Purpose of this document:

1. Provide recommendations regarding which Hawaii Content and Performance Standards (HCPS) III benchmarks that Grade K teachers should continue to teach during SY 2011-2012 **in addition to** the kindergarten Common Core standards.
2. Provide additional insights to better understand the kindergarten Common Core standards.

In SY 2011-2012, Grade K teachers are expected to design and implement learning and assessment opportunities that are aligned with the Common Core State Standards (CCSS) for mathematics. During the initial years of implementation of the CCSS, teachers will need to be particularly mindful of any curricular gaps between grade levels. Therefore, the following recommendations are being made to help ensure students are prepared as they transition from one grade to the next:

a. Kindergarten teachers should address all of the CCSS grade K learning expectations.
b. While all of the kindergarten Common Core standards will prepare students for the 1st grade Common Core standards, kindergarten teachers should continue to address the following HCPS III benchmark:

HCPS III kindergarten benchmarks that should continue to be addressed	**Common Core kindergarten standard to connect with** *(i.e., address the HCPS III benchmark as an extension of the Common Core standard indicated below)*	**Comments**
K.4.2: Identify the value of pennies, nickels, and dimes and the equivalence among them (e.g., 5 pennies = 1 nickel).	K.CC.1: Count to 100 by ones and tens.	Grades 1 and 2 will continue to address the HCPS III benchmarks regarding money, so it is important to continue teaching K.4.2 in order to ensure students are prepared for subsequent grade levels.

The next several pages are intended to provide teachers with some further insight into the kindergarten mathematics learning expectations in the CCSS. Teachers should have multiple opportunities to review and discuss the pages that follow, collaborating within and across grade level teams. Conversations in professional learning teams should focus upon aligning learning and assessment opportunities with the intended targets of the standards.

In addition, during instruction, teachers are strongly encouraged to turn students' misconceptions into learning opportunities. Whenever students express an incorrect answer or a misconception, the teacher's response should be something like, "How did you get that?" ***Formative assessment is most effective when it occurs in real time***. Thus, the best way to help a student overcome a misconception is to have him or her talk about it so the teacher can identify what specifically needs to be addressed. Talking openly about misconceptions (in a safe, non-judgmental manner) helps foster a classroom learning culture in which students expect mathematics to make sense, in which they learn that effort and perseverance are necessary for learning mathematics, and in which making mistakes is a natural and important part of the learning process. Promoting a classroom culture that nurtures a disposition to learn from one's mistakes is not only an important part of the learning process, but a powerful life lesson to give to students.

[1] Explanations include excerpts from the Hawaii Department of Education Curriculum and Instruction Branch's crosswalk documents (http://standardstoolkit.k12.hi.us/index.html) and from the Arizona Department of Education Standards and Assessment Division's 2010 Academic Content Standards for Mathematics (http://www.ade.az.gov/standards/math/2010MathStandards/) with permission granted by Dr. Mary Knuck, Deputy Associate Superintendent.

Domain and Cluster	Kindergarten Common Core standard	Explanation of the Standard[1]
Domain: Counting and Cardinality Cluster: Know number names and the count sequence.	K.CC.1: Count to 100 by ones and by tens.	The emphasis of this standard is on the counting sequence. When counting by ones, students need to understand that the next number in the sequence is one more. When counting by tens, the next number in the sequence is "ten more" (or one more group of ten). Instruction on the counting sequence should be scaffolded (e.g., 1-10, then 1-20, etc.). Counting should be reinforced throughout the day, not in isolation, for example, • Count the number of chairs of the students who are absent. • Count the number of stairs, shoes, etc. • Counting groups of ten such as "fingers in the classroom" (ten fingers per student). When counting orally, students should recognize the patterns that exist from 1 to 100. They should also recognize the patterns that exist when counting by 10s.
Domain: Counting and Cardinality Cluster: Know number names and the count sequence.	K.CC.2: Count forward beginning from a given number within the known sequence (instead of having to begin at 1).	The emphasis of this standard is on the counting sequence to 100. Students should be able to count forward from any number, 1-99.
Domain: Counting and Cardinality Cluster: Know number names and the count sequence.	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).	Students should be given multiple opportunities to count objects and recognize that a number represents a specific quantity. Once this is established, students begin to read and write numerals (numerals are the symbols for the quantities). The emphasis should first be on quantity and then connecting quantities to the written symbols. A sample unit sequence might include: 1. Counting up to 20 objects in many settings and situations over several weeks. 2. Beginning to recognize, identify, and read the written numerals, and match the numerals to given sets of objects. 3. Writing the numerals to represent counted objects. Since the teen numbers are not written as they are said, teaching the teen numbers as one group of ten and extra ones is foundational to understanding both the concept and the symbol that represents each teen number. For example, when focusing on the number "14," students should count out fourteen objects using one-to-one correspondence and then use those objects to make one group of ten and four extra ones. Students should connect the representation to the symbol "14."

