Know number names and the counting sequence.

NC.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.

Clarification	**Checking for Understanding**
This standard calls for students to recognize and write numerals 0-20. • When shown a set within 20, students record the quantity by selecting the appropriate number card/tile (numeral recognition) or writing the numeral. • When given a numeral, students create a set of items to represent the numeral presented. Due to variations in the development of students' fine motor and visual skills, reversal of numerals is anticipated and acceptable as long as it does not affect place value. 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. While children may experiment with writing numbers beyond 20, this standard places emphasis on numbers 0-20.	As the teacher says a number aloud, the student records the written numeral:  After counting a set of objects, student is asked to record the numeral that represents the quantity. The student records the written numeral "19". After counting a set of objects, student is asked to select the number card that matches the quantity. The student selects "13" to represent the set.

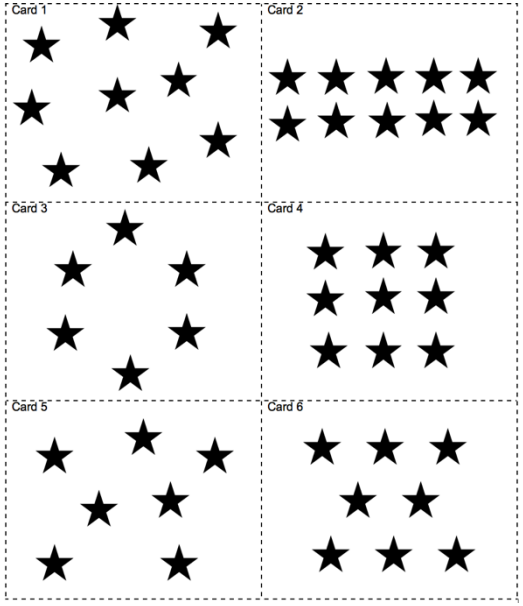
Return to Standards

Count to tell the number of objects.

NC.K.CC.5 Count to answer "How many?" in the following situations:

- Given a number from 1–20, count out that many objects.
- Given up to 20 objects, name the next successive number when an object is added, recognizing the quantity is one more/greater.
- Given 20 objects arranged in a line, a rectangular array, and a circle, identify how many.
- Given 10 objects in a scattered arrangement, identify how many.

Clarification	**Checking for Understanding**

When counting to answer "how many", students employ two big understandings from NC.K.CC.4: one-to-one correspondence and cardinality. They say one number for each item counted (one-to-one correspondence) and know the last number counted tells the quantity of the set (cardinality).
• This standard asks that students are both counters and producers.
  ○ **Producer**: When given a number, a student counts out a set of objects or draw a picture to match.
  ○ **Counter**: When given a set of objects or drawings, a student counts to determine "how many".
• After numerous experiences with counting objects, along with the developmental understanding that a group of objects counted multiple times will remain the same amount, students recognize the need for keeping track in order to determine "how many". Some arrangements, such as a line or rectangular array, are easier to count. However, they may limit students' flexibility with developing meaningful tracking strategies, so providing multiple arrangements help children learn how to keep track. Since scattered arrangements are the most challenging, this standard specifies that students only count up to 10 objects in a scattered arrangement and count up to 20 objects in a line, rectangular array, or circle. Depending on the amount of objects to be counted, and students' confidence with counting a set of objects, students may move the objects as they count each, point to each object as counted, look without touching when counting, or use a combination of these strategies.
• An important component of this standard is that of naming the next successive number when an object is added to a set, which is based on the idea of inclusion. Inclusion is the understanding that numbers build by exactly one each time and that they nest within each other by this amount. A set of three objects is nested within a set of 4 objects; within this same set of 4 objects is also a set of two objects and a set of one. Using this understanding, if a student has four objects and wants to have 5 objects, the student is able to add one more-knowing that four is within, or a sub-part of, 5 (rather than removing all 4 objects and starting over to make a new set of 5). This concept is critical for the later development of part/whole relationships.
	"Producing a Set" Task:
	• Teacher places a bowl of objects on table and asks student to count out a set of 15 objects.
	• Student removes 15 objects from the bowl and places them on the table while counting aloud.
	• Teacher adds one more object to the set of 15, and asks, "How many are there now?"
	Rather than re-counting the entire set, the student says the next number in the counting sequence…16.
	
