

Mathematics

Grade Kindergarten

Grade(s):	Grade K
Discipline/Course:	Mathematics
Course Title:	Grade K Mathematics
Prerequisite(s):	~~0-60 months~~
Course Description: <i>Program of Studies</i>	In Kindergarten, instructional time focuses on two critical areas: (1) representing and comparing whole numbers, initially with sets of objects; (2) describing shapes and space. More learning time in Kindergarten is devoted to understanding number than the other topics. Students will develop an understanding of counting: one to one matching, the last number said tells the quantity, there is a sequence to our numbers, and there is a pattern to the underlying structure to our number system. Students will develop an understanding of early number concepts and place value. Students combine and take apart numbers. Students describe their physical world using geometric ideas. Young children are exposed to and explore the power of mathematics to understand and shape their world.
Course Essential Questions:	• Why do we count? • How are numbers and shapes related to each other? • What patterns and relationships do we find with numbers when counting?
Course Enduring Understandings:	• There are patterns in our counting sequence and our number system. • When counting a set, the last number said is the number of objects in a set (Cardinality). • If there is a corresponding object matched to each object in a set, the totals of the sets are equivalent (one-to-one correspondence). • Numbers grow by one, and exactly one, each time (Hierarchical Inclusion). • Ordinal numbers are numbers that are counted once and only once in conventional order. • Numbers can be composed and decomposed (eg. 5 is 2 and 3). • Quantities within 10 can be compared using less than, more than or the same. • Conservation of number - the arrangement of objects does not affect how many there are. • Subitizing (perceptual) is the instant recognition of a number of objects. • Unitizing is recognizing that numbers count not only objects, but groups of objects, e.g. 1

	thing, and one group of (10) things. • Numbers can be combined and separated (eg. Adding 2 more to a group of 3 gives you 5). • Objects can be described and compared using measurable attributes. • Objects can be sorted and classified by attributes. • Shapes can be identified, analyzed and compared. • Shapes can be combined to make other shapes. • Objects can be identified by describing their location and relative position.
Duration:	1 year
Course Materials/Resources:	Bridges 2nd ed., Bridges Number Corner
FPS Course Academic Expectation(s):	☒ Exploring and Understanding (EU) ☐ Synthesizing and Evaluating (SE) ☐ Creating and Constructing (CC) ☒ Conveying Ideas (CI) ☐ Collaborating Strategically (CS) ☐ Using Communication Tools (UCT)
At a Glance	Unit 1: Numbers to Five and Ten (Bridges Unit 1 and August/September Number Corner) Unit 2: Numbers to Ten (Bridges Unit 2 and October Number Corner) Unit 3: Double, Add, and Subtract (Bridges Unit 3 and November/December Number Corner) Unit 4: Adding, Subtracting, and Measuring (Bridges Unit 4 and January Number Corner) Unit 5: Two-Dimensional Geometry (Bridges Unit 5 and February Number Corner) Unit 6: Three-Dimensional Shapes and Numbers Beyond Ten (Bridges Unit 6 and March Number Corner) Unit 7: Weight and Place Value (Bridges Unit 7 and April Number Corner) Unit 8: Computing and Measuring (Bridges Unit 8 and May/June Number Corner)

Unit 1 Numbers to Five and Ten	The first unit is intended to engage students in thinking mathematically. The students will focus on the numerals 0-5 with an emphasis on counting and matching numerals. Students will compare sets and numbers to 5 and beyond. Students develop facility with the number word sequence from 1 to 20, counting, and quantity. Students are introduced to the five-frame as a structure for composing numbers in the range of 1 to 5. Students also work on developing the standard finger patterns as another representation of the quantities in the range of 1 to 5. Building on the five structure, students are introduced to the ten-frame, which extends the range of quantities students can work with. They use the ten-frame to practice counting, ordering, and comparing numbers, and begin to match numerals to quantity. Lastly, students discover pattern through motion, sound, and concrete materials. They use their hands, feet, and voices, as well as manipulatives, to build skills in recognizing, describing, copying, extending, translating, and creating simple repeating patterns.
Standard(s): <i>Note: The Board of Education adopted elementary mathematics standards for this course will remain the same; however, the sequence of units and standards among units may shift over time in response to student performance needs.</i>	Counting and Cardinality Know number names and the count sequence. K.CC.1. Count to 100 by ones. 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). 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. 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.