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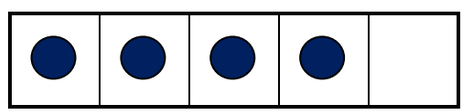
Domain and Cluster	Kindergarten Common Core standard	Explanation of the Standard[1]
Domain: Counting and Cardinality Cluster: Count to tell the number of objects.	K.CC.4: Understand the relationship between numbers and quantities; connect counting to cardinality. a. When counting objects, say the number names in 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.	The standard has several critical components: 4a: one-to-one correspondence; 4b: cardinality and conservation of number; 4c: the quantitative concept of "one larger". Students should have numerous learning opportunities (including concrete and semi-concrete representations) to develop an understanding of the relationship between numbers and quantities. For example, learning activities that utilize patterned sets and five- and ten-frames can be very useful for developing students' expertise for recognizing sets of objects without having to count each individual object. This standard focuses on one-to-one correspondence and how cardinality connects with quantity. • For example, when counting three bears, the student should use the counting sequence, "1-2-3," to count the bears and recognize that "three" represents the group of bears, not just the third bear. A student may use an interactive whiteboard to count objects, cluster the objects, and state, "This is three." In order to understand that each successive number name refers to a quantity that is one larger, students should have experience counting objects, placing one more object in the group at a time. • For example, using cubes, the student should count the existing group, and then place another cube in the set. Some students may need to re-count from one, but the goal is that they would count on from the existing number of cubes. S/he should continue placing one more cube at a time and identify the total number in order to see that the counting sequence results in a quantity that is one larger each time one more cube is placed in the group. Instruction should start with developing an understanding of 1, 2 and 3. Then, learning opportunities should be designed to develop an understanding of 4 and 5. The use of 5-frames can be very helpful to help students develop fluency with connecting counting to quantifying. For example, the following could be displayed on a note card or projected onto the screen, initially allowing students approximately 5 seconds to view the image:  If students are simply counting 1 circle at a time to get the number 4, instruction should focus on helping students to develop efficiency with recognizing the number being represented in that 5-frame. Over time, the teacher should decrease the number of seconds that the image is shown in the note card or projected on the screen, to eventually flash the image so the students have about one second to view the image. Students should eventually come to recognize very quickly that if there is only one box of the 5-frame without an object, that must represent the number 4. ***(the explanation of this standard continues on the next page)***

