Kindergarten Mathematics

UNIT 1: Understanding the Physical Quantity of Number

ESSENTIAL QUESTION	BIG IDEAS
How do we use numbers to tell about our world? (Essential question extends through Unit 2)	Students can count up to five objects in a set. Students can read and write numerals 0-5.

GUIDING QUESTIONS

Content and Process

- How are the numbers 0-5 written and read? **K.CC.3**
- How can pictures, words and numbers be paired to represent a quantity (0-5)? **K.CC.3**
- How can we count a group of objects, saying the number names 0-5 in order, counting each object only one time (one-to-one correspondence)? **K.CC.4, K.CC.4a**
- What does each number, including the last number, in a counting sequence represent? **K.CC.4a, K.CC.4b**
- How can objects be rearranged to show the same quantity? **K.CC.4b**

Reflective

- What counting strategies do you use to avoid re-counting or skipping objects?
- What does it mean to count precisely?

FOCUS STANDARDS

Standards of Mathematical Practice

MP.6 Attend to precision.

Content Standards- Assessed

K.CC.3. Read and write numerals from 0 to 20. (Assess only 0-5; 0-10 will be assessed in in unit 2; 0-20 will be assessed in unit 5)

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
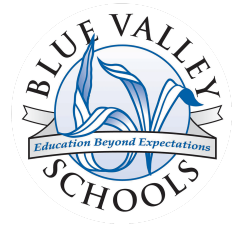
one and only one number name and each number name with one and only one object.

- **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.

Supporting Standards- Not Assessed

K.CC.1. Count to 100 by ones and by tens and identify as a growth pattern.

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

- **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.5. Count to answer "how many?" up to 20 concrete or pictorial objects arranged in a line, a rectangular array, or a circle, or as many as 10 objects in a scattered configuration (subitizing); given a number from 1 to 20, count out that many objects.

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UNIT 2: Using Fingers as Numbers

ESSENTIAL QUESTION	BIG IDEAS
How do we use numbers to tell about our world? (Essential question extends from Unit 1)	Students can count up to 10 objects in a set. Students can read and write numerals 0-10. Students understand the relationship between numbers and quantities.

GUIDING QUESTIONS

Content and Process

- How are the numbers 0-10 written and read? **K.CC.3**
- How can pictures, words and numbers be paired to represent a quantity (0-10)? **K.CC.3, K.CC.4d**
- What strategies can be used to count a set of objects and represent the quantity with a number 0-10? **K.CC.4d**
- What numeral represents no objects? **K.CC.4d**

Reflective

- Why is counting precisely important?
- How can you use your fingers, ten frames, or other manipulatives as tools for counting?

FOCUS STANDARDS

Standards of Mathematical Practice
MP.4 Model with Mathematics

Content Standards- Assessed
K.CC.3 Read and write numerals from 0 to 20. (Assess only 0-10; 11-20 will be assessed in unit 5)

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

- **K.CC.4d** Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects). (Assess only 0-10; 11-20 will be assessed in unit 5)

Supporting Standards- Not Assessed
K.CC.1 Count to 100 by ones and by tens and identify as a growth pattern.

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

- **K.CC.4c** Understand that each successive number name refers to a quantity that is one larger.

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

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UNIT 3: Talking about and Making Shapes

ESSENTIAL QUESTION	BIG IDEAS
How do we explore our world through shapes?	Students accurately identify shapes based on attributes and describe their relative position. Students compare two-dimensional and three-dimensional shapes. Students build and draw shapes.

GUIDING QUESTIONS

Content and Process

- What attributes of an object help identify its shape? (Identify and name 2D and 3D shapes.) **K.G.1**
- How can the relative position of an object be described using terms such as *above, below, beside, in front of, behind, and next to*? **K.G.1**
- How can shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres) be correctly identified even when their size and orientation is unusual or different? **K.G.2**
- How can shapes be identified as either two-dimensional (flat) or three-dimensional (solid)? **K.G.3**
- How can flat and solid shapes be compared using their attributes? (Students should compare between and among 2-D and 3-D shapes) **K.G.4**
- How are attributes used to build and draw shapes? **K.G.5**
- How can two or more shapes be put together to form larger shapes? **K.G.6**

Reflective

- What shapes can you find in your everyday life?
- What do you look for when identifying what shape an object is?
- Why are flat shapes called 2-dimensional and solid shapes called 3-dimensional?
- Which shapes do you think are the most useful for building larger shapes? Why?

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.

Content Standards- Assessed
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.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)*.

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

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UNIT 4: Seeing Numbers inside of Numbers
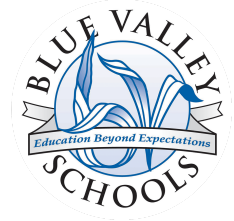
ESSENTIAL QUESTION	BIG IDEAS
How do we see numbers in different ways?	Students use counting to identify "how many?" in a group. Students represent addition and subtraction in a variety of ways. Students decompose numbers less than or equal to 10 in multiple ways.