	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. Operations and Algebraic Thinking 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 $5 = 4 + 1$).
Essential Question(s):	• How do numerals represent different amounts of objects? • What patterns do we see in our numbers when we count more and more objects? • What relationships can we find when counting different sets of objects?
Enduring Understanding(s):	• Counting helps students to understand how numbers are related. • Numbers can be represented by numerals, sets, and number names. • Counting objects requires synchrony and tagging (Synchrony: remembering the word that comes next and using only one word for each object. Tagging: touching each object once and only once.) • Numbers grow by one, and exactly one, each time (Hierarchical Inclusion). • When counting a set the number they end on is the number of objects in a set (Cardinality). • One to one correspondence (if there is a corresponding object matched to each object in a set, the sets are equivalent) is necessary to the understanding of equivalency. • The number of objects in a set remains the same regardless of the arrangement of the set (Conservation of a Number). • The number of objects can be recognized at a glance without counting (Subitizing). • Five and ten are landmark numbers.
Learning Goal(s): <i>Students will know and will be able to</i>	Content: (Students will know...) • attributes: similarities and differences.

use their learning to:
(Content/ Skills)

- sorting objects into groups based on attributes.
- number word sequence from 1 to 20, counting, and quantity (say the number words in their correct order).
- one-to-one correspondence (to find the total objects, count each object once and only once).
- cardinality (the last number they say when counting a group of objects indicates the total).
- subitizing (recognize the quantity without counting).
- composing numbers in the range of 1 to 5.
- finger patterns, five frame, and other representations of quantities in the range of 1 to 5.
- matching numerals to quantity.
- counting using a ten frame.
- simple repeating patterns.
- models:
 - five-frame
 - ten-frame
 - finger patterns
- strategies:
 - count starting at one
 - recognize the quantity by subitizing
 - count on from a number other than 1

Skills: (Students will be able to...)

- count to 5 and 10 by 1s .
- count objects one by one, saying the numbers in standard order and pairing each object with only one number name (one-to-one correspondence).
- identify the number of objects as the last number said when counting a group of objects (cardinality).
- recognize the number of objects in a collection of 6 or fewer, arranged in any configuration (subitizing).
- identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group for groups up to 10 objects.

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| | <ul style="list-style-type: none">● decompose numbers less than or equal to 10 into pairs in more than one way.● develop and use models to represent numerals, sets and number names.● ask questions and investigate how numbers are related and represented.● construct explanations using patterns, structures and relationships of quantities of numbers.● use tools and clear and precise language to defend conservation of a number and cardinality.● trusts the count and, without prompting, choose 'counting' as a way of solving such problems.● investigate, generalize and reason about patterns in numbers, explaining and justifying the conclusions reached. |
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Unit 2 Numbers to Ten	Students continue to develop the major concepts addressed in Unit 1 related to counting and recognizing quantities: number sequence, one-to-one correspondence, cardinality, and subitizing. Unit 2 emphasizes combinations of numbers that make 5, and also introduces the process of comparing quantities within 10. Students compare and contrast the five-frame and ten-frame, and use the ten-frame and the words “more” and “less” to compare two quantities. Students explore numbers between 0 and 10 by building and using a 10-bead number rack. Students also explore shapes and patterns in an ABAB pattern. They are introduced to puzzles that require them to use pattern block shapes (hexagon, trapezoid, rhombus, triangle).
Standard(s):	Counting and Cardinality Know number names and the count sequence. K.CC.1. Count to 100 by ones and by tens. 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. 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. 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. Operations and Algebraic Thinking 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 $5 = 4 + 1$). Geometry Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres). 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 name shapes regardless of their orientations or overall size. 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?”
Essential Question(s):	• How do we count objects and groups of objects? • What patterns do we see in our numbers when we count more and more objects? • What relationships can we find when counting different sets of objects? • How does the arrangement of objects affect the number of objects when counting? • How can shapes make other shapes?
Enduring Understanding(s):	• Counting helps students to understand how numbers are related. • Numbers can be represented by numerals, sets, and number names. • Counting objects requires synchrony and tagging (Synchrony: remembering the word that comes next and using only one word for each object. Tagging: touching each object once and only once.) • Numbers grow by one, and exactly one, each time (Hierarchical Inclusion). • When counting a set the number they end on is the number of objects in a set (Cardinality). • One to one correspondence (if there is a corresponding object matched to each object in a set, the sets are equivalent) is necessary to the understanding of equivalency.

