



PISCATAWAY TOWNSHIP SCHOOLS

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Math K

Content Area: Mathematics

Grade Span: K

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COURSE OVERVIEW

Description		
<p>This course aims to: represent and compare whole numbers, initially with sets of objects and to describe shapes and space. More learning time in Kindergarten should be devoted to number sense and operations than to other topics.</p>		
Goals		
<p><i>Counting and Cardinality</i> Know number names and the count sequence. Count to tell the number of objects. Compare numbers.</p> <p><i>Operations & Algebraic Thinking</i> Understand addition as putting together/adding to, and understand subtraction as taking apart/taking from.</p> <p><i>Number and Operations in Base Ten</i> Work with numbers 11-19 to gain foundations for place value.</p> <p><i>Geometry</i> Identify and describe shapes. Analyze, compare, create, and compose shapes.</p> <p><i>Measurement & Data</i> Describe and compare measurable attributes. Classify objects and count the number of objects in categories.</p> <p><i>Mathematical Practices</i> Attend to precision Construct arguments and critique reasoning of others. Look for and make use of structure. Model with mathematics. Use appropriate tools strategically. Express regularity in repeated reasoning. Reason abstractly and quantitatively.</p>		
Scope and Sequence		
Unit	Topic	Length
Unit 1	Numbers & Operation to 5 (1-6)	49-53 days
Unit 2	Numbers & Operation 6-10 (7-9)	27-31 days
Unit 3	Numbers & Operation 10 (10-12)	27 days
Unit 4	Numbers & Operations from 11 -20 and Beyond (13-16)	34 days
Unit 5	Geometry & Positions (17-18)	25-26 days
Unit 6	Measurement & Data (19-20)	14 days
Resources		
<p>Core Text: Go Math! Suggested Resources: Ipads, Waggle, Freckle, Osmo, Abcya, Center Activities, Seesaw</p>		

UNIT 1: Numbers & Operation to 5

Summary and Rationale	
<p>In this unit students will learn how to count, represent and write whole numbers to 5. Students will also work with sets of objects to compare and contrast. They will also learn to represent addition and subtraction with objects, fingers, mental images, drawings, sounds(e.g. claps), acting out situations, verbal explanations, expressions or equations.</p>	
Recommended Pacing	
49-53 days: Chapters 1-6	
State Standards	
Standard : Counting and Cardinality	
CPI #	Cumulative Progress Indicator (CPI)
1	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).
2	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.
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.
Standard	
CPI #	Cumulative Progress Indicator (CPI)
4	Understand that each successive number name refers to a quantity that is one larger.
5	Count by 100 by ones and by tens.
6	Identify whether the number of objects in one group is greater than, less than, or equal to the number objects in another group, e.g., by using matching and counting strategies (include groups with up to ten objects).
Standard : Operations and Algebraic Thinking	
CPI #	Cumulative Progress Indicator (CPI)
7	Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanation, expressions, or equations.
8	Solve addition and subtraction word problems, and add and subtract with 10, e.g., by using objects or drawings to represent the problem.
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> ● Students will understand that numbers represent quantities. ● Students will understand that models and/or number sentences represent information that can be used to solve a problem. ● Students will understand that relationships exist among the basic operations. 	
Unit Essential Questions	
<ul style="list-style-type: none"> ● Is math a language? ● What is the most effective way to solve a problem? ● What is the best answer? ● What is the best way to compute it? 	

Objectives

Students will know:

- number names and count the sequence
- count and write to represent the number of objects
- represent numbers in counting order
- count forward and backward
- to tell a number of objects without counting
- solve problems that use 0
- compare numbers using greater than, less than and equal to
- identify objects from first to fifth
- use addition as putting together and adding to and subtraction as taking apart from and taking from
- use symbols to write an addition or subtraction equation
- use objects or drawings to show why an addition or subtraction equation is true
- solve addition and subtraction equations and word problems within 5

Students will be able to:

