



PISCATAWAY TOWNSHIP SCHOOLS

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Math 2

Content Area: Mathematics

Grade Span: Grade 2

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PK-6

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COURSE OVERVIEW

Description		
<p>This course aims to: extend understanding of base-ten notation; build fluency with addition and subtraction; use standard units of measure; and describe and analyze shapes.</p>		
Goals		
<p><i>Numbers & Operations in Base Ten</i> <i>Understand place value.</i> <i>Use place value understanding and properties of operations to add and subtract.</i></p> <p><i>Operations & Algebraic Thinking</i></p> <ul style="list-style-type: none"> • <i>Represent and solve problems involving addition and subtraction.</i> • <i>Work with equal groups of objects to gain foundations for multiplication.</i> <p><i>Geometry</i> <i>Reason with shapes and their attributes.</i></p> <p><i>Measurement & Data</i> <i>Measure and estimate lengths in standard units.</i> <i>Relate addition and subtraction to length</i> <i>Work with time and money.</i> <i>Represent and interpret data.</i></p> <p><i>Mathematical Practices</i> <i>Attend to precision</i> <i>Construct arguments and critique reasoning of others.</i> <i>Look for and make use of structure.</i> <i>Model with mathematics.</i> <i>Use appropriate tools strