 100	• Build sets using concrete materials to construct towers, or groups of ten, to make sense of counting by tens • Count using the hundreds chart or number line **Example**: Students rote count by starting at one and counting to 100. Students count by tens (0, 10, 20, 30, 40 …).
K.CC.2. Count forward beginning from a given number within the known sequence.	• Count forward from a given number	• Count forward starting with any number 11 through 20 and count on (focus: teen number order) • Start with any number and state the next 10 numbers • model counting from a given number using a hundreds chart **Example**: Students rote forward count in sequence from a number other than 1. Thus, given the number 4, the student would count, "4, 5, 6, 7 …"
K.CC.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).	• Write numbers 0-20 • Label a group of objects with the correct written numeral 0-20 • Knowledge that zero represents an empty set	• Write numbers 0-20 when given a group of objects **Example:** The student has counted 9 objects, then the written numeral "9" is recorded. A student picks up the number card "13", the student then creates a pile of 13 counters.
Count to tell the number of objects.		
K.CC.4. Understand the relationship between numbers and quantities; connect counting to cardinality. a. When counting objects, say the number names in standard order, pairing each object with one and only one number name and each number name with one and only one	• Counts objects in a set using one to one correspondence • States the number of objects in a set regardless of placement within the set (objects specifically placed or objects randomly placed) • Construct a group of objects to show a quantity and one larger • Understand that when counting a set, the last number	• Model a quantity using objects/manipulatives • Count linked cubes or cubes placed randomly on table • Model a quantity of one larger using objects/manipulatives • Given a set of manipulatives students will count the objects and state the number to tell how many are in the set • Use math discourse to explain reasoning on how many objects are in a given set • Use math discourse to explain reasoning why changing the arrangement of objects in a set does not change the quantity • Use math discourse to explain that each successive number

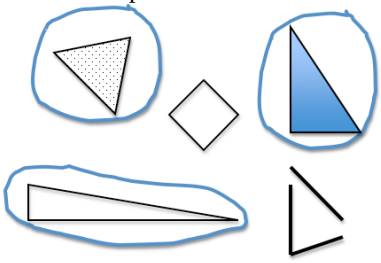
object. b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. c. Understand that each successive number name refers to a quantity that is one larger.	represents the total number of the objects in the set • Apply cardinality (e.g., states the number of objects in a set after counting) • Knowledge of and ability to apply Conservation of number (e.g., ability to understand that the quantity of a set does not change, no matter how the objects of the set are displayed) • Knowledge that when one more is added to a number set, this new number includes all the previous objects in the set, plus the new one. (e.g., 6+1=7)	name refers to a quantity that is one larger **Example**: Students count a set of objects and see the set and number in relationship to one another. **Example:** Student responds after counting a set of 8 objects and answers the question, "How many would there be if we added one more object?
K.CC.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.	• Count and answer "how many" with up to 20 objects arranged in a line • Count and answer "how many" with up to 20 objects arranged in a rectangular array • Count and answer "how many" with up to 20 objects arranged in a circle • Count and answer "how many" with up to 10 objects in a scattered configuration • Count out that number of objects indicated given a number 1-20	• Apply subitizing (e.g., the ability to immediately recognize a quantity) when counting objects • Identify patterns of groups of objects to help count the quantity • Use skip counting strategies to find the total quantity • Use one to one correspondence to count objects **Example:** Students need to keep track of objects when counting. Student arranges objects into a line or shape and counts objects correctly.
Compare numbers.		
K.CC.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, counting, or estimating strategies).	• Identify whether the number of objects in one group is greater than, less than or equal to the number of objects in another group by using the strategy of matching • Identify whether the number of objects in one group is greater than, less than or equal to the number of objects in another group by using the strategy of counting • Identify whether the number of objects in one group is greater than, less than or equal to the number of objects in another group by using the strategy of estimating	• Play games where students are comparing the displayed numbers (e.g., card games, dot cards, ten frame cards, dominoes) • Practice subitizing (e.g., the ability to immediately recognize a quantity) skills with students with dot cards • Reading data from a graph and discussing which category has more, less, or is equal to another category **Example:** Students use their counting ability to compare sets of objects (0-10). **Student 1** I lined up one square and one triangle. Since there is one extra triangle, there are more triangles than squares.  **Student 2** I counted the squares and I got 4. Then I counted the triangles and got 5. Since 5 is bigger than 4, there are more triangles than squares. **Student 3** I put them in a pile. I then took away objects. Every time I took a square, I also took a triangle. When I had taken almost all of the shapes away, there was still a triangle left. That means that there are more triangles than squares.

