Kindergarten Mathematics

UNIT 1: Position, Length, Height, and Sorting

ESSENTIAL QUESTION	BIG IDEAS
How do we describe and sort objects in many ways?	Students can describe where an object is. Students can describe and compare attributes of objects. Students are able to directly compare the lengths or heights of two objects to identify which is longer or taller and which is shorter. Students identify and explain the sorting rules of different groupings

GUIDING QUESTIONS

Content and Process

- How can someone use precise positional language (including above, below, beside, in front of, and next to) to describe the relative positions of objects? **K.G.1**
- How can knowing a position help someone find an object? **K.G.1**
- How can someone describe physical attributes of an object and use attributes to compare one object to another?
- How can someone directly compare the length or height of two objects? **K.MD.2**
- How can precise measurement language (long/longer, short/shorter, tall/taller) to compare length and height? **KMD..2**
- How can someone describe the attributes of a given object (color, size, shape, etc.)? **K.MD.1**
- Can objects be grouped with common attributes? **K.MD.3**
- How can someone describe sorting rules? **K.MD.3**
- How can someone count sorted groups of objects and sort them by count? **K.MD.3**
- How can objects be alike and different? **K.MD.3**

Reflective

- How do you move and model objects in describing positions using drawing, pictures and manipulatives?
- Can you describe the relative positions of objects using above, behind, below, beside, in front of, and next to?

- Explain an object as long, short or tall and compare it to another object using the terms longer, shorter or taller.
- How do you describe the attributes of a given object?
- Think about ways to identify and explain the sorting rules of different groupings of objects?

FOCUS STANDARDS

Standards of Mathematical Practice
MP. 5 Use Appropriate Tools Strategically

Standards
K.MD.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
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.*
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*).
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*

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UNIT 2: Numbers to 5, Shapes, and Weight

ESSENTIAL QUESTION	BIG IDEAS
How do we show how many objects are in a group and how could we compare those groups?	Students can count each object in a group to tell you how many are in the group.
	Students can compare two groups
	Students can name and describe solid shapes.

GUIDING QUESTIONS

Content and Process

- How can someone count, show,and write numbers 0 to 5? **K.CC.3**
- How can saying number words in sequential order, the last number said, tell how many? **K.CC4c**
- How can someone match a number to a count or collection of objects? **K.CC.4b**
- How can someone explain and show the arrangement of objects does not change the number of objects? **K.CC.4a**
- How can someone compare two numbers and quantities within 5, using the words more, less or same? **K.CC.6**
- How can someone recognize the one more that a given number is the next number in the counting sequence? **K.CC.4d**
- How can someone identify three-dimensional shapes as solid shapes and describe their attributes? **K.G.4**
- How can objects in the environment be connected to solid shapes? **K.G.1**
- Can solid shapes be named regardless of their orientation, overall size, or weight? **K.G.2**

Reflective
- How can you write or draw something to show the amount of things?
- Think about some ways you compare numbers. Use more, less and the same to compare the number of objects in each group?
- What is a strategy for finding one more?
- What is a strategy for finding one more?
- How can you use the terms solid, cube, cylinder, sphere to identify three-dimensional shapes?
- Describe solid shapes using face, corner, edge, and curved.
- How do you compare two object weights to determine heavier and lighter.
- Where do you see solid shapes in the real world?

FOCUS STANDARDS

Standards of Mathematical Practice

MP.6 Attend to precision.

Standards

K.CC.3. Read and write numerals from 0 to 20.

K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality.

- **K.CC.4a** When counting objects, say each number's name in sequential order, pairing each object with one and only one number name and each number name with one and only one object.
- **K.CC.4b** 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.
- **K.CC.4c** Understand that each successive number name refers to a quantity that is one larger.
- **K.CC.4d.** Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

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.

K.MD.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

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.*

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.*

K.G.2 Correctly gives most precise name of shapes regardless of their orientations (position and direction in space) or overall size.

K.G.4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations (position and direction in space), 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)*.

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UNIT 3: Addition and Subtraction Within 5 and Shapes

ESSENTIAL QUESTION	BIG IDEAS
How can we use our understanding of addition, subtraction and shapes to help in real-world situations?	Students can add one group to another group to make more. Students can take away objects from a group to make less. Students identify shapes as flat or solid and also describe the shape's position.

GUIDING QUESTIONS

Content and Process

- How can two numbers be added within 5? **K.OA.1,**
- What happens when adding to a number? (except 0) **K.OA.1**
- How can a real-world addition story problem be modeled? **K.OA.2**
- How can someone identify a two-dimensional shape as a flat shape and describe its attributes? **K.G.3**
- How can someone use positional words where shapes are seen? (above, behind, below, in front of and next to) **K.OA.2**
- How can someone correctly name two-dimensional shapes regardless of their orientation or overall size? **K.G.1, K.G. 2, K.G.4**
- How can you subtract two numbers within 5? **K.OA.1**
- How can someone subtract two numbers with 5 and then find how many are left? (except when subtracting 0). **K.OA.1**
- How can real-world subtraction story problems be modeled? **K.OA.3**
- How can someone determine whether a story problem calls for addition or subtraction? **K.OA.2**
- How can someone use a model or story to match an expression and find its value? **K.OA.3**

Reflective

- How can you describe two dimensional shapes using terms flat, side, and corner.
- How can you add to find totals within 5?
- How can you tell and solve addition story problems within 5?
- How can you Identify the following shapes: circles, triangles, rectangles and squares.
- Can you draw and describe the position of shapes using the following: above, behind, below, in front of and next to?
- How can you subtract to find how many are left?
- How can you use words such as take away, go away and leave in subtraction problems?

- Can you solve take away problems?
- How can you use a model or story to match an expression and find its value?

FOCUS STANDARDS

Standards of Mathematical Practice
MP.2 Reason abstractly and quantitatively.

Standards

K.CC.4d Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

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.

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.*)
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*.
K.G.3 Identify shapes as two-dimensional (Lying in a plane, "flat" or three-dimensional. ("solid")
K.G.4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations (position and direction in space), 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)*.

Kindergarten Mathematics

UNIT 4: Numbers to 10 and Shapes

ESSENTIAL QUESTION	BIG IDEAS
How can we use our understanding of the association between numbers, counting, cardinality and shapes to help us in the real world?	Students can compare two numbers to decide if one number is greater than, less than, or equal to the other. Students can find number partners by breaking apart a number into smaller parts. Students can put together two or more shapes to make larger shapes.

GUIDING QUESTIONS

Content and Process

- How can someone count to 10 using one-to-one correspondence and number words in sequential order? **K.CC.4a**
- How can someone recognize and write numbers 6 to 10? **K.CC.3**
- How can someone understand that the last number said tells the number of objects? **K.CC.4b**
- How can someone identify the number of objects to 10 in one group is greater than, less than or equal to the number in another group? **K.CC.6**
- How can someone compare two numbers from 1-10? **K.CC.7**
- How can shapes be described and composed from two-dimensional shapes? **K.G.6**
- How can shapes be described and composed from three-dimensional shapes? **K.G.6**
- How can numbers be broken into smaller parts? **K.OA.3**
- How can someone identify number partners for 10? **K.0A.4**
- How can someone find the second number partner for 10 when given the first? **K.OA.4**
- How can someone understand equations that represent number partners for ten with an equal sign? **K.OA.4**
- How can someone decompose 10 into number partners and find number partners that make 10? **K.OA.3**

Reflective

- How can you state the number of objects up to ten in a group or arranged in a ten-frame?
- How can you recognize and write numbers 6-10?
- How can you compare groups of objects to 10 using the terms greater than, less than and equal to?
- How can you explain different strategies when comparing objects and numbers with a group of ten?
- How can you name two or three dimensional shapes that form a composed shape?
- How can you identify and explain ways to break a number into smaller parts?
- Can you use the terms compose and decompose to find and name number partners for 10?
- How can equations be interpreted and recorded that represent number partners for 10 using the equal sign?

- How can someone find and describe number partners for 10?

FOCUS STANDARDS

Standards of Mathematical Practice
MP.4 Model with Mathematics

Standards
K.CC.3 Read and write numerals from 0 to 20.

K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality.
- **K.CC.4a** When counting objects, say each number's name in sequential order, pairing each object with one and only one number name and each number name with one and only one object.
- **K.CC.4b** Understand that the last number name says the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.

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.

K.CC.7 Compare two numbers between 1 and 10 presented as written numerals.

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.*

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.).*

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?"*

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UNIT 5: Numbers to 100

ESSENTIAL QUESTION	BIG IDEAS
What patterns can be found in larger numbers?	Students can recognize teen numbers as 11 to 19.
	Students can use different strategies to count up to 100.
	Students know number partners combine to make a new number.
	Students are able to find number partners by breaking apart a number into smaller parts.

GUIDING QUESTIONS

Content and Process

- How can groups of up to 20 objects be counted? **K.CC.4a, K.CC.5**
- How can numbers be read and written from 11 to 20? **K.CC.3**
- How can someone count to 100 by 1s and by 10s? **K.CC.1**
- How can someone count from a given number that is less than 100? **K.CC.2**
- Explin how the numbers 6, 7, 8, and 9 be decomposed into number patterns. **K.OA.3**
- How can number partners for 6, 7, 8 and 9 be represented with equations? **K.OA.4**

Reflective

- How can you read and write numbers to 20?
- How can you count a group of up to 20 objects?
- How can you count to 100 by 1s and 10s?
- How can you count from a given number within a 100?
- How can you decompose 6, 7, 8, and 9 into number partners?
- How can you show number partners for 6, 7, 8, and 9 with equations?