	"Counting a Set" Task: Given a set of cards, students count the quantity of stars in each arrangement.
	 

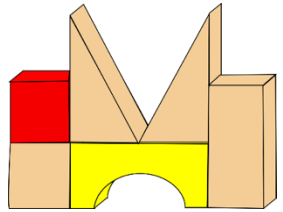
Return to Standards

Compare numbers.
NC.K.CC.6 Identify whether the number of objects, within 10, in one group is greater than, less than, or equal to the number of objects in another group, by using matching and counting strategies.

Clarification	Checking for Understanding
This standard calls for students use their counting ability to compare two sets of concrete objects (0 to 10). Early comparisons involve matching objects from each set in order to see if a group has extras, or repeatedly removing one object from each group until only one group is left with extra objects. Later, students apply their knowledge of number to count the objects in each group, determining which group has more/less. An important goal of this standard is to develop comparison language: more/greater, less/fewer, and equal/same amount. This language supports standards in successive grades where students are asked, "How many more?" and "How many less?"	Students are given a set of triangles and a set of squares. They are asked to find which set has more. *Possible responses:* Student A Matching *I lined up one square and one triangle. Since there is one extra triangle, there are more triangles than squares.*  Student B Equal Shares *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 the shapes away, there was still a triangle left. That means that there are more triangles than squares.* Student C Compare Counts *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.*

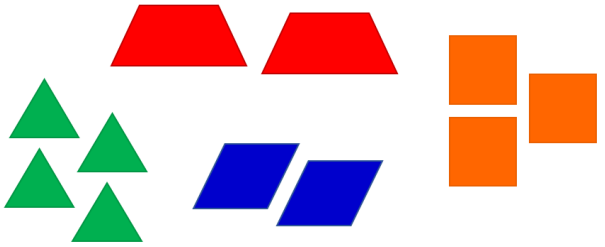
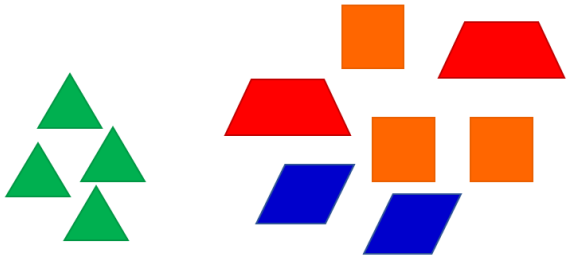
Measurement and Data

Describe and compare measurable attributes.
NC.K.MD.1 Describe measurable attributes of objects; and describe several different measurable attributes of a single object.

Clarification	Checking for Understanding
This standard calls for students to describe an object's measurable attributes such as length, weight, and size. Students will use words such as heavy/light, long/short, and big/small to describe these attributes. Additionally, students will describe a single object using more than one measurable attribute. For example, a student may describe a shoe with one attribute, "My shoe is heavy!", or more than one attribute, "This shoe is heavy! It's also really long." Initially, students may have undifferentiated views about the size of objects; a student may believe that an object is "bigger" or "smaller" based on a single attribute. For example, a student may state that one book is bigger than another because it is longer. In reality, the other book may be wider and heavier. Through experiences and conversations, students will learn to discriminate and name these specific measurable attributes. Kindergarten students are not expected to measure objects with standard or non-standard units.	Show student a feather and a heavy book (e.g., dictionary). Allow student to examine each object. Say: Tell me about the weight of the paperclip. Tell me about the weight of the book. Student: *The feather is light. It's easy to lift. The book is heavy. I need my muscles to lift it.* Example: Display two block towers. Say: We've been using measurement words to describe objects in our classroom. Use some measurement words to tell me about this tower (point to bigger tower). Student A: *This tower is tall and big.* Student B: *That tower is long, and it looks heavy!* 

