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| **K.CC.1**: Count to 100 by ones and by tens.  **PA2.1.K.A.1** Know number names and write and recite the count sequence.  Say the number names in sequence to 100 by ones and tens, without repeating or skipping over a number. This is performed without objects to count.  Students rote count by starting at one and counting to 100. When students count by tens they are only expected to master counting on the decade (0, 10, 20, 30, 40 …). This objective does not require recognition of numerals. It is focused on the rote number sequence. |  | **K.CC.2**: Count forward beginning from a given number within the known sequence (instead of having to begin at 1).  **PA2.1.K.A.1** Know number names and write and recite the count sequence.  Say the number names in sequence beginning from any number, without having to begin at 1. This is performed without objects to count. This objective does not require recognition of numerals. It is focused on the rote number sequence 0-100. |
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| **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).  **PA2.1.K.A.1:** Know number names and write and recite the count sequence.  •Write the numbers from 0 to 20 in order.  •Write the number to match the name of number (from 0 to 20) that is said aloud.  •Count the number of objects (limited to 0 to 20 objects) shown, and then write the number that represents how many there are.  Due to varied development of fine motor and visual development, reversal of numerals is anticipated. While reversals should be pointed out to students and correct formation modeled in instruction, the emphasis of this standard is on the use of numerals to represent quantities rather than the correct handwriting formation of the actual numeral itself. |  | **K.CC.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.  **PA2.1.K.A.2:** Apply one-to-one correspondence to count the number of objects.  •Say the number names in standard order as each object is counted.  •Keep track of the objects as they are counted so that no objects are skipped or double-counted.  •After counting the objects, when asked “how many object are there?” the student responds correctly without having to go through the counting sequence again.  •After counting the objects, when one more object is added to the set and when asked “how many are there now?” the student responds correctly without having to count the set.  •Young children believe what they see. Therefore, they may believe that a pile of cubes that they counted may be more if spread apart in a line. As children move towards the developmental milestone of conservation of number, they develop the understanding that the number of objects does not change when the objects are moved, rearranged, or hidden. Children need many different experiences with counting objects, as well as maturation, before they can reach this developmental milestone. |
| **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.  **PA2.1.K.A.2:** Apply one-to-one correspondence to count the number of objects.  •Say how many objects there are as a result of counting them (objects are limited to 20 things arranged in a line, in a rectangular array (in rows), or in a circle) (objects scattered in a random configuration are limited to 10).  •Count out a given number of objects (e.g., when given a tub of jelly beans, the student can take out the number of jelly beans that he is told to take out). |  | **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 and counting strategies. (Note: Include groups with up to ten objects.)  **PA2.1.K.A.3:** Apply the concept of magnitude to compare numbers and quantities.  •Tell which group has more (or less or the same number of) objects than the other by…  •Comparing one group to the other by sight (and not counting them) when  it is obvious that one group has more (e.g., one group has 2 objects and  the other has 8);  •Comparing one group to the other by strategically arranging the objects so  that they can be compared by sight;  •Using other comparison strategies such as removing one object from each  group, and then removing another object from each group, and then  continuing until only one group has leftovers;  •Counting the number of objects in one group, then counting the number of  objects in the other group, and then saying which has more. |
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| **K.CC.7**: Compare two numbers between 1 and 10 presented as written numerals.  **PA2.1.K.A.3:** Apply the concept of magnitude to compare numbers and quantities.  •Say which number is more (or less) than the other when show a pair of written numbers between 1 and 10.  • Students need ample experiences with actual sets of objects (K.CC.3 and K.CC.6) before completing this standard with only numerals. |  |  |

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| **K.OA.2**: Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.  **PA2.2.K.A.1:** Extend the concepts of putting together and taking apart to add and subtract within 10.  •Recognize whether the word problem requires addition or subtraction and uses objects or drawings to model the problem and find the solution.  •Kindergarten students solve four types of problems within 10: Result Unknown/Add To; Result Unknown/Take From; Total Unknown/Put Together-Take Apart; and Addend Unknown/Put Together-Take Apart  •Kindergarteners use counting to solve the four problem types by acting out the situation and/or with objects, fingers, and drawings.  •Before introducing symbols (+, -, =) and equations, kindergarteners require numerous experiences using joining (addition) and separating (subtraction) vocabulary in order to attach meaning to the various symbols. For example, when explaining a solution, kindergartens may state, “Three and two is the same amount as 5.” While the meaning of the equal sign is not introduced as a standard until First Grade, if equations are going to be modeled and used in Kindergarten, students must connect the symbol (=) with its meaning (is the  same amount/quantity as). |  | **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 (e.g., 5 = 2 + 3 and 5 = 4 + 1).  **PA2.2.K.A.1:** Extend the concepts of putting together and taking apart to add and subtract within 10.  •Start with *x* number of objects (*x* ≤ 10) and show different ways to separate them into two quantities (e.g., the student starts with 7 tiles and then separates them into a set of 4 and a set of 3, 5 and 2, and 6 and 1).  •For each decomposition, draw the two sets of objects and write an equation that represents the decomposition.  Students develop an understanding of part-whole relationships as they recognize that a set of objects (5) can be broken into smaller sub-sets (3 and 2) and still remain the total amount (5). In addition, this objective asks students to realize that a set of objects (5) can be broken in multiple ways (3 and 2; 4 and 1). Thus, when breaking apart a set (decompose), students use the understanding that a smaller set of objects exists within that larger set (inclusion). |
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| **K.OA.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.  **PA2.2.K.A.1:** Extend the concepts of putting together and taking apart to add and subtract within 10.  •Add enough objects to make 10 when given 1-9 objects/manipulatives to start with.  •Draw enough objects to make 10 when given a picture of 1-9 objects to start with.  •Say what number is needed to make 10 when given any number from 1 to 9.  •Complete a missing addend equation when one of the given addends is 1 to 9, and the sum is 10. (e.g., 8 + \_\_\_ = 10, and the student fills 2 into the blank). |  | **K.OA.5**: Fluently add and subtract within 5.  **PA2.2.K.A.1:** Extend the concepts of putting together and taking apart to add and subtract within 10.  •Effortlessly add any pair of numbers who sum is 5 or less.  •Effortlessly subtract any pair of numbers whose starting number is 5 or less (of course, the second number not greater than the first number).  NOTE: Proficiency of this standard should come as a result of development  •Students are fluent when they display accuracy (correct answer), efficiency (a reasonable amount of steps in about 3 seconds without resorting to counting), and flexibility (using strategies such as the distributive property).  •Students develop fluency by understanding and internalizing the relationships that exist between and among numbers. Oftentimes, when children think of each “fact” as an individual item that does not relate to any other “fact”, they are attempting to memorize separate bits of information that can be easily forgotten. Instead, in order to fluently add and subtract, children must first be able to see sub-parts within a number (inclusion, K.CC.4.c).  •Traditional flash cards or timed tests have not been proven as effective instructional strategies for developing fluency.\* Rather, 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 |

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| **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 or 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.  **PA2.1.K.B.1:** Use place value to compose and decompose numbers within 19.  •Represent numbers 11-19 with ones units (e.g., represent 13 with 13 square tiles or 13 straws or 13 ones units).  •Associate the number 10 with a collect of ten ones (e.g., 10 square tiles stacked together or 10 straws banded together or a tens unit).  •When representing numbers 11-19 with ones units, compose ten ones units into a bundle of 10 so that the student sees a bundle of 10 with some ones units.  •Draw a picture representing the numbers 11-19 that shows a bundle/group of 10 units with further units to represent the ones (e.g., represent 13 with a drawing of 10 sticks circled with 3 more sticks, and write an equation for the drawing (e.g., 13 = 10 + 3). |  | **K.MD.1**: Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.  **PA2.4.K.A.1:** Describe and compare measureable attributes of objects.  •Look at an object and describe what is measurable about it (e.g., for a pencil, the student says he can measure its length (or how long it is) and weight (or how heavy it is)).  •For example, a student may describe 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.” |
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| **K.MD.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.*  **PA2.4.K.A.1:** Describe and compare measureable attributes of objects.  •When presented with two objects that have a common measurable attribute, compare the objects according to the attribute, and make a statement about the comparison. For example…  •If length is the common attribute: Place the objects side-by-side to see which one is longer/shorter, and make a statement about the comparison (e.g., the pencil is longer than the crayon).  •If height is the common attribute: Stand the objects side-by-side to see which one is taller/shorter, and make a statement about the comparison (e.g., Molly is taller than Jake).  •If weight is the common attribute: Hold/carry/pick up each object to see which one is heavier/lighter, and make a statement about the comparison (e.g., the dictionary is a lot heavier than this book).  •If capacity is the common attribute: Fill one object and pour the contents into the other object to see which one holds more, and make a statement about the comparison (e.g., the red cup holds more water than the blue cup).  •Similar to the development of the understanding that keeping track is important to obtain an accurate count, kindergarten students need ample experiences with comparing objects in order to discover the importance of lining up the ends of objects in order to have an accurate measurement. |  | **K.MD.3**: Classify objects or people into given categories; count the numbers in each category and sort the categories by count. (Note: Limit category counts to be less than or equal to 10.)  **PA2**.4.K.A.4: Classify objects and count the number of objects in each category.  •Take a collection of objects or people and decide in which category (among categories provided) the object belongs;  •Count the total for each category (NOTE: limit the count of each category to 10 or less); and  •Say which category has the most, second most, etc. |