GUIDING QUESTIONS

Content and Process

- How can counting be used to determine how many objects are in a group? **K.CC.5**
- Given a number from 1-20, how can that number of objects be counted out? **K.CC.5**
- When shown a set of dots, how can the number of dots be "seen" without counting one-by-one? **K.CC.5**
- How can addition (to 10) be represented in a variety of ways (objects, fingers, drawings, claps, etc)? **K.OA.1**
- How can subtraction (to 10) be represented in a variety of ways (objects, fingers, drawings, claps, etc)? **K.OA.1**
- How can a number (less than or equal to 10) be decomposed into pairs of numbers in various ways? **K.OA.3**
- How can a drawing or equation be used to record how a number (less than or equal to 10) has been decomposed? **K.OA.3**

Reflective

- What are some situations when I wonder, "How many?"
- What strategies are most useful to me when counting a group of objects?

FOCUS STANDARDS

Standards of Mathematical Practice
MP. 7 Look for and make use of structure.

Content Standards - Assessed
K.CC.5 Count to answer "how many?" up to 20 concrete or pictorial objects arranged in a line, a rectangular array, or a circle, or as many as 10 objects in a scattered configuration (subitizing); given a number from 1 to

20, count out that many 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.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*).

Supporting Standards- Not Assessed

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.4c** Understand that each successive number name refers to a quantity that is one larger.

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.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.).*

Kindergarten Mathematics

UNIT 5: Putting Numbers Together

ESSENTIAL QUESTION	BIG IDEAS
How can numbers be represented in various ways?	Students can read and write numbers 0-20. Students use objects to solve joining (addition) and separating (subtraction) problems.

GUIDING QUESTIONS

Content and Process

- How are the numbers 0-20 written and read? **K.CC.3**
- What strategies can be used to count a set of objects and represent the quantity with a number 0-20? **K.CC.3**, **K.CC.4d**
- How can addition word problems, within 10, be represented with objects, drawings, math tools, or numbers? **K.OA.2**
- How can subtraction word problems, within 10, be represented with objects, drawings, math tools, or numbers? **K.OA.2**
- When given a number 1-9, how can the missing addend to make ten be determined? **K.OA.4**
- How can number pairs for ten be shown visually? **K.OA.4**
- What strategies can be used to fluently add and subtract within 5? **K.OA.5**

Reflective

- When might I use addition or subtraction in my life?
- How can I use ten frames, cubes, two-color counters, or other manipulatives to determine how many more are needed to make ten?

FOCUS STANDARDS

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

Content Standards- Assessed
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.4d** Represent a number of objects with a written numeral 0-20 (with 0 representing a count of

no objects).

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

Supporting Standards- Not Assessed
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).

Kindergarten Mathematics

UNIT 6: Describing and Sorting Objects

ESSENTIAL QUESTION	BIG IDEAS
How does describing and sorting objects help us develop an understanding of data?	Students use attributes to describe, sort and compare objects. Students develop data sense through classifying objects, choosing attributes and sorting.

GUIDING QUESTIONS

Content and Process

- How can the measurable attributes (e.g. length, width, height, volume, and weight) of an object be described? **K.MD.1**
- How can a single object be described using several measurable attributes? **K.MD.1**
- How can two objects, with a measurable attribute in common, be directly compared to see which object has "more of"/"less of" the attribute? **K.MD.2**
- How can a group of objects be classified into categories using attributes (e.g., size, color, shape) of the objects? **K.MD.3**
- How can the number of objects in each category be counted and compared (using greater than, less than, or equal to) to the number of objects in another category? **K.MD.3, K.CC.6**
- What does it mean for two groups to be "equal" or "not equal?" **K.CC.6**
- How can you tell which group of objects has more or less by matching or counting the number of objects in both groups? **K.CC.6**
- How can the written numerals 1 through 10 be compared? **K.CC.7**

Reflective

- What strategies or tools are most useful to me when comparing either objects or numbers?
- How can you justify your reasoning when comparing written numbers?
- Why is it important for me to pay attention to the "starting point" of each object when comparing objects directly?

FOCUS STANDARDS

Standards of Mathematical Practice
MP. 5 Use Appropriate Tools Strategically

Content Standards- Assessed

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.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.

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UNIT 7: Stretching Counting toward 100
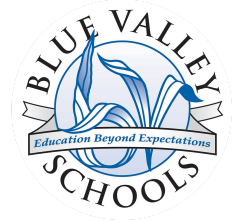
ESSENTIAL QUESTION	BIG IDEAS
What patterns can be found in larger numbers?	Students work flexibly with numbers and counting through 100. Students compose and decompose teen numbers.

GUIDING QUESTIONS

Content and Process

- How can you count from 1 to 100 by ones? **K.CC.1**
- How can you count from 1 to 100 by tens? **K.CC.1**
- What patterns can be found when counting from 1 to 100? **K.CC.1**
- How can you count forward from any number (0-100)? **K.CC.2**
- When counting by ones, how much larger is one number than the number right before? **K.CC.4, K.CC.4c**
- When counting a set of objects, how does the number name for that set change when one more object is added to the set? **K.CC.4, K.CC.4c**
- How can a drawing or equation be used to show how a teen number is decomposed into a ten and ones? **K.NBT.1**

Reflective

- Which pattern on a hundreds chart is most interesting to me? Why?
- If I have _____ chips (any number 11-19), do I have enough to make a group of ten chips? How many chips will be leftover?

FOCUS STANDARDS

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

Content Standards- Assessed
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.4 Understand the relationship between numbers and quantities; connect counting to cardinality.
- **K.CC.4c** Understand that each successive number name refers to a quantity that is one larger.

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.