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

NC.K.MD.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Clarification	**Checking for Understanding**
This standard calls for students to identify similarities and differences between objects, such as size, color, shape. Using the identified criteria, students will sort the objects into categories. Students will count the number of objects in each category. The sets in each category should be limited to less than or equal to 10. Students will sort (or group) each of the sets by the amount in each set. Like amounts are grouped together, but not necessarily ordered. **For example:** A student separates buttons into different piles based on color (all the blue buttons are in one pile, all the orange buttons are in a different pile, etc.). Then the student counts the number of buttons in each pile: blue (5), green (4), orange (3), purple (4). Finally, the student organizes the groups by the quantity. "I put the purple buttons next to the green buttons because purple also had (4). Blue has 5 and orange has 3. There aren't any other colors that have 5 or 3. So they are sitting by themselves."	Give the student a set of pattern blocks. Can you sort the pattern blocks? *Possible response:* *A student chooses to sort the pattern blocks by putting all of the hexagons in one pile and non-hexagons in a different pile. "I put the hexagons together and there were 6 of them. I put the triangles, trapezoids, and rhombuses together. There were 3 triangles, 2 trapezoids, and 2 rhombuses so there were 7 in that pile. There were 13 objects total."* Provide student with a set of pattern blocks. Say: Here is a set of blocks. Sort these blocks into groups. Tell me how you sorted them. Student A: *I put the colors together. I put the green shapes here, the blue shapes here, the red shapes here, and the orange shapes over here.*  Student B: *I put the shapes with 3 points in one group, and the shapes with 4 points in the other group.* 

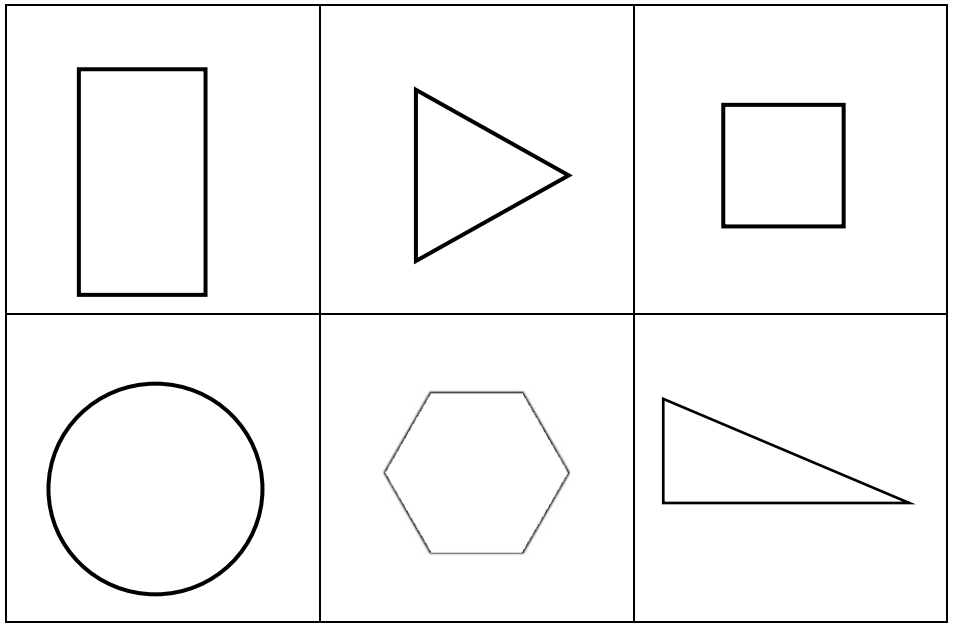
Return to Standards

Identify and describe shapes. **NC.K.G.1** Describe objects in the environment using names of shapes, and describe the relative positions of objects using positional terms.	
Clarification	**Checking for Understanding**
In this standard, students locate and identify shapes in their environment. At first students may use informal names e.g., “balls,” “boxes,” “cans”. Eventually students refine their informal language by learning mathematical concepts and vocabulary and identify, compare, and sort shapes based on geometric attributes. Students also use positional words such as above, below, beside, in front of, behind and next to, to describe objects in the environment. Students should be able to identify the location and position of actual two-and three-dimensional objects in their classroom/school. By the end of Kindergarten, students should be able to describe location and position of two- and three-dimension representations on paper.	Look around the classroom. • Where do you see a cone? • Show an example of a square? • What shape is the door? • Do you see a shape next to the door?