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| **K.G.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*.  **PA**: - not specifically addressed in standards  •Name an object and say what shape it resembles, and can give clues to its location by using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*.  •Kindergarten students need numerous experiences identifying the location and position of actual two-and-three dimensional objects in their classroom/school prior to describing location and position of two-and-three dimensional representations on paper. |  | **K.G.2**: Correctly name shapes regardless of their orientations or overall size.  **PA2.3.K.A.1:** Identify and describe two-and three-dimensional shapes.  •Say or write the name of shape that they see (e.g., circle, square, rectangle, triangle, hexagon, trapezoid, cube).  •Give the name of shapes regardless of their orientation. (e.g., names the following as a “rectangle” even though it is tilted…)  (e.g., recognizes the following as a “triangle” even though it is “upside down”…)  •Give the name of shapes regardless of their size (e.g., recognizes the following as a “rectangle” even though it is long and thin”…)  •Through numerous experiences exploring and discussing shapes, 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). |
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| **K.G.3**: Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).  **PA2.3.K.A.1:** Identify and describe two-and three-dimensional shapes.  •Look at a shape and say whether it is two-dimensional or three-dimensional. |  | **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/“corners”) and other attributes (e.g., having sides of equal length).  **PA2.3.K.A.2:** Analyze, compare, create, and compose two- and three- dimensional shapes.  •Compare and contrast given shapes and say/write what is similar about them (e.g., they both have 3 sides, or they both have sides of that are all equal), what is different about them (e.g., one has 4 sides, but the other has 3 sides).  •For example, when comparing a triangle and a square, they note that they both have sides, but the triangle has 3 sides while the square has 4. Or, when building in the Block Center, they notice that the faces on the cube are all square shapes. |

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| **K.G.5**: Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.  •Draw shapes to model objects/shapes that they see (e.g., draws a car with a rectangle body and circles for wheels).  •Build shapes out of everyday materials (such as straws, toothpicks, sticks, paper, raw spaghetti noodles). |  | **K.G.6**: Compose simple shapes to form larger shapes. *For example, “Can you join these two triangles with full sides touching to make a rectangle?”*  •When using Pattern Blocks:  •Use the smaller shapes to overlap perfectly onto the hexagon.  •Use the smaller shapes to overlap perfectly onto the trapezoid.  •Use the smaller shapes to overlap perfectly onto the blue  parallelogram.  ·•When using cut-out shapes, join smaller shapes to form larger shapes so that the sides that are joined together lie up perfectly. For example:  •Form a rectangle out of two right triangles.  •Form rectangles out of other squares or rectangles.  •Form a square out of 4 same-size squares.  •This standard moves beyond identifying and classifying simple shapes to manipulating two or more shapes to create a new shape. This concept begins to develop as students move, rotate, flip, and arrange puzzle pieces to complete a puzzle. Kindergarteners use their experiences with puzzles to use simple shapes to create different shapes.  For example, when using basic shapes to create a picture, a student flips and turns triangles to make a rectangular house. |
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|  |  | **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. (Note: Drawings need not show details, but should show the mathematics in the problem -- this applies wherever drawings are mentioned in the Standards.)  **PA2.2.K.A.1:** Extend the concepts of putting together and taking apart to add and subtract within 10.  **•Represent addition in the following ways:**  •Using fingers, objects, manipulatives, sounds, or people to represent what is being added together (or represent one quantity being to another), and then determining the total/sum.  •Drawing pictures of the objects to represent what is being added together (or represent one quantity being to another), and then determining the total/sum.  •Verbally explaining the how to find the answer to the addition problem.  •Writing an addition expression (e.g., 4 + 3).  •Writing an equation (e.g., 4 + 3 = 7).  **•Represent subtraction in the following ways:**  •Using fingers, objects, manipulatives, or people to represent the starting amount in a subtraction problem, and physically taking away or removing what is supposed to be subtracted, and then counting what’s leftover to determine the difference.  •Drawing pictures of the objects to represent the starting amount in a subtraction problem and crossing out or separating what is supposed to be subtracted, and then determining the difference.  •Verbally explaining the how to find the answer to the addition problem.  •Writing a subtraction expression (e.g., 7 – 3)  •Writing a subtraction equation (e.g., 7 – 3 = 4)  •Common Core State Standards for Mathematics states, “Kindergarten students should see addition and subtraction equations, and student writing of equations in kindergarten is encouraged, but it is not required.”  Please note that it is not until First Grade when “Understand the meaning of the equal sign” is an expectation (1.OA.7). |