- model and count 1, 2, 3, 4 and 5 with objects
- represent 1, 2, 3, 4 and 5 objects with number names and written numerals
- use objects or drawings to decompose 5 into pairs in more than one way
- tell the number of objects in a group without counting
- know that each successive number refers to a quantity that is one larger
- count forward and backward within 5
- use matching and counting strategies to compare sets with the same number of objects
- use matching and counting strategies to compare sets when the number of objects in one set is greater than the number of objects in the other set
- use matching and counting strategies to compare sets when the number of objects in one set is less than the number of objects in the other set
- make a model to solve problems using a matching strategy
- use a counting strategy to compare sets of objects
- recognize the ordinal positions to 5th
- put together numbers to make 3, 4, and 5
- take away from numbers to 5
- put together and take away within 5
- use symbols to write an addition equation
- use addition to put together two groups
- use objects or drawings to show that an addition equation is true
- write and solve addition equations with sums up to 5
- use symbols to write a subtraction equation
- use subtraction to take apart two groups
- use objects or drawings to show that a subtraction equation is true
- write and solve subtraction equations within 5
- solve subtraction word problems within 5

Resources

Core Text: Go Math!

Suggested Resources: Ipads, Waggle, Freckle, Osmo, Abcya, Center Activities, Seesaw

UNIT 2: Numbers & Operation 6-10

Summary and Rationale	
<p>In this unit students will learn how to count, represent and write whole numbers to 10. Students will also work with sets of objects to compare and contrast. They will also learn to represent addition and subtraction with objects, fingers, mental images, drawings, sounds(e.g. claps), acting out situations, verbal explanations, expressions or equations.</p>	
Recommended Pacing	
27-31 days: Chapters 7-9	
State Standards	
Standard: Counting and Cardinality	
CPI #	Cumulative Progress Indicator (CPI)
1	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).
2	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.
3	For any number 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.
Standard: Counting and Cardinality (CC)	
CPI #	Cumulative Progress Indicator (CPI)
4	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.
5	Count by 100 by ones and by tens.
6	Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
Standard: Counting and Cardinality	
CPI #	Cumulative Progress Indicator (CPI)
7	Identify whether the number of objects in one group is greater than, less than, or equal to the number objects in another group, e.g., by using matching and counting strategies (include groups with up to ten objects).
8	Understand that each successive number name refers to a quantity that is one larger.
9	Compare two numbers between 1 and 10 presented as written numerals.
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> ● Students will understand that numbers represent quantities. ● Students will understand that models and/or number sentences represent information that can be used to solve a problem. ● Students will understand that relationships exist among the basic operations. 	
Unit Essential Questions	
<ul style="list-style-type: none"> ● Is math a language? ● What is the most effective way to solve a problem? ● What is the best answer? ● What is the best way to compute it? 	

Objectives

Students will know:

- count out 6, 7, 8, 9 and 10 objects
- write 6, 7, 8, 9 and 10 to represent a group of objects
- represent 10 in different ways
- count forward from a given number
- compare sets to 10 by matching and counting
- use a number line to compare numbers

Students will be able to:

- model and count 6, 7, 8, 9 and 10 with objects
- represent up to 6, 7, 8, 9 and 10 objects with a written numeral
- solve problems by using the strategy draw a picture
- use a drawing to make 10 from a given number
- count forward to 10 from a given number
- solve problems by using the strategy make a model
- use counting strategies to compare sets of objects
- use a number line to find one more than and one less than
- compare two numbers between 1 and 10
- compare numbers and sets of objects to 10

Resources

Core Text: Go Math!

Suggested Resources: , I-pads, Waggle, Freckle, Osmo, Abcya, Center Activities, Seesaw

UNIT 3: Numbers & Operation 10

Summary and Rationale	
In this unit students will learn how to put together and take apart numbers to 10. They will also learn to represent addition and subtraction with objects, fingers, mental images, drawings, sounds(e.g. claps), acting out situations, verbal explanations, expressions or equations.	
Recommended Pacing	
27 days: Chapters 10-12	
State Standards	
Standard: Operations and Algebraic Thinking	
CPI #	Cumulative Progress Indicator (CPI)
1	Represent addition and subtraction up to 10 with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations
2	Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
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 $5 = 4 + 1$).
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
5	Demonstrate fluency for addition and subtraction within 10
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> ● Students will understand that numbers represent quantities. ● Students will understand that models and/or number sentences represent information that can be used to solve a problem. ● Students will understand that relationships exist among the basic operations. 	
Unit Essential Questions	
<ul style="list-style-type: none"> ● Is math a language? ● What is the most effective way to solve a problem? ● What is the best answer? ● What is the best way to compute it? 	
Objectives	
<p>Students will know:</p> <ul style="list-style-type: none"> ● addition as putting together and adding to and subtraction as taking apart and taking from ● add and subtract within 10. ● work with addition and subtraction equations ● find the sum of doubles <p>Students will be able to:</p> <ul style="list-style-type: none"> ● put together numbers to make 6, 7, 8, 9 and 10 ● take away numbers from 6, 7, 8, 9 and 10 ● solve problems by using the strategy act it out ● solve problems by using the strategy make a model ● use pictures to "add to" and find sums. ● use expressions to represent addition 	