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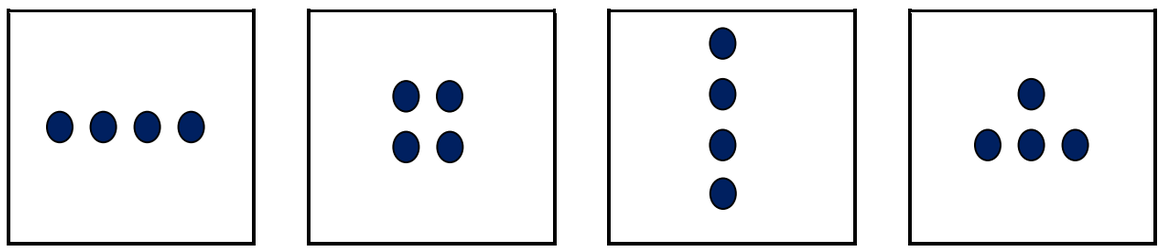
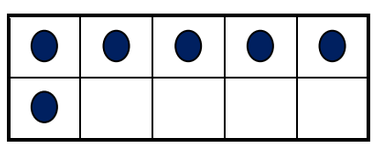
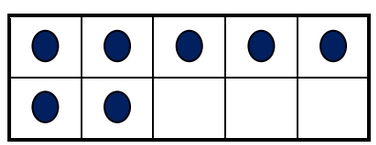
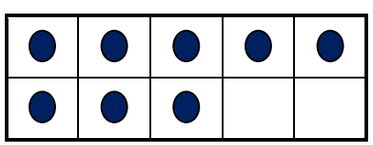
Domain and Cluster	Kindergarten Common Core standard	Explanation of the Standard[1]
		Over the course of the school year, this standard should be extended to develop students' fluency with recognizing and visualizing quantities. Learning activities should incorporate the use of patterned sets to develop students' ability to ***subitize***, i.e., to quickly/efficiently visualize and recognize mental or pictorial images of numbers. For example, using note cards showing various configurations of objects representing the number 4, learning opportunities should help students (over time) to develop the ability to quickly recognize that any of the configurations below is the number 4 (i.e., eventually without having to rely solely on counting each individual circle on the note card):  After developing proficiency with numbers 1-5, instruction should then focus on developing an understanding of 6, 7 and 8 as an extension of their understanding of 1-5 (i.e., building upon and incorporating learning opportunities similar to those described above). It is critical that students get really good at making and building upon the number 5, not simply counting by ones all the time. Using 10-frames together with concrete objects as counters, learning activities should develop an understanding of 6 as "1 more than 5"  7 as "2 more than 5"  8 as "3 more than 5"  After developing fluency with 6, 7 and 8, then move on to developing an understanding of the numbers 9 and 10, building upon and incorporating learning opportunities similar to those described above. Continuing to utilize 10-frames to further develop students' ability to efficiently recognize and visualize quantities, the number 9 should be understood in relation to the number 8 ("1 more than 8"), the number 5 ("4 more than 5"), and the number 10 ("1 less than 10").

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Domain and Cluster	Kindergarten Common Core standard	Explanation of the Standard[1]
Domain: Counting and Cardinality Cluster: Count to tell the number of objects.	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.	This standard is closely related to (and thus, builds off of) K.CC.4b. The previous standard (K.CC.4) describes an expectation to "understand" an important mathematical idea, while K.CC.5 describes an expectation of applying that understanding to perform a task or skill. Students should develop counting strategies to help them organize the counting process to avoid re-counting or skipping objects. For example, • If items are placed in a circle, the student may mark or identify the starting object. Or, the student may move the objects to rearrange them in an organized pattern (e.g., rows of five to connect with their use of 5 and 10 as important benchmark numbers that was developed with the use of 5-frames and 10-frames). • If items are in a scattered configuration, the student should move the objects to rearrange them in an organized pattern (e.g., rows of five to further develop their use of 5 and 10 as important benchmark numbers that is developed with the use of 5-frames and 10-frames). • Counting up to 20 objects should be reinforced when collecting data to create charts and graphs.
Domain: Counting and Cardinality Cluster: 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 and counting strategies. (Include groups with up to ten objects.)	This standard builds on the understanding of K.CC.4 (e.g., students must have an understanding of one-to-one correspondence as a prior learning expectation). Students should develop a strong sense of the relationship between quantities and numerals before they begin comparing numbers. The following are a few recommended strategies to incorporate into learning opportunities: • Matching: Students use one-to-one correspondence, repeatedly matching one object from one set with one object from the other set to determine which set has more objects. • Counting: Students count the objects in each set, and then identify which set has more, less, or an equal number of objects. • Observation: Students may use observation to compare two quantities (e.g., by looking at two sets of objects, they may be able to tell which set has more or less without counting). • Observations in comparing two quantities can be accomplished through daily routines of collecting and organizing data in displays. Students create object graphs and pictographs using data relevant to their lives (e.g., favorite ice cream, eye color, pets, etc.). Graphs may be constructed by groups of students as well as by individual students. • Benchmark Numbers: Reinforce the use of 0, 5 and 10 as benchmark numbers to help students further develop their sense of quantity as well as their ability to compare numbers. Students should develop the ability to identify whether the number of objects in a set is more, less, or equal to a set that has 0, 5, or 10 objects.
Domain: Counting and Cardinality Cluster: Compare numbers.	K.CC.7: Compare two numbers between 1 and 10 presented as written numerals.	This standard requires students to make comparisons between number quantities at the symbolic level (abstract). The standard expects students to compare the quantities that are represented by the written form of the number. Students may create concrete or semi-concrete representations to be able to do the comparison. However, this standard specifies that the numbers must be presented symbolically (written numerals) for students to compare. Over time, students should develop a level of fluency such that they will not have to rely on concrete or semi-concrete representations to be able to make the comparison.