	• The number of objects in a set remains the same regardless of the arrangement of the set (Conservation of a Number). • Shapes have names and attributes.
Learning Goal(s): <i>Students will be able to use their learning to:</i>	Content: (Students will know...) • one-to-one correspondence, cardinality, subitizing. • combinations of 5 (0+5, 1+4, 3+2, etc.). • comparing quantities with quantities up to 10. • which is more, which is less. • combinations of 10 using a number rack. • numbers greater than 5 as “5 and some more.” • if the order in which objects are counted that doesn’t change the total number. • shapes can be found in our environment. • shapes can be put together to make other shapes. • numbers less than or equal to 10 can be decomposed into pairs in more than one way. • models: ○ two-color five-frames ○ two-color ten-frames ○ number rack ○ standard finger patterns • strategies: ○ see groups and subitize Skills: (Students will be able to...) • write numbers from 0 to 10. • read numbers from 0 to 10. • count objects one by one, saying the numbers in standard order and pairing each object with only one number name (one-to-one correspondence). • identify the number of objects as the last number said when counting a group of objects (cardinality).

- count collections of objects in different ways to demonstrate that the arrangement of objects and the order in which they are counted do not change the total number of objects.
- count up to 10 objects arranged in a line, rectangular array, or circle to answer “how many?” questions
- recognize the number of objects in a collection of 6 or fewer, arranged in any configuration (subitizing).
- Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group for groups up to 10 objects.
- investigate equivalence through conservation and compensation using tools, models, numbers and pictorial representations.
- recognize quantities through groupings and construct explanations using counting strategies.
- plan and conduct an investigation of counting a set of objects, determining that the last number said is the number of objects in the set.
- investigate how numbers grow by one, and exactly one each time.
- look for and make use of the patterns that exists in number combinations to 10.

Unit 3 Double, Add, and Subtract	The purpose of this unit is to develop an understanding of the benchmark numbers 5 and 10 to count and match numerals through 20. Students use benchmark numbers to compose and decompose numbers. They begin using units of 5s and 10s to help determine other quantities. Foundational place value concepts are developed as students begin to build numbers using a group of ten and some ones. Students begin counting by 2s. This leads them to an exploration of doubling and even numbers. They also use the five- and ten-frames to add 1 to numbers from 1 to 10, compare and order numbers, and write equations to show combinations of numbers that have a sum of 5.
Standard(s):	Counting and Cardinality Know number names and the count sequence. K.CC.1. Count to 100 by ones and by tens. K.CC.2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1). 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). 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. 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. 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. Operations and Algebraic Thinking 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, 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.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 $5 = 4 + 1$).
Essential Question(s):	• How do we count objects and groups of objects? • What patterns do we see in our numbers when we count more and more objects? • What relationships can we find when counting different sets of objects? • How does the arrangement of objects affect the number of objects when counting? • What happens to the number of objects when you combine two or more sets of objects? • What happens to the number of objects when you take away an object or set of objects? • What strategies can help us think about how to combine or take away objects? • How can we show that two groups of objects have the same value as each other?
Enduring Understanding(s):	• Addition is combining numbers (joining). • Addition means the whole in terms of combining parts. • Subtraction is taking apart numbers (separating). • Subtraction names a missing part. • Addition and subtraction are related. • Sets and numbers can be composed and decomposed. • Manipulatives can illustrate the process of addition or subtraction. • Addition and subtraction can be represented by equations (number sentences).

