

Milford Public Schools Curriculum

Department: Mathematics

Course Name: Kindergarten Math



UNIT 1

Unit Title: “Who is in School Today?”

Unit Description: The processes, structures, and materials that are important features of the kindergarten math curriculum are introduced in this unit. It also introduces routines, common to many kindergarten classrooms that students will encounter regularly throughout the year. These routines include taking attendance, using the calendar to count and to keep track of time and events, counting sets of objects, and collecting and discussing data about the class. These classroom routines offer reinforcement of number concepts that are central to the kindergarten curriculum.

LEARNING GOALS

Enduring Understanding(s):

We count objects to find how many there are – each object gets one number and the last number said tells how many objects there are.
Each number represents a specific quantity, or amount of things.

Essential Question(s):

How can we find how many things are in a set?
How are numbers related to quantities?

Content and Skills:

Count objects to 10
Create sets with equal number of objects as a given set
Describe attributes of an object
Record the number of objects in a set (numbers, pictures)
Sort objects by a given attribute
Compare the size of two groups
Write numerals from 1 to 10 (this will need additional resources)

Standards Addressed:

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).

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.

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

K.CC.5 Count to answer “how many?” questions about as many as 20 things arranged in a line, 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.

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.)

UNIT 2

Unit Title: “Counting and Comparing”

Unit Description: Students explore numbers through a variety of counting activities. They build knowledge of the counting sequence, use numerals to represent quantities, represent equivalent amounts, and develop skills for accurate counting. They also begin to compare quantities. As an introduction to linear measurement, students measure and compare the lengths of objects using direct comparison

LEARNING GOALS

Enduring Understanding(s):

We can use pictures, other representations (tally or circles), and numerals to represent quantities.
Length and quantity are two attributes that can be used to compare two objects or two sets of objects.
Changing the arrangement or order of a set of objects does not change the number of objects in the set.

Essential Question(s):

How can we represent how many objects are in a group?
How can we compare objects or sets of objects?
If a set of objects is counted in a different order, does it change the number of objects in the set?

Content and Skills:

Represent quantities (to 12) with numbers and/or pictures
Write numerals to 12
Count backwards from 12 (orally)
Count objects to 12
Use manipulatives to represent numbers to 10
Create sets with an equal number of objects as in a given set of objects
Compare two objects with different lengths
Describe the difference (more of/less of, or taller or longer/shorter) of two objects

Standards Addressed:

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).

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.

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

K.CC.5 Count to answer “how many?” questions about as many as 20 things arranged in a line, 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.

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. eg., 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.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.*

UNIT 3

Unit Title: Addition and Subtraction “Measuring and Counting”

Unit Description: Students gain a deeper understanding of numbers and number relationships as they engage in activities in which they count, combine, and compare amounts. They develop visual images of numbers and solve problems in which they find different combinations of the same number. Students are introduced to addition and subtraction situations through story problem contexts. Work with linear measurement continues as students use nonstandard units to measure the length of objects and paths.

LEARNING GOALS

Enduring Understanding(s):

Zero represents a count of no objects.
Addition is used to represent things that are coming together or growing.
Subtraction is used to represent things that are leaving or being taken away.
Length and weight are/can be used to compare objects.

Essential Question(s):

How do we represent a set when there is nothing in the set?
How can we represent situations where things are coming together or growing?
How can we represent situations where things are leaving or being taken away?
How can we compare objects?

Content and Skills:

Count forward from a number other than 1
Compare two numbers when given the numerals (1-10)
Count on to add
Count backwards or remove objects and then recount to subtract
Decompose numbers ($5 = 3 + 2$)
Measure an object by counting the number of same length units that fit against it
Compare lengths of different objects
Compare weights of different objects
Represent addition and subtraction problems (with objects, acting out situations, equations, etc.)
Find how many there are when one more is added or one is taken away
Given a story problem, identify whether it is a combining (+) or separating (-) scenario

Standards Addressed:

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).
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.
c. Understand that each successive number name refers to a quantity that is one larger.
K.CC.5 Count to answer “how many?” questions about as many as 20 things arranged in a line, 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.

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

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 in 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.

UNIT 4

Unit Title: 2D and 3D Shapes” Make a Shape, Build a Block”

Unit Description: Students explore geometry using a variety of materials, including Geoblocks, pattern blocks, interlocking cubes and geoboards. They describe, sort, and compose and decompose two- and three-dimensional shapes. They think about shapes in their environment and match two-dimensional shapes to three-dimensional objects.

LEARNING GOALS

Enduring Understanding(s):

Objects can be described using attributes and shape names.

The location of an object can be described using relative position.

Shapes can be composed into larger shapes or decomposed into smaller shapes.

Essential Question(s):

How can we describe an object and its location?

How can we create and decompose shapes?