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Domain and Cluster	Kindergarten Common Core standard	Explanation of the Standard[1]
Domain: Operations and Algebraic Thinking Cluster: 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 (drawings need not show details, but should show the mathematics in the problem), sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.	Using addition and subtraction in a word problem context allows students to develop their understanding of what it means to add and subtract. Students should use objects, fingers, mental images, drawing, sounds, acting out situations and verbal explanations in order to develop the concepts of addition and subtraction. Then, they should be introduced to writing expressions and equations using appropriate terminology and symbols which include "+," "–," and "=". • Addition terminology: add, join, put together, plus, combine, sum • Subtraction terminology: minus, take away, separate, difference, compare Students may use document cameras or interactive whiteboards to represent the concept of addition or subtraction. This gives them the opportunity to communicate their thinking.
Domain: Operations and Algebraic Thinking Cluster: Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	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.	Using a word problem context allows students to develop their understanding about what it means to add and subtract. Sample learning sequence: • Students make sense of a word problem, such as, "Mia had 3 apples. Her friend gave her 2 more. How many does she have now?" o A student's "think aloud" of this problem might be, "I know that Mia has some apples and she's getting some more. So she's going to end up with more apples than she started with." • Students develop the concept of addition/subtraction by modeling the actions in the word problem using: o objects, fingers, mental images, drawings, sounds, acting out situations, and/or verbal explanations. Students may use different representations based on their experiences, preferences, etc. • Students connect their conceptual representations of the situation using symbols, expressions, and/or equations. • Students may represent addition/subtraction equations with word problems. o For example, given the equation 8 – 2 = 6, a student makes up a word problem such as, "José had 8 markers and he gave 2 away. How many does he have now?" Note that in context, there are two types of subtraction problems: separate (take-away) and compare. These two types are very different when modeled. • Example: 8 – 2 = 6 o Separate (take-away) example: "José had 8 markers and he gave 2 away. How many does he have now?" When modeled, a student would begin with 8 objects and remove two to get the result. o Comparison example: "José had 8 marbles and Zia had 2. How many more marbles does José have than Zia?" When modeled, a student would make a set of 8 objects and a set of 2 objects and compare the two sets. Students may use a document camera or interactive whiteboard to demonstrate addition or subtraction strategies. This gives them the opportunity to communicate and justify their thinking.

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Domain and Cluster	Kindergarten Common Core standard	Explanation of the Standard[1]
Domain: Operations and Algebraic Thinking Cluster: Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	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).	Decomposing (and composing) numbers is a fundamental idea that is scaffolded throughout the grades K-5 standards. Learning opportunities should be provided to develop a profound understanding of this concept (and develop fluency with the skill) that students will draw upon in future grades. In addition, students should have numerous opportunities to visualize representations of important benchmark numbers (i.e., anchoring numbers to 5 and 10 using five-frames and ten-frames). This standard focuses on number pairs which add to a specified total, 1-10. These number pairs may be examined either in or out of context. Students may use objects such as cubes, two-color counters, square tiles, etc., to show different number pairs for a given number. For example, for the number 5, students may split a set of 5 objects into 1 and 4, 2 and 3, etc. Students may also use drawings to show different number pairs for a given number. For example, students may draw 5 objects, showing how to decompose in several ways. x x x x x 5 objects x x | x x x 5 = 2 + 3 x x x x | x 5 = 4 + 1 Sample unit sequence: • A contextual problem (word problem) is presented to the students such as, “Mia goes to Nan’s house. Nan tells her she may have 5 pieces of fruit to take home. There are lots of apples and bananas. How many of each can she take?” • Students find related number pairs using objects (such as cubes or two-color counters), drawings, and/or equations. Students may use different representations based on their experiences, preferences, etc. • Students write equations such as: o Equations that equal 5: • 5 = 4 + 1 • 3 + 2 = 5 • 2 + 3 = 4 + 1 This is a good opportunity for students to systematically list all the possible number pairs for a given number. For example, all the number pairs for 5 could be listed as 0 + 5, 1 + 4, 2 + 3, 3 + 2, 4 + 1, and 5 + 0. Students should describe the pattern that they see in the addends, e.g., each number is one less or one more than the previous addend.