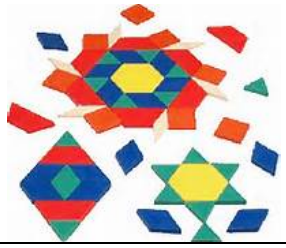
K.CC.7. Compare and order two numbers between 1 and 10 presented as written numerals.	• Compare two numbers between 1 and 10 as written numerals • Order two numbers between 1 and 10 as written numerals	• Be able to put numeral cards in correct order • Compare written numerals to tell which one is greater/less **Example:** Students apply their understanding of numerals 1-10 to compare one numeral from another. Thus, looking at the numerals 8 and 10, a student is able to recognize that the numeral 10 represents a larger amount than the numeral 8.
Operations & Algebraic Thinking		
Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.		
K.OA.1. Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps) acting out situations, verbal explanations, expressions, or equations.	• Construct models to show addition concretely using objects or fingers, acting out situations, etc. • Construct models to show addition semi-concretely using sounds, drawings, etc. • Explain addition abstractly by using mental images, verbal explanations, expressions, equations, etc. • Construct models to show subtraction concretely using objects or fingers, acting out situations, etc. • Construct models to show subtraction semi-concretely using sounds, drawings, etc. • Explain subtraction abstractly by using mental images, verbal explanations, expressions, equations, etc.	• Demonstrate "putting together" and "adding to" are two different processes of addition • Demonstrate "taking apart" and "taking from" are two different processes of subtraction **Example:** When working with manipulatives, student may verbally state that three and two is the same amount as 5.
K.OA.2. Add or subtract whole numbers to 10 (e.g., by using objects or drawings to solve word problems).	• Add whole numbers to 10 using objects or drawings • Subtract whole numbers to 10 using object or drawings	• Provide objects/manipulatives for students to use when listening to a word problem • Provide whiteboards/paper for students to draw pictures to help solve word problems **Example**: Nine grapes were in the bowl. I ate 3 grapes. How many grapes are in the bowl now? **Student:** I got 9 "grapes" and put them in my bowl. Then, I took 3 grapes out of the bowl. I counted the grapes still left in the bowl… 1, 2, 3, 4, 4, 5, 6. Six. There are 6 grapes in the bowl. **Example:** Six crayons are in the box. Two are red and the rest are blue. How many blue crayons are in the box?  **Student:** I got 6 crayons. I moved these two over and pretended they were red. Then, I counted the "blue" ones... 1, 2, 3, 4. Four. There are 4 blue crayons.

K.OA.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). *For example, 5 = 2 + 3 and 5 = 4 + 1.*	• Illustrate the decomposition of numbers less than or equal to 10 by using objects or drawings. • Represent the decomposition of numbers less than or equal to 10 by using equations. • For example, 5 = 2 + 3 and • 5 = 4 + 1.	• Use two-colored counters to show various ways to make a number that is less than equal to 10 • For a given number less than or equal to 10, record its various pairs of numbers into equations such as 5=2+3 and 5=4+1 **Example**: "Bobby Bear is missing 5 buttons on his jacket. How many ways can you use blue and red buttons to finish his jacket? Draw a picture of all your ideas.
K.OA.4. For any number from 1- **4**, find the number that makes 5 when added to the given number and, for any number from 1- 9, find the number that makes 10 when added to the given number (e.g., by using objects, drawings or 10 frames) and record the answer with a drawing or equation.	• Identify the missing number that when added to a given number from 1- 4 makes 5 and record the answer with a drawing • Identify the missing number that when added to a given number from 1- 4 makes 5 and record the answer with an equation • Identify the missing number that when added to a given number from 1- 9 makes 10 and record the answer with a drawing • Identify the missing number that when added to a given number from 1- 9 makes 10 and record the answer with an equation	• Use a five-frame and counters to demonstrate how to find the missing number that makes 5 when given a number 1-4 • Record the information in a drawing • Record the information as an equation • Use ten-frames and counters to demonstrate how to find the missing number that makes 10 when given a number 1-9 • Record the information in a drawing • Record the information as an equation **Example:** When working with 2-color beans, a student determines that 4 more beans are needed to make a total of 10.  "I have 6 beans. I need 4 more beans to have 10 in all." **Example:** "A full case of juice boxes has 10 boxes. There are only 6 boxes in this case. How many juice boxes are missing? **Student A:** *Using a Ten-Frame* "I used a ten frame for the case. Then, I put on 6 counters for juice still in the case. There's no juice in these 4 spaces. So, 4 are missing."  **Student B:** *Think Addition* "I counted out 10 counters because I knew there needed to be ten. I pushed these 6 over here because they were in the container. These are left over. So there's 4 missing."  **Student C:** *Fluently add/subtract* "I know that it's 4 because 6 and 4 is the same amount as 10."