FOCUS STANDARDS

Standards of Mathematical Practice
MP.8 Look for and express regularity in repeated reasoning.

Standards
K.CC.1 Count to 100 by ones and by tens and identify as a growth pattern.
K.CC.2 Count forward beginning from a given number within the known sequence (instead of having to begin at 1).

K.CC.3 Read and write numerals from 0 to 20.

K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality.

- **K.CC.4a** When counting objects, say each number's name in sequential order, pairing each object with one and only one number name and each number name with one and only one object

K.CC.5 Count to answer "how many?" up to20 concrete or pictorial objects arranged in a line, a rectangular array, or a circle, or as many as 10 objects in a scattered configuration given a number from 1 to 20, count out that many objects.

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).*

K.OA.4 For any number from 1 to 9, find the number that makes 10 when added to the given number.

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UNIT 6: Addition and Subtraction Within 10

ESSENTIAL QUESTION	BIG IDEAS
How do we use numbers to tell about our world?	Students know that being able to add and subtract with numbers to 5 can help them learn how to add and subtract with numbers to 10. Students can use different tools to help them tell and solve addition and subtraction story problems. Students can write an equation to show what is happening in a problem.

GUIDING QUESTIONS

Content and Process

- How can someone use tools, manipulatives and number partners to solve addition problems with 10, in and out of context? **K.OA.1, K.OA.5**
- How can someone recognize equations that represent addition problems? **K.OA.2**
- How can someone use tools and manipulatives to solve subtraction problems with 10, in and out of context? **K.OA.2**
- How can someone recognize equations that represent subtraction problems? **K.OA.2**
- How can someone draw pictures and write equations to represent addition and subtraction stories?
- How can someone decide to add or subtract to solve a story problem? **K.OA.2**
- How can someone solve story problems for addition up to 10 or subtraction from 10 or less. **K.OA.2**

Reflective

- How can you solve addition problems to 10 using manipulatives?
- How can you demonstrate understanding of addition problems by writing or identifying a corresponding equation?
- How can you solve subtraction problems to 10 using manipulatives?
- How can you demonstrate understanding of subtraction problems by writing or identifying a corresponding equation?
- What could you draw or equations you could write to represent addition and subtraction story problems?
- How can you explain whether to add or subtract to solve a story problem?
- How can you tell and solve addition and subtraction story problems within 10?

FOCUS STANDARDS

Standards of Mathematical Practice
MP.1 Make sense of problems and persevere in solving them.
MP.3 Construct viable arguments and critique the reasoning of others.

Standards
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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.
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.)*
K.OA.5 Fluently (efficiently, accurately, and flexibly) add and subtract within 5.

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UNIT 7: Teen Numbers and Shapes

ESSENTIAL QUESTION	BIG IDEAS
How do we see numbers in different ways?	Students know teen numbers are numbers from 11-19.
	Students know teen numbers are made up of ten ones and some ones.
	Students can identify shapes as flat or solid.
	Students can put together two or more shapes to make larger shapes.

GUIDING QUESTIONS

Content and Process

- How can someone compose and decompose teen numbers into 10 one and some more ones? **K.OA.3**
- How can someone understand that teen numbers can always be composed of 10 ones and some more ones? **K.OA.3**
- How can a shape be identified as a flat or solid shape? **K.G.3**
- How can someone make a picture of a two-dimensional shape? **K.G.6**
- How can someone build a three-dimensional shape? **K.G.5**
- How can someone make connections between the concrete, representational and abstract representations of teen numbers? **K.CC.3**
- How can someone write equations to represent composition and decomposition of teen numbers? **K.CC.5**

Reflective

- How can you compose and decompose teen numbers into 10 ones and some more ones?
- How can you show that you understand that teen numbers can always be composed of 10 ones and some more (1 to 9) ones?
- How can you explain shapes as flat or solid?
- How can you put together a picture with flat shapes?
- How can you build objects with solid shapes?
- How can you compose and decompose tenn numbers into 10 one and some more ones?
- How can you record composing and decomposing teen numbers with drawings and equations.

Standards of Mathematical Practice

MP.1 Make sense of problems and persevere in solving them.

MP.3 Construct viable arguments and critique the reasoning of others.

Standards

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. 10 + 8 = 18 and 19 = 10 + 9)*; understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

K.CC.3 Read and write numerals from 0 to 20.

K.OA.3 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;* understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

K.G.3 Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

K.G.5 Model shapes in the world by building shapes from components (*e.g. sticks and clay balls*) and drawing shapes.