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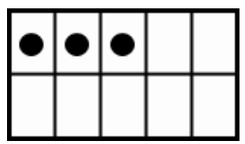
Domain and Cluster	Kindergarten Common Core standard	Explanation of the Standard[1]
Domain: Operations and Algebraic Thinking Cluster: Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	K.OA.4: For any number from 1 to 9, find the number 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.	This standard represents an important mathematical idea (***making ten***) that is utilized and extended throughout the grades K-3 learning expectations. Numerous learning opportunities should be provided for students to develop fluency regarding this learning expectation. The number pairs that total ten are foundational for students' ability to work fluently within base-ten numbers and operations. Different models, such as ten-frames, cubes, two-color counters, etc., assist students in visualizing these number pairs for ten. Example 1: Students place three objects on a ten frame and then determine how many more are needed to "make a ten." Students may use electronic versions of ten frames to develop this skill.  Example 2: The student snaps ten cubes together to make a "train." • Student breaks the "train" into two parts. S/he counts how many are in each part and records the associated equation (10 = ___ + ___). • Student breaks the "train" into two parts. S/he counts how many are in one part and determines how many are in the other part without directly counting that part. Then s/he records the associated equation (if the counted part has 4 cubes, the equation would be 10 = 4 + ___). • Student covers up part of the train, without counting the covered part. S/he counts the cubes that are showing and determines how many are covered up. Then s/he records the associated equation (if the counted part has 7 cubes, the equation would be 10 = 7 + ___). Example 3: The student tosses ten two-color counters on the table and records how many of each color is facing up.

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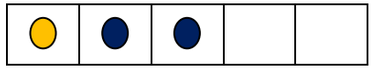
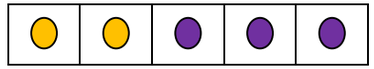
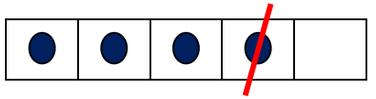
Domain and Cluster	Kindergarten Common Core standard	Explanation of the Standard[1]
Domain: Operations and Algebraic Thinking Cluster: Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.	K.OA.5: Fluently add and subtract within 5.	Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently. Strategies students may use to attain fluency include: • Counting on (e.g., for 3+2, students will state, "3," and then count on two more, "4, 5," and state the solution is "5") • Counting back (e.g., for 4-3, students will state, "4," and then count back three, "3, 2, 1" and state the solution is "1") • Counting up to subtract (e.g., for 5-3, students will say, "3," and then count up until they get to 5, keeping track of how many they counted up, stating that the solution is "2") • Using doubles (e.g., for 2+3, students may say, "I know that 2+2 is 4, and 1 more is 5") • Using commutative property (e.g., students may say, "I know that 2+1=3, so 1+2=3") • Using fact families (e.g., students may say, "I know that 2+3=5, so 5-3=2") This standard builds on the other standards in this domain toward the goal of developing fluency over time. Although "fluently" should not be interpreted as simply *recall*, by the end of grade K, students should have developed efficient strategies (other than simply counting on their fingers) for determining sums and differences within 5, which is an essential skill that students will need to build off of in order to be successful in future grades. Learning activities may incorporate the use of 5-frames to scaffold students' learning experiences toward developing their ability to efficiently visualize and recognize mental or pictorial images of sums and differences within 5. The goal of "fluency" implies that over time, students need to become less dependent upon "counting by ones" strategies. Students may use printed and/or electronic versions of five frames to develop fluency of these facts. For example, what is the number sentence that could represent each of the diagrams below? ____ + ____ = _____  ____ + ____ = _____  ____ – ____ = _____ 