Learning Goal(s):

Students will be able to use their learning to:

Concepts: (Students will learn...)

- cardinality, composing, decomposing numbers, and doubling.
- counting and reading numerals to 10.
- writing numerals.
- counting to 20 by 2s.
- adding and subtracting 1s to numbers to 10.
- stating a number before and a number after.
- representing addition and subtraction with objects.
- numbers in order: Counting on from a number other than 1, matching numerals and amounts, counting forward and backward, comparing amounts to determine more or less.
- combinations to 5.
- ways to decompose number less than or equal to ten.
- for numbers from 1 to 5, the number that makes 5 when added to that number.
- when counting a group of objects, the number of objects is the last number said.

Skills: (Students will be able to...)

- count backward from any number in the range of 10 to 1.
- count forward from a given number, rather than starting at 1
- count objects one by one, saying the numbers in the standard order and pairing each object with only one number name.
- count collections of objects in different ways to demonstrate that the arrangement of objects and the order in which they are counted do not change the total number of objects.
- identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group for groups of up to ten objects.
- represent addition and subtraction with objects, fingers, mental images, etc
- plan and conduct investigations of place value patterns when building teen numbers.
- analyze patterns that appear when counting groups of ten.
- develop and use models to represent teen numbers by grouping tens and ones.
- ask questions and investigate why place value patterns occur when counting ten and more

objects.

- use tools and models to demonstrate and defend reasoning or the reasoning of others related to the order and sequence of counting numbers.

Unit 4: Adding, Subtracting, and Measuring	Students begin this unit by building a number line to model the number sequence from 0 to 10. They continue to practice counting forward and backward between 0 and 50, starting with any number in the range. They also solve addition and subtraction problems, compute with pennies and nickels, and begin measuring length using non-standard units. The number line and measurement provides many opportunities for students to consider the relationships between numbers and quantities, including making comparisons about which are greater and which are less.
Standard(s):	Counting and Cardinality Know number names and the count sequence. K.CC.1. Count to 100 by ones. K.CC.2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1). 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). 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. 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.

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.

Compare numbers.

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

Operations and Algebraic Thinking

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, 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.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 $5 = 4 + 1$).

K.OA.5. Fluently add and subtract within 5.

Measurement and Data

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.

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.*

	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
Essential Question(s):	• What happens to the number of objects when you combine two or more sets of objects? • What happens to the number of objects when you take away an object or set of objects? • How is adding to or taking away a set of objects different from composing and decomposing a set of objects? • What strategies can help us think about how to combine or take away objects?
Enduring Understanding(s):	• Addition is combining numbers (joining). • Addition means the whole in terms of combining parts. • Subtraction is taking apart numbers (separating). • Subtraction names a missing part. • Addition and subtraction are related. • Sets and numbers can be composed and decomposed. • Manipulatives can illustrate the process of addition or subtraction. • Addition and subtraction can be represented by equations (number sentences).
Learning Goal(s): <i>Students will be able to use their learning to:</i>	Concepts: (Students will know...) • counting: rote counting to 50. • counting forward and backward between 0 and 50, starting with any number. • numbers in order: determine missing numbers, put scrambled numbers in order. • counting objects to 20 (counting on, one-to-one correspondence, counting to answer “how many.”) • sums to 10 and subtractions with minuends to 10. • measuring with non-standard units, comparing objects. • fives and ones with money: 5 as a sub base, counting “five and some more”, ten is two sets of five. • penny and nickel names and worth. • interval counting on a the number line.