K.OA.5. Fluently add and subtract numbers up to 5	• Accurately and efficiently add numbers up to 5 • Accurately and efficiently subtract numbers up to 5	**Example:** Make various arrangements of a number with toothpicks. Students learn that only a certain number of sub-parts exist within the number 4:  Then, after numerous opportunities to explore, represent and discuss "4", a student becomes able to fluently answer problems such as, "One bird was on the tree. Three more birds came. How many are on the tree now?"; and "There was one bird on the tree. Some more came. There are now 4 birds on the tree. How many birds came?". Numerous experiences with breaking apart actual sets of objects help children internalize parts of number. *Burns (2000) *About Teaching Mathematics*; Fosnot & Dolk (2001) *Young Mathematicians at Work;* Richardson (2002) *Assessing Math Concepts*; Van de Walle & Lovin (2006) *Teaching Student-Centered Mathematics*
Identify and continue patterns.		
K.OA.6. Recognize, identify and continue simple patterns of color, shape, and size.	• Recognize simple patterns of color, shape, and size. • Identify simple patterns of color, shape, and size. • Continue simple patterns of color, shape, and size.	• Model using concrete materials (e.g., Unifix cubes, snap cubes, Digi-blocks, base ten blocks, etc.) to represent a pattern • Record a pattern using paper pattern block shapes. • Incorporate patterning into calendar routines. **Example:** Given a set of pattern blocks, students continue patterns. Given a pattern, a child can identify the pattern.
Numbers and Operations in Base Ten		
Work with numbers 11-19 to gain foundations for place value.		
K.NBT.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 and decomposition by a drawing or equation (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight or nine ones.	• Compose numbers from 11 to 19 into a group of ten ones and additional ones using objects • Compose numbers from 11 to 19 into a group of ten ones and additional ones using recorded drawings • Compose numbers from 11 to 19 into a group of ten ones and additional ones using equations (e.g., 18 = 10 + 8) • Decompose numbers from 11 to 19 into a group of ten ones and additional ones using objects • Decompose numbers from 11 to 19 into a group of ten ones and additional ones using recorded drawings • Decompose numbers from 11 to 19 into a group of ten ones	• Model using concrete materials (e.g., Unifix cubes, snap cubes, Digi-blocks, base ten blocks, etc.) to represent the combination of one ten and ones for each number • Record the representations of 11 through 19 in pictures, numbers, and/or equations • Incorporate 10 group building into calendar routines. **Example:** **Teacher**: "I have some chips here. Do you think they will fit on our ten frame? Why? Why Not?" **Students**: Share thoughts with one another. **Teacher**: "Use your ten frame to investigate." **Students**: "Look. There's too many to fit on the ten frame. Only ten chips will fit on it." **Teacher**: "So you have some leftovers?" **Students**: "Yes. I'll put them over here next to the ten frame." **Teacher**: "So, how many do you have in all?" **Student A**: "One, two, three, four, five… ten, eleven, twelve, thirteen, fourteen. I have fourteen. Ten fit on and four didn't." **Student B**: Pointing to the ten frame, "See them- that's 10… 11, 12, 13, 14. There's fourteen."