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Domain and Cluster	Kindergarten Common Core standard	Explanation of the Standard[1]
Domain: Number and Operations in Base Ten Cluster: 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 or decomposition by a drawing or equation (such 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.	This standard expects students to recognize and create a group of ten ones. (NOTE: the concept of "ten ones makes one ten" is not specified here, although it is explicitly addressed in grade 1). Ten-frames may be used to provide a visual representation that students can connect the meaning of the numbers to. Special attention needs to be paid to this set of numbers as they do not follow a consistent pattern in the verbal counting sequence. • Eleven and twelve are special number words. • "Teen" means one "ten" plus ones. • The verbal counting sequence for teen numbers is backwards – we say the ones digit before the tens digit. For example "27" reads tens to ones (twenty-seven), but 17 reads ones to tens (seven-teen). • In order for students to interpret the meaning of written teen numbers, they should read the number as well as describe the quantity. For example, for 15, the students should read "fifteen" and state that it is one group of ten *and* five ones and record that 15 = 10 + 5. Teaching the teen numbers as one group of ten and extra ones is foundational to understanding both the concept and the symbol that represent each teen number. For example, when focusing on the number "14," students should count out fourteen objects using one-to-one correspondence and then use those objects to make one group of ten ones and four additional ones. Students should connect the representation to the symbol "14." Students should recognize the pattern that exists in the teen numbers; every teen number is written with a 1 (representing one ten) and ends with the digit that is first stated.
Domain: Measurement and Data Cluster: Describe and compare measurable attributes.	K.MD.1: Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.	This standard requires students to describe measurable attributes; it does not require any measurement or comparison. In order to describe attributes such as length and weight, students must have many opportunities to informally explore these attributes. Students should compare objects verbally and then focus on specific attributes when making verbal comparisons for K.MD.2. They may identify measurable attributes such as length, width, height, and weight. For example, when describing a soda can, a student may talk about the following "measureable attributes": how tall, how wide, how heavy, or how much liquid can fit inside. Examples of non-measurable attributes include the following: words on the object, colors, pictures, etc. An interactive whiteboard or document camera may be used to model objects with measurable attributes.

[1] Explanations include excerpts from the Hawaii Department of Education Curriculum and Instruction Branch's crosswalk documents (http://standardstoolkit.k12.hi.us/index.html) and from the Arizona Department of Education Standards and Assessment Division's 2010 Academic Content Standards for Mathematics (http://www.ade.az.gov/standards/math/2010MathStandards/) with permission granted by Dr. Mary Knuck, Deputy Associate Superintendent.

Domain and Cluster	Kindergarten Common Core standard	Explanation of the Standard[1]
Domain: Measurement and Data Cluster: Describe and compare measurable attributes.	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.	This standard expects students to directly compare two objects but does not require the use of any measurement tools. It also requires students to use comparison words (e.g., longer/shorter, heavier/lighter, etc.) to describe how the two objects differ. Language plays an important role in this standard as students describe the similarities and differences of measurable attributes of objects (e.g., shorter than, taller than, lighter than, the same as, etc.). When making direct comparisons for length, students must attend to the "starting point" of each object. For example, the ends need to be lined up at the same point, or students need to compensate when the starting points are not lined up (conservation of length includes understanding that if an object is moved, its length does not change; an important concept when comparing the lengths of two objects).
Domain: Measurement and Data Cluster: Classify objects and count the number of objects in each category.	K.MD.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.)	For this standard, after students classify objects and count the number of objects in each category, the expectation to "sort by count" means that students should be prompted to identify, for example, which groups have more (or less) than 5 objects. Possible objects to sort include buttons, shells, shapes, beans, etc. After sorting and counting, it is important for students to: • explain how they sorted the objects; • label each set with a category; • answer a variety of counting questions that ask, "How many …"; and • compare sorted groups using words such as, "most", "least", "alike" and "different".
Domain: Geometry Cluster: Identify and describe shapes.	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.	The standard specifies the use of objects in students' surroundings (both inside and outside of the classroom). To assist with understanding the parameters for this standard, teachers should refer to the CLUSTER that this standard supports: ***Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).*** Examples of environments in which students would be encouraged to identify shapes would include nature, buildings, and the classroom using positional words in their descriptions. Teachers should work with children and pose four mathematical questions: Which way? How far? Where? And what objects? To answer these questions, children develop a variety of important skills contributing to their spatial thinking. Examples: • Teacher holds up an object such as an ice cream cone, a number cube, ball, etc. and asks students to identify the shape. Teacher holds up a can of soup and asks," What shape is this can?" Students respond "cylinder!" • Teacher places an object next to, behind, above, below, beside, or in front of another object and asks positional questions. Where is the water bottle? (water bottle is placed behind a book) Students say "The water bottle is behind the book." Students should have multiple opportunities to identify shapes; these may be displayed as photographs, or pictures using the document camera or interactive whiteboard.