- objects can be put into categories and we can count the number of objects in each category.
- equality.

Skills: (Students will be able to...)

- count to 10 by 1s.
- count backward from any number in the range of 10 to 1.
- count forward from a given number, rather than starting at 1.
- write numbers from 0 to 15.
- read numbers from 0 to 10 and 0 to 20.
- order numeral from 0 to 10.
- count up to 20 objects arranged in a line, rectangular array, or circle to answer “how many?” questions.
- add with sums to 10.
- identify pennies and nickels by name and worth.
- Analyze and interpret the relationships between numbers and quantities (ex. Cardinality, hierarchical inclusion, one to one correspondence).
- Develop and use models such as objects, fingers, and acting it out, to represent how to solve an addition or subtraction word problems.
- Ask questions and investigate how to compose and decompose numbers to 10 in different ways.

Unit 5: Two-Dimensional Geometry	Students begin this unit by comparing a sphere and a circle, two shapes with which they are likely to be quite familiar. Students' comparisons bring to light the difference between three-dimensional shapes and two-dimensional shapes. Students are examining, identifying, comparing, and sorting two-dimensional shapes. students to construct and deconstruct a variety of shapes.
Standard(s):	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. Operations and Algebraic Thinking 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 $5 = 4 + 1$). 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. Geometry Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres). 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 name shapes regardless of their orientations or overall size. K.G.3. Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

	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). 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?”
Essential Question(s):	• How are 2-D shapes alike and different? • How can we compose from other shapes? • How can we decompose shapes into other shapes? • Where are objects in relationship to each other?
Enduring Understanding(s):	• Shapes can be compared by using a variety of geometric attributes. • Flat shapes are two-dimensional • Shapes ~~and objects~~ can be described by their attributes. • Shapes can be constructed and deconstructed into other shapes.
Learning Goal(s): <i>Students will be able to use their learning to:</i>	Concepts: (Students will know...) • pattern blocks: naming, sorting, and describing attributes of each shape. • counting backward from 20. • naming, identifying and analyzing basic shapes. • writing equations and comparison statements. • drawing and constructing shapes (circles, squares, rectangles, triangles, hexagons, trapezoids, rhombuses). • combining shapes. • numbers can be found on a number line. • objects can be put into categories and we can sorty the categories by count.

- sorting, composing and decomposing shapes.

Skills: (Students will be able to...)

- identify whether the number of objects in one group is greater than, less than, or equal to the number in another group.
- for any number from 1 to 9, find the number that makes 10 when added to that number.
- classify objects into categories.
- count the number of objects in different categories.
- identify shapes by geometric name.
- identify shapes, regardless of orientation or size.
- use informal language to describe the parts and attributes of two-dimensional shapes.
- model two-dimensional shapes in the world by drawing them.
- compose simple shapes to form larger shapes.
- Ask questions and investigate the attributes of shapes.

Unit 6 Three-dimensional Shapes and Numbers Beyond Ten	The purpose of this unit is to work with numbers 11-30 to compose and decompose these numbers to gain foundational concepts for place value. Students build larger numbers by counting and grouping quantities over 100. They compose and decompose numbers and build an understanding of number relationship and relative magnitude. This unit emphasizes the two critical areas for kindergarten mathematics: number and geometry. Students describe the attributes, similarities, and differences among two-dimensional and three-dimensional shapes. Students count and make combinations to 5, students count forward and backward, read and write numerals to 20, and explore combinations to numbers from 5 to 10, with special emphasis on the 5+ and 10+ combinations. Students are introduced to the concept that numbers greater than 10 are composed of 10 and some more.
Standard(s):	Counting and Cardinality Know number names and the count sequence. K.CC.1. Count to 100 by ones and by tens. K.CC.2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1). 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). 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. 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.

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.

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

Operations and Algebraic Thinking

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, 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.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 $5 = 4 + 1$).