	and additional ones using equations (e.g., 18 = 10 + 8) • Explain that the numbers 11-19 are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine additional ones	**Teacher**: Use your recording sheet (or number sentence cards) to show what you found out.
Measurement and Data		
Describe and compare measurable attributes.		
K.MD.1. Describe measurable attributes of objects (e.g., length or weight). Match measuring tools to attribute (e.g., ruler to length). Describe several measurable attributes of a single object.	• Describe measurable attributes of objects (length, weight, capacity) • Match type of measuring tool to the attribute of the object to be measured • Use appropriate tools to measure an object • Describe several measurable attributes of a single object	**Example:** Student verbally describes a shoe with one attribute, "Look! My shoe is blue, too!", or more than one attribute, "This shoe is heavy! It's also really long."
K.MD.2. Make comparisons between 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.*	• Compare two objects with the same measurable attribute to determine more/less of that attribute	**Example:** Students can line up two blocks and say, "The blue block is a lot longer than the white one." Students are not comparing objects that cannot be moved and lined up next to each other.   "Sometimes this block is longer and sometimes it's shorter."  "The dark block is always longer than this block"
Classify objects and count the number of objects in each category.		
K.MD.3. Classify objects into given categories (attributes). Count the number of objects in each category (limit category counts to be less than or equal to 10).	• Sort objects by a given attribute • Count the number of objects in each category	• Classify objects by predetermined categories related to attributes (e.g., number of sides, number of corners) **Example:** When given a group of shapes, sort the shapes into a category and describe why the shapes fit in the category.
Work with time and money.		
K.MD.4. Name in sequence the days of the week.	• Verbally name the days of the week in sequential order.	**Example:** Sing "Days of the Week Song" You Tube Video for days of the week Incorporate days of the week into daily calendar routines

K.MD.5. Tell time to the hour using both analog and digital clocks.	• Verbally tell time to the hour on analog clocks • Verbally tell time to the hour on digital clocks	**Example:** Play time games on Promethean Board using both analog and digital clocks.
K.MD.6. Identify coins by name.	• Identify coins by name (penny, nickel, dime, quarter)	**Example:** Play coin sorting games, coin identification games and act out spending scenarios as a class.
Geometry		
Identify and describe shapes.		
K.G.1. Describe objects in the environment using names of shapes and describe their relative positions (e.g., *above, below, beside, in front of, behind, next to).*	• Describe objects in the environment using names of geometric shapes • Verbally explain positions using geometric vocabulary when describing objects (e.g., *above, below, beside, in front of, behind, next to)*	• When observing objects, use descriptive words to tell position of an object. • Students manipulate a held shape to show positional words. **Example:** Student may discover a new pattern by looking at a tile pattern arrangement on the hall floor and say, "Look! I see squares! They are next to the triangle."
K.G.2. Name shapes regardless of their orientation or overall size.	• Name various sized geometric shapes • Name geometric shapes regardless of orientation	**Example:** Students begin to understand that certain attributes define what a shape is called (number of sides, number of angles, etc.) and that other attributes do not (color, size, orientation). As the teacher facilitates discussions about shapes ("Is it still a triangle if I turn it like this?"), children question what they "see" and begin to focus on the geometric attributes.
K.G.3. Identify shapes as two-dimensional (flat) or three-dimensional (solid).	• Identify if a shape is two-dimensional (flat) • Identify if a shape is three-dimensional (solid)	• Using a T chart, sort given shapes according to two dimensions or three dimensions • Sort a variety of shapes into two- and three-dimensional categories and explain thinking **Example:** Students identify and sort real objects as flat (2 dimensional) or solid (3 dimensional). Students can bring in 3D objects from home to create a shape museum.
Analyze, compare, create and compose shapes.		
K.G.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), and other attributes (e.g., having sides of equal lengths).	• Analyze and compare two-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices), and other attributes (e.g., having sides of equal lengths) • Analyze and compare three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices), and other attributes (e.g., having sides of equal lengths)	**Example:** When identifying the triangles from a collection of shapes, a student circles all of the triangle examples from the non-examples. 
K.G.5. Build shapes (e.g., using sticks and clay) and draw shapes.	• Build shapes • Draw shapes	**Example:** Use marshmallows and toothpicks to have students form shapes Bend pipe cleaners or wax sticks to create shapes.

K.G.6. Put together two-dimensional shapes to form larger shapes (e.g., join two triangles with full sides touching to make a rectangle).	• Build composite figures using concrete materials (e.g. pattern blocks, tangrams, and shape models) • Explain composed shape and name what shapes were used to make the composite shape	• Have student count and explain number of shapes and types of shapes used **Example:** Students can manipulate two or more shapes to create a new shape. When using basic shapes to create a picture, a student flips and turns triangles to make various objects. 
Examples used are from North Carolina Department of Public Instruction		