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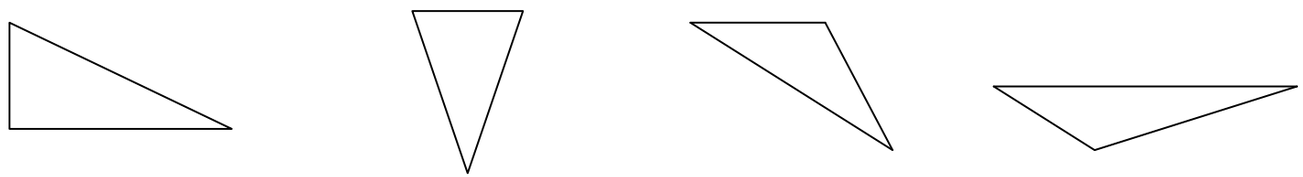
Domain and Cluster	Kindergarten Common Core standard	Explanation of the Standard[1]
Domain: Geometry Cluster: Identify and describe shapes.	K.G.2: Correctly name shapes regardless of their orientations or overall size.	The standard specifies that the shapes should be presented in a variety of orientations and sizes. In addition, different types of triangles should be presented, for example, scalene, isosceles and equilateral (however, students do not need to be able to verbalize the names of these categories of triangles). To assist with understanding the parameters for this standard, teachers should refer to the CLUSTER that this standard supports: ***Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).*** Students should be exposed to many types of triangles in many different orientations in order to eliminate the misconception that a triangle is always right-side-up and equilateral.  Examples: • Teacher makes pairs of paper shapes that are different sizes. Each student is given one shape and the objective is to find the partner who has the same shape. • Teacher brings in a variety of spheres (tennis ball, basketball, globe, ping pong ball, etc) to demonstrate that size doesn't change the name of a shape.
Domain: Geometry Cluster: Identify and describe shapes.	K.G.3: Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").	Student should be able to differentiate between two dimensional and three dimensional shapes. • Student identifies a picture of a shape as two dimensional because it is flat and can be measured in only two ways (length and width). • Student identifies an object as three dimensional because it is not flat (it is a solid object/shape) and can be measured in three different ways (length, width, height/depth).

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Domain and Cluster	Kindergarten Common Core standard	Explanation of the Standard[1]
Domain: Geometry Cluster: 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/"corners") and other attributes (e.g., having sides of equal length).	Students analyze and compare two- and three-dimensional shapes by observations. Their visual thinking enables them to determine if things are like or different based on the appearance of the shape. Students sort objects based on appearance. Even in early explorations of geometric properties, they are introduced to how categories of shapes are subsumed within other categories. For instance, they will recognize that a square is a special type of rectangle. Students should be exposed to triangles, rectangles, and hexagons whose sides are not all congruent. They first begin to describe these shapes using everyday language and then refine their vocabulary to include sides and vertices/corners. Opportunities to work with pictorial representations, concrete objects, as well as technology helps student develop their understanding and descriptive vocabulary for both two- and three- dimensional shapes.
Domain: Geometry Cluster: Analyze, compare, create, and compose shapes.	K.G.5: Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.	Because two-dimensional shapes are flat and three-dimensional shapes are solid, students should draw two-dimensional shapes and build three-dimensional shapes. Shapes may be built using materials such as clay, toothpicks, marshmallows, gumdrops, straws, etc.
Domain: Geometry Cluster: Analyze, compare, create, and compose shapes.	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?"	Students use pattern blocks, tiles, or paper shapes and technology to make new two- and three-dimensional shapes. Their investigations allow them to determine what kinds of shapes they can join to create new shapes. They answer questions such as "What shapes can you use to make a square, rectangle, circle, triangle? …etc." Simple tangram puzzles may be incorporated into learning activities for this standard. To prepare students for geometric concepts students will learn in subsequent grades, instruction may incorporate the use of the terms, "flips, slides and turns" while composing objects. Students may use a document camera to display shapes they have composed from other shapes. They may also use an interactive whiteboard to copy shapes and compose new shapes. They should describe and name the new shape.

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