K.OA.5. Fluently add and subtract within 5.

Operations in Base Ten

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.

Geometry

Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

	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 name shapes regardless of their orientations or overall size. K.G.3. Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”). 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). K.G.5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
Essential Question(s):	• How does the location of the numeral (digit) affect its value? • What patterns do we see in our numbers when we count by fives, tens, and ones? • How can we represent equal sets of objects differently and how can we represent a set of objects differently? • How does the arrangement of objects affect the number of objects when counting? • How can we compose and decompose numbers to help us to understand numbers and number relationships better? • How are 3-D objects alike and different? • How are 2-D and 3-D shapes alike and different from each other?
Enduring Understanding(s):	• Quantities can be grouped into units (unitizing). Those units can be composed and decomposed into other numbers. The units can be counted in the same way units can be counted. There are patterns in our number system. • Counting helps students to understand how numbers are related and that each successive number named refers to a quantity that is one larger. • Teen numbers are 10 plus another number. • Ten is found within every 2 digit number.

	● A set of ten can be perceived as a single unit (Unitizing). ● The positions of digits determine what value they represent. ● Place values patterns occur when making and adding on groups of ten. ● Two-digit numbers can be composed and decomposed. ● There are multiple ways to take apart and combine any given set of numbers. ● Our number system is structured around multiples of ten. ● Skip counting allows students to count sets of objects with the same number of items. ● Benchmark numbers help us to mentally think about quantities. ● Shapes can be compared by using a variety of geometric attributes. ● Three-dimensional shapes can be seen from different perspectives. ● Shapes ~~and objects~~ can be described by their attributes. ● Shapes can be constructed and deconstructed into other shape
Learning Goal(s): <i>Students will be able to use their learning to:</i>	Concepts: (Students will know...) ● two-dimensional (flat shapes): hexagon, rhombus, square, trapezoid, triangle, circle ● three-dimensional (solid shapes): sphere, cone, cube, cylinder, pyramid, rectangular prism, triangular prism. ● two-dimensional shape attributes: side, corner or vertex. ● three-dimensional shape attributes: face, edge, vertex or corner. ● length. ● estimate. ● comparison: less, more, short, tall, greater than, less than. ● positional comparison: between, before, after. ● ones, tens, penny, dime. ● addition can be represented with equations. ● numbers less than or equal to ten can be decomposed into parts in more than one way. ● three-dimensional shapes can be described by looking at their parts and attributes and they can be compared by looking at their similarities and differences between shapes. Skills: (Students will be able to...)

- write numbers from 0 to 20.
- identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group for groups of up to 10 objects.
- for any number from 1 to 9 find the number that makes 10 when added to that number
- fluently add with sums to 5
- decompose numbers from 11 to 19 into a group of 10 and some 1s
- identify the name and worth of a penny and a dime
- identify shapes using geometric shape names.
- identify shapes, regardless of orientation or size.
- identify shapes as two-dimensional or three-dimensional
- model three-dimensional shapes in the world by building them.
- investigate the relationship between groups of 1's, 5's and 10's.
- use clear and precise language to defend efficient strategies for counting quantities.
- recognize that there is a pattern in two-digit numbers and the position of the digits determine its value.
- use appropriate tools and models to represent quantities of ten and more.

Unit 7 Weight and Place Value	The purpose of this unit is to describe measurable attributes of objects and to estimate and measure using non-standard units. Students will compare these attributes, such as length, width, height, and weight. Students use direct comparisons of the length of objects and develop strategies to determine more of, less of, or the same. Students explore weight and capacity, solve addition and subtraction story problems, and begin to develop an understanding of place value. Students measure weight and capacity and make comparisons about those measurements. During the unit the focus shifts to counting and operations. Students begin to develop robust strategies for solving addition and subtraction problems and explore the concept that numbers are composed of 10s and 1s.
Standard(s):	Counting and Cardinality Know number names and the count sequence. K.CC.1. Count to 100 by ones and by tens. 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). 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. 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. K.CC.7. Compare two numbers between 1 and 10 presented as written numerals. Operations and Algebraic Thinking 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, 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.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 $5 = 4 + 1$).