- write and solve addition equations with sums up to 10
- use objects and drawings to solve addition word problems within 10
- solve addition word problems within 10 and record the equation
- use pictures to show "taking from" and find differences.
- use expressions to represent subtraction
- write and solve subtraction equations within 10
- use objects and drawings to solve subtraction word problems within 10
- solve subtraction word problems within 10 and record the equation
- understand addition as putting together or adding to and subtraction as taking apart or taking from to solve word problems
- use addition and subtraction to find one more and one less
- use a number line to find one more than and one less than
- use a number line to show taking apart 10
- use doubles as a strategy to solve addition facts with sums within 10

Resources

Core Text: Go Math!

Suggested Resources: Ipads, Waggle, Freckle, Osmo, Abcya, Center Activities, Seesaw

UNIT 4: Numbers & Operation from 11 to 20 and Beyond

Summary and Rationale	
<p>In this unit students will understand that numbers represent quantities. Students will learn to recite number names to 100 by ones and by tens. They will be able to compare the number of objects from 0 to 20 in two groups using the terms less than, equal to or greater than. They will represent whole numbers from 10 to 20, using a unit of ten and a group of ones, with objects, drawings and expressions or equations. They will also learn to count forward within 100 and backward within 20, starting at a given number.</p>	
Recommended Pacing	
34 days: Chapters 13-16	
State Standards	
Standard : Counting and Cardinality	
CPI #	Cumulative Progress Indicator (CPI)
1	Count to 100 by ones and by tens.
2	Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
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).
Standard : Counting and Cardinality	
CPI #	Cumulative Progress Indicator (CPI)
4	Understand the relationship between numbers and quantities; connect counting to cardinality
5	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.
6	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.
7	Understand that each successive number name refers to a quantity that is one larger.
8	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.
Standard: Counting and Cardinality	
CPI #	Cumulative Progress Indicator (CPI)
9	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.
10	Compare two numbers between 1 and 10 presented as written numerals.
Standard: Number and Operations in Base Ten	
CPI #	Cumulative Progress Indicator (CPI)
11	Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., $18 = 10 + 8$); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

Instructional Focus

Unit Enduring Understandings

- Students will understand that numbers represent quantities.
- Students will understand that models and/or number sentences represent information that can be used to solve a problem.
- Students will understand that relationships exist among the basic operations.

Unit Essential Questions

- Is math a language?
- What is the most effective way to solve a problem?
- What is the best answer?
- What is the best way to compute it?

Objectives

Students will know:

- know number names and count the sequence
- count to tell the number of objects
- compare numbers
- addition as putting together and adding to and subtraction as taking apart and taking from
- understand numbers to 20 by decomposing the numbers into 10 ones and some more ones using objects
- work with numbers 11-19 to gain foundations for place value
- order numbers and recognize number sequence to 20

Students will be able to:

- model and count 11 through 20 with objects
- count and write 11 through 20 to represent a group of objects
- find one more or one less than a number to 15
- use a number line to order numbers to 20
- find and compare numbers to 20 using a number line
- compare numbers to 20 using the strategy make a model
- put together and take apart numbers 11 through 20
- solve problems by using the draw a picture strategy and writing an equation
- know the count sequence when counting to 50 by ones
- know the count sequence when counting to 100 by ones
- know the count sequence when counting to 100 by tens
- order numbers and recognize the number sequence to 20
- count and order numbers forward and backward to 20 from a given number

Resources

Core Text: Go Math!