Return to Standards

Identify and describe shapes.

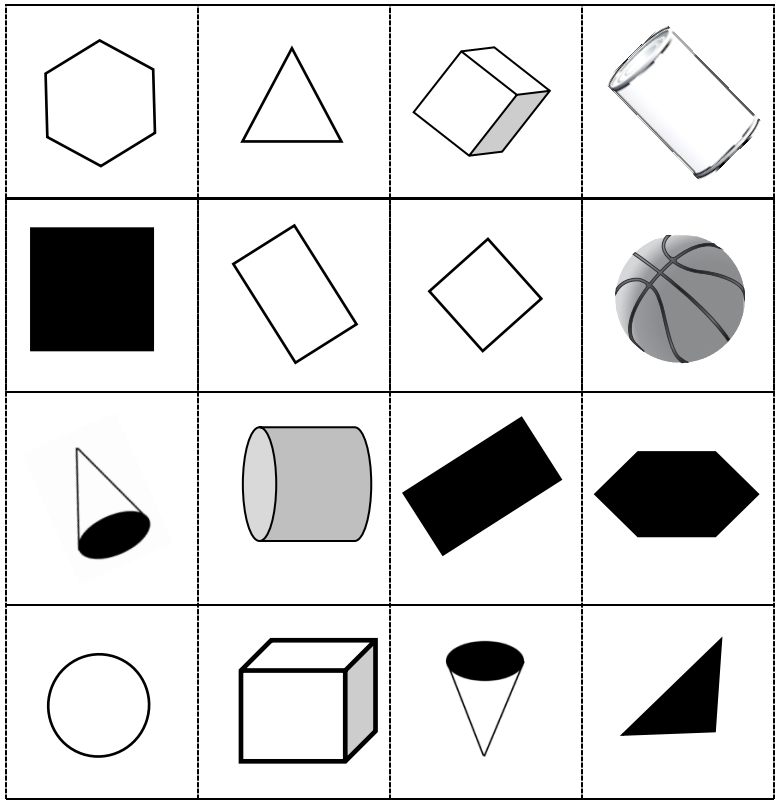
NC.K.G.2 Correctly name squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres regardless of their orientations or overall size.

Clarification	**Checking for Understanding**
In this standard, 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). Students should be familiar with shapes in various forms (isosceles, scalene, equilateral), different sizes (big, small), and different orientations so they can begin to move beyond what a shape "looks like" to identifying particular geometric attributes that define a shape. Note: Students are not expected know the terms isosceles, scalene or equilateral. They should be able to identify those shapes as triangles	Identify each of these shapes: 

Return to Standards

Identify and describe shapes.

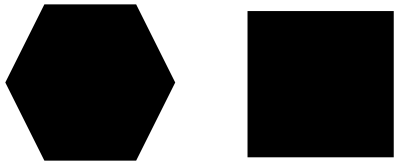
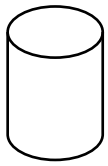
NC.K.G.3 Identify squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres as two-dimensional or three-dimensional.

Clarification	**Checking for Understanding**
In this standard, students identify, analyze, sort, describe, and compare shapes that are two-dimensional and three-dimensional. Students should be able to differentiate between shapes that are flat (2 dimensional) or solid (3 dimensional) and use the terms two-dimensional and three-dimensional as they discuss the properties of various shapes. Students should be able to sort two- and three-dimensional shapes and explain how the shapes are sorted.	Sort these figures in two categories: two-dimensional and three-dimensional. 

Return to Standards

Analyze, compare, create, and compose shapes.

NC.K.G.4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, attributes and other properties.

