Content Area: Mathematics
Standard: 4. Shape, Dimension, and Geometric Relationships

Prepared Graduates:

- Make claims about relationships among numbers, shapes, symbols, and data and defend those claims by relying on the properties that are the structure of mathematics

Grade Level Expectation: Kindergarten

Concepts and skills students master:

1. Shapes can be described by characteristics and position and created by composing and decomposing

Evidence Outcomes	**21st Century Skills and Readiness Competencies**
Students can: a. Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres). (CCSS: K.G) i. 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*. (CCSS: K.G.1) ii. Correctly name shapes regardless of their orientations or overall size. (CCSS: K.G.2) iii. Identify shapes as two-dimensional[1] or three dimensional.[2] (CCSS: K.G.3) b. Analyze, compare, create, and compose shapes. (CCSS: K.G) i. Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts[3] and other attributes.[4] (CCSS: K.G.4) ii. Model shapes in the world by building shapes from components[5] and drawing shapes. (CCSS: K.G.5) iii. Compose simple shapes to form larger shapes.[6] (CCSS: K.G.6)	**Inquiry Questions:** 1. What are the ways to describe where an object is? 2. What are all the things you can think of that are round? What is the same about these things? 3. How are these shapes alike and how are they different? 4. Can you make one shape with other shapes? **Relevance and Application:** 1. Shapes help people describe the world. For example, a box is a cube, the Sun looks like a circle, and the side of a dresser looks like a rectangle. 2. People communicate where things are by their location in space using words like next to, below, or between. **Nature of Mathematics:** 1. Geometry helps discriminate one characteristic from another. 2. Geometry clarifies relationships between and among different objects. 3. Mathematicians model with mathematics. (MP) 4. Mathematicians look for and make use of structure. (MP)

[1] lying in a plane, "flat". (CCSS: K.G.3)
[2] "solid". (CCSS: K.G.3)
[3] e.g., number of sides and vertices/"corners". (CCSS: K.G.4)
[4] e.g., having sides of equal length. (CCSS: K.G.4)
[5] e.g., sticks and clay balls. (CCSS: K.G.5)
[6] For example, "Can you join these two triangles with full sides touching to make a rectangle?" (CCSS: K.G.6)

Content Area: Mathematics
Standard: 1. Number Sense, Properties, and Operations

Prepared Graduates:

- Understand the structure and properties of our number system. At their most basic level numbers are abstract symbols that represent real-world quantities

Grade Level Expectation: Kindergarten

Concepts and skills students master:

1. Whole numbers can be used to name, count, represent, and order quantity

Evidence Outcomes	**21st Century Skills and Readiness Competencies**
Students can: a. Use number names and the count sequence. (CCSS: K.CC) i. Count to 100 by ones and by tens. (CCSS: K.CC.1) ii. Count forward beginning from a given number within the known sequence.[1] (CCSS: K.CC.2) iii. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20.[2] (CCSS: K.CC.3) b. Count to determine the number of objects. (CCSS: K.CC) i. Apply the relationship between numbers and quantities and connect counting to cardinality.[3] (CCSS: K.CC.4) ii. Count and represent objects to 20.[4] (CCSS: K.CC.5) c. Compare and instantly recognize numbers. (CCSS: K.CC) i. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group.[5] (CCSS: K.CC.6) ii. Compare two numbers between 1 and 10 presented as written numerals. (CCSS: K.CC.7) iii. Identify small groups of objects fewer than five without counting	**Inquiry Questions:** 1. Why do we count things? 2. Is there a wrong way to count? Why? 3. How do you know when you have more or less? 4. What does it mean to be second and how is it different than two? **Relevance and Application:** 1. Counting is used constantly in everyday life such as counting plates for the dinner table, people on a team, pets in the home, or trees in a yard. 2. Numerals are used to represent quantities. 3. People use numbers to communicate with others such as two more forks for the dinner table, one less sister than my friend, or six more dollars for a new toy. **Nature of Mathematics:** 1. Mathematics involves visualization and representation of ideas. 2. Numbers are used to count and order both real and imaginary objects. 3. Mathematicians attend to precision. (MP) 4. Mathematicians look for and make use of structure. (MP)

[1] instead of having to begin at 1. (CCSS: K.CC.2)
[2] with 0 representing a count of no objects. (CCSS: K.CC.3)
[3] 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. (CCSS: K.CC.4a)
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. (CCSS: K.CC.4b)
Understand that each successive number name refers to a quantity that is one larger. (CCSS: K.CC.4c)
[4] 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. (CCSS: K.CC.5)
Given a number from 1–20, count out that many objects. (CCSS: K.CC.5)
[5] e.g., by using matching and counting strategies. (CCSS: K.CC.6)

Content Area: Mathematics
Standard: 1. Number Sense, Properties, and Operations

Prepared Graduates:

- Apply transformation to numbers, shapes, functional representations, and data

Grade Level Expectation: Kindergarten

Concepts and skills students master:

2. Composing and decomposing quantity forms the foundation for addition and subtraction

Evidence Outcomes	**21st Century Skills and Readiness Competencies**
Students can: a. Model and describe addition as putting together and adding to, and subtraction as taking apart and taking from, using objects or drawings. (CCSS: K.OA) i. Represent addition and subtraction with objects, fingers, mental images, drawings, sounds,[1] acting out situations, verbal explanations, expressions, or equations. (CCSS: K.OA.1) ii. Solve addition and subtraction word problems, and add and subtract within 10.[2] (CCSS: K.OA.2) iii. Decompose numbers less than or equal to 10 into pairs in more than one way.[3] (CCSS: K.OA.3) iv. For any number from 1 to 9, find the number that makes 10 when added to the given number.[4] (CCSS: K.OA.4) v. Use objects including coins and drawings to model addition and subtraction problems to 10 (PFL) b. Fluently add and subtract within 5. (CCSS: K.OA.5) c. Compose and decompose numbers 11–19 to gain foundations for place value using objects and drawings.[5] (CCSS: K.NBT)	**Inquiry Questions:** 1. What happens when two quantities are combined? 2. What happens when a set of objects is separated into different sets? **Relevance and Application:** 1. People combine quantities to find a total such as number of boys and girls in a classroom or coins for a purchase. 2. People use subtraction to find what is left over such as coins left after a purchase, number of toys left after giving some away. **Nature of Mathematics:** 1. Mathematicians create models of problems that reveal relationships and meaning. 2. Mathematics involves the creative use of imagination. 3. Mathematicians reason abstractly and quantitatively. (MP) 4. Mathematicians model with mathematics. (MP)

Standard: 1. Number Sense, Properties, and Operations
Kindergarten

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[1] e.g., claps. (CCSS: K.OA.1)
[2] e.g., by using objects or drawings to represent the problem. (CCSS: K.OA.2)
[3] 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). (CCSS: K.OA.3)
[4] e.g., by using objects or drawings, and record the answer with a drawing or equation. (CCSS: K.OA.4)
[5] 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. (CCSS: K.NBT.1)