Content and Skills:

Use attributes to describe 2D and 3D shapes

Describe objects in the real world (door, clock) using names of shapes (rectangle, circle)

Describe the relative location of an object (the clock is *above* the door)

Compose simple shapes to form larger shapes (two triangles can make a rectangle)

Compare different 2D and 3D shapes

Construct 3D shapes

Name shapes

Identify a shape as 2D or 3D

Standards Addressed:

K.CC.1 Count to 100 by ones and tens.

K.CC.4a 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.

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 in 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.5 Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangle 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.

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”).

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., having sides of equal length).

K.G.5 Model shapes in a 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 examples, “Can you join these two triangles with full sides with full sides touching to make a rectangle?”

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

UNIT 5

Unit Title: Adding, Subtracting and Teens “How Many Do You Have?”

Unit Description: Students continue to work with counting and number composition as they count sets of objects and find multiple combinations of the same number as they decompose numbers to 20. They use numbers and notation to describe arrangements of tiles and number combinations. Students continue to develop an understanding of the operations of addition and subtraction as they act out, model, solve story problems, and play games that involve combining or separating small amounts.

LEARNING GOALS

Enduring Understanding(s):

The equal sign shows that two expressions represent the same quantity.

Numbers can be composed with other numbers to form larger numbers (or decomposed into the sum of smaller numbers) and can be represented with drawings, representations, equations, and objects.

Addition is used to represent when things are coming together and subtraction is used to represent when things are being taken away.

The numbers from 11 to 19 are composed of one group of ten ones and some more ones.

Essential Question(s):

What are the different ways numbers can be represented when we are composing or decomposing them?

How can we represent situations where things are coming together or being taken away?

How can we represent the teen numbers (from 12 to 19)?

Content and Skills:

Decompose numbers (<10) in more than one way

Record decompositions of numbers using drawings, representations, and/or equations

Find the other addend to make a sum of 10 given one addend

Solve addition and subtraction word problems

Represent addition and subtraction with objects, acting out situations, verbal explanations, drawings, equations, etc.

Count on the number line

Fluently add and subtract within 5

Compare two numbers between 1 and 10

Write numerals from 0 to 20

Represent the number taken away (minuend) in a picture

Count on from a number other than 1

Compose and decompose numbers from 11 to 19 into a group of ten ones and some further ones

Use notations (+, -, =) to write equations

Use equal sign to show equivalent expressions

Standards Addressed:

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).

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. eg., 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.1 Represent addition and subtraction with objects, fingers, mental images, drawings (Drawings need not show details, but should show the mathematics in the problem.), sounds (e.g., claps), acting out situations, verbal explanation, expressions, or equations.

K.OA.2 Solve addition and subtraction word problems, and add and subtract with 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.

K.NBT.1 Compose and decompose numbers from 11 to 19 into tens, 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.

UNIT 6

Unit Title: Data Analysis “Sorting and Surveys”

Unit Description: Students sort objects according to common attributes, as well as sort data about their class. They collect, record, and represent categorical and numerical data about their class, and they carry out their own data investigation by collecting responses to their own survey questions.

LEARNING GOALS

<p>Enduring Understanding(s): Data can be collected about things in the real world using surveys and the results need to be counted.</p>	<p>Essential Question(s): How is counting used in the real world?</p>
<p>Content and Skills: Represent a set of data (2 categories) Count by 2's Compare two quantities to determine which is more Solve problems using data Collect survey responses Sort objects into given categories by attributes Count the number of objects in each category Count on to 100 Count by groups of 10 to 100</p>	
<p>Standards Addressed: 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.4a 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. 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 the quantity that is one larger. 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. 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).</p>	

<p>UNIT 7</p>	
<p>Unit Title: Patterns “What Comes Next?” Unit Description: Students investigate what makes a repeating pattern. They focus on attributes of objects and think about which attributes (i.e., size, color, shape, orientation) are important in the patterns they are making. Students work with simple and complex repeating patterns. They have many opportunities to copy, create, and extend repeating patterns using a variety of materials and common objects. They use patterns to determine what comes next and focus on the part, or unit, of a pattern that repeats.</p>	
<p>LEARNING GOALS</p>	
<p>Enduring Understanding(s): We can use attributes such as number, size, shape, and color to describe patterns. Using the pattern of attributes in a sequence, we can find what comes next.</p>	<p>Essential Question(s): What patterns can we find and how can we describe them? How can we extend a pattern?</p>

Content and Skills:

Copy a repeating pattern

Determine what comes next in a repeating pattern

Use positional terms to describe locations (next to, before, after in front, behind, etc.)

Count the number of things needed to make one unit (car) of a pattern (train)

Standards Addressed:

K.CC.1 Count to 100 by ones and tens.

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.5 Count to answer “how many?” questions about as many as 20 things arranged in a line, 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.

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.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 orientation or overall size.

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