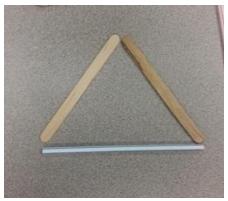
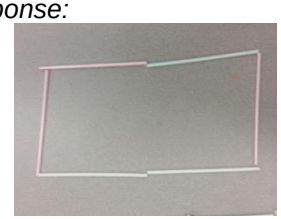
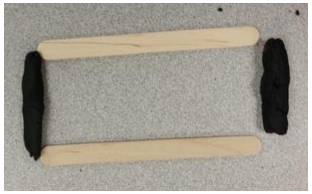
Clarification	**Checking for Understanding**
In this standard, students can sort, compare, and analyze two-dimensional and three-dimensional shapes to note similarities and differences using informal language. Students should be able to describe two-dimensional shapes by telling the number of sides and vertices it has. Students should be able to identify the vertex (corner) as the location where to sides meet; however, it is not necessary for kindergarten students to use the term vertex. Through analysis, students should recognize that the length of sides is an important attribute when naming shapes. Faces of three-dimensional shapes can be identified as specific two-dimensional shapes.	Compare these two shapes. How are they alike and how are they different? *Possible response:* *Both shapes have straight sides. They both have corners and they are both two-dimensional. The hexagon has 6 sides. The square only has 4 sides.*  What do you notice about the sides of these three-dimensional shapes? *Possible response:* *The sides of the cube are squares. I can tell it's a square because it has four sides that are the same size and four corners.*  *I can see that the top and bottom of the cylinder are circles.* 

Return to Standards

Analyze, compare, create, and compose shapes.

NC.K.G.5 Model shapes in the world by:

- Building and drawing triangles, rectangles, squares, hexagons, circles.
- Building cubes, cones, spheres, and cylinders.

Clarification	**Checking for Understanding**
In this standard, students apply their understanding of geometric attributes of shapes in order to create given shapes. Since two-dimensional shapes are flat and three-dimensional shapes are solid, students may draw or build two-dimensional shapes and only build three-dimensional shapes. Students should identify two-dimensional shapes used to construct three-dimensional shapes.	Using the materials in front of you, build or draw a triangle. *Possible response:*   Using the materials in front, of you, build or draw a rectangle. *Possible response:*   Using the clay, create a sphere. *Possible response:* 

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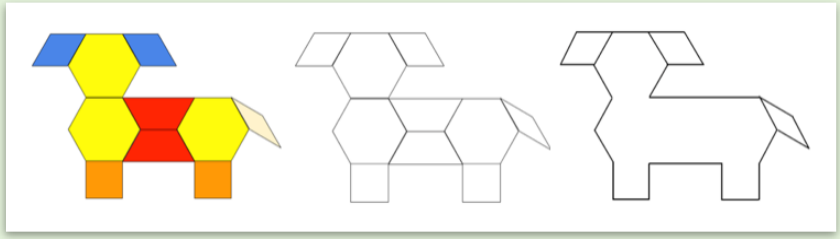
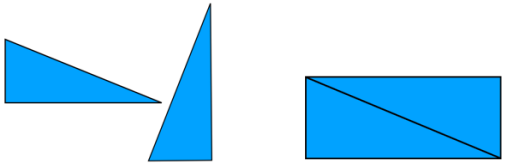
Analyze, compare, create, and compose shapes.
NC.K.G.6 Compose larger shapes from simple shapes.

Clarification	**Checking for Understanding**
In this standard, students move beyond identifying and classifying two-dimensional shapes to manipulating two or more shapes to create larger shapes and pictures. Students should be able to describe the shapes they have composed using informal geometric terminology. Students also combine shapes to build pictures. Pictures should be described using informal geometric terminology. Students should intuitively explore geometric motions (slides, flips, and turns) to create pictures and solve problems. **For example:** A student may build this figure starting with a color pattern, then a shape outline, and finally a figure outline. 	Using these triangles, can you create a different shape? *Possible response:* *While exploring with triangles, a student flips and turns the triangles to make a rectangle.* 

Return to Standards