Suggested Resources: Ipads, Waggle, Freckle, Osmo, Abcya, Center Activities, Seesaw

Unit 5: Geometry & Positions

Summary and Rationale	
<p>In this unit students will describe their physical world using geometric ideas (e.g., shapes, orientation, spatial relations) and vocabulary. They will learn to identify, name, and describe basic two-dimensional shapes (circles, squares, rectangles, triangles, and hexagons) as presented in a variety of ways, such as different sizes, colors and orientations. They will also learn to use basic shapes to construct more complex shapes. Lastly, students will learn to identify, describe, and analyze three-dimensional shapes (spheres, cubes, cylinders, and cones). They will compare the positions of two- and three-dimensional shapes and use spatial reasoning to model objects in their environment.</p>	
Recommended Pacing	
25-26 days: Chapters 17-18	
State Standards	
Standard: Geometry	
CPI #	Cumulative Progress Indicator (CPI)
1	Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as <i>above</i> , <i>below</i> , <i>beside</i> , <i>next to</i> , <i>in front of</i> <i>behind</i> , and <i>next to</i> .
2	Correctly name shapes regardless of their orientation or overall size.
3	Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).
Standard	
CPI #	Cumulative Progress Indicator (CPI)
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).
5	Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
6	Compose simple shapes to form larger shapes. <i>For example, “Can you join these two triangles with full sides touching to make a rectangle?”</i>
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> ● Shapes are named based on their characteristics. 	
Unit Essential Questions	
<ul style="list-style-type: none"> ● How can you identify, name, and describe two- and three-dimensional shapes? ● How can identifying and describing shapes help you sort them? 	
Objectives	
<p>Students will know:</p> <ul style="list-style-type: none"> ● two-dimensional shapes can be identified, described & compared ● three-dimensional shapes can be identified, described & analyzed ● two- and three-dimensional shapes can be created and modeled in different ways ● shapes can be located by using positional words <p>Students will be able to:</p> <ul style="list-style-type: none"> ● identify, name and describe two-dimensional shapes (circle, squares, rectangles, triangles, hexagons) 	

- compare two-dimensional shapes by attributes
- combine shapes to make larger shapes
- identify, name and describe three-dimensional shapes (spheres, cubes, cylinders, cones)
- compare three-dimensional shapes based on their similarities and differences
- identify and sort two- and three-dimensional shapes
- use the words *above* and *below* to compare the positions of two- and three-dimensional shapes
- use the words *beside* and *next to* to compare the positions of two- and three-dimensional shapes
- use the words *in front of* and *behind* to compare the positions of two- and three-dimensional shapes

Resources

Core Text: Go Math!

Suggested Resources: Ipads, Waggle, Freckle, Osmo, Abcya, Center Activities, Seesaw

Unit 6: Measurement & Data

Summary and Rationale	
<p>This unit gives hands-on practice of measurement which enables students to compare objects, discuss their comparisons, and measure objects with non-standard units. These foundational experiences are beneficial for students' interpretations of measurements when using standard units. In addition, this unit gives hands-on practice with classifying, counting and sorting data, which helps deepen students' understanding. Students have opportunities to create their own categories and explain their reasoning. Students will learn to make and read concrete graphs, which is an essential mathematical skill for learning in future grades.</p>	
Recommended Pacing	
14 days: Chapters 19-20	
State Standards	
Standard: Measurement & Data	
CPI #	Cumulative Progress Indicator (CPI)
1	Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
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. <i>For example, directly compare the heights of two children and describe one child as taller/shorter.</i>
3	Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> ● There are standard and non-standard units of measurement. ● Classifying and sorting helps you display information. 	
Unit Essential Questions	
<ul style="list-style-type: none"> ● How can comparing objects help you measure them? ● How does sorting help you display information? 	
Objectives	
<p>Students will know:</p> <ul style="list-style-type: none"> ● objects can be measured in different ways ● objects can be described by attributes ● objects can be classified in different ways ● information can be displayed on a graph and analyzed <p>Students will be able to:</p> <ul style="list-style-type: none"> ● compare lengths, heights, and weights of two objects ● solve problems using the logical reasoning strategy ● describe several measurable attributes of a single object ● classify and count objects by color, shape, and size ● make and read a graph 	
Resources	
Core Text: Go Math!	

Suggested Resources: Ipads, Waggle,
Freckle, Osmo, Abcya, Center Activities,
Seesaw