K.OA.5. Fluently add and subtract within 5.

Operations in Base Ten

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.

Measurement and Data

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.

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.

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.
Essential Question(s):	• Why do we measure? • How can we compare the measurement of objects? • How do we decide which unit to use to measure an object? • How can we estimate a measurement? • How do you know if your estimation is reasonable?
Enduring Understanding(s):	• Measurement involves a comparison of an attribute of an item or situation with a standard or non-standard unit of measure. • Objects can be measured. • Non-standard units can be used to measure. • There is a purpose for measurement. • Estimation is a way to determine if the answer is reasonable.
Learning Goal(s): <i>Students will be able to use their learning to:</i>	Concepts: (Students will know...) • whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group for groups of up to 10 objects. • the number of objects in a collection of 6 or fewer, arranged in any configuration. • the numbers 0-10 on a number line. • represent any number from 11 to 19 as the sum of 10 and some more 1s. • weight Comparison description : heavy/ heavier/heaviest, light/lighter/lightest. • compare the weights of two objects and the difference between their weights. • place Value: Ones, tens, hundreds. • positional comparison: between, before, after. • value comparison: greater than, less than, equal, more. • coins value: penny, dime. • count to 90 by 1s. • count to 100 by 10s. • numbers from 11 to 19 are composed by adding any number of 1s to a 10. • numbers from 11 to 19 can be represented by drawing of the sum of 10 and some more 1s.

- an object can be described by its weight.
- two objects can be compared by describing the difference between their weights.

Skills: (Students will be able to...)

- represent addition with objects, fingers, drawings, or equations.
- solve addition story problems.
- fluently add with sums to 5.
- analyze and interpret different measurement tools.
- use tools and clear and precise language to directly compare two objects with a measurable attribute in common.
- plan and conduct measurement investigations using non-standard units of measure.
- select which tool is most appropriate for a given measurement task.

Unit 8: Computing and Measuring	The last unit of the kindergarten year helps students build a deeper understanding of subtraction and strengthen the connections between quantity, related number combinations, and written notation to 20. Students will add and subtract to 5 with fluency add to 10 and strengthen their understanding of place value.
Standard(s):	Counting and Cardinality 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). 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). Count to tell the number of objects. 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. Operations and Algebraic Thinking 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, 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.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 $5 = 4 + 1$).

	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 add and subtract within 5. Operations in Base Ten 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. Measurement and Data 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. 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.
Essential Question(s):	• Why do we measure? • How can we compare the measurement of objects? • How do we decide which unit to use to measure an object? • How can we estimate a measurement? • How do you know if your estimation is reasonable?
Enduring Understanding(s):	• Measurement involves a comparison of an attribute of an item or situation with a standard or non-standard unit of measure. • Objects can be measured. • Non-standard units can be used to measure. • There is a purpose for measurement.

	● Estimation is a way to determine if the answer is reasonable.
Learning Goal(s): <i>Students will be able to use their learning to:</i>	Concepts: (Students will know...) ● whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group for groups of up to 10 objects. ● represent any number from 11 to 19 as the sum of 10 and some more 1s. ● compare the lengths of two objects and the difference between their lengths. ● “take away” when a certain number is being removed and “find the difference” when comparing two quantities. ● subtraction strategies: ○ count from 1 three times ○ count down from ○ thinking about the difference Skills: (Students will be able to...) ● write numerals from 0 to 10 to represent a number of objects. ● read numbers from 0 to 10. ● identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group for groups of up to 10 objects. ● represent subtraction with objects and equations. ● solve addition story problems. ● compose numbers from 11 to 19 by adding any group of 10 and some 1s. ● use an equation to represent any number from 11 to 19 as the sum of 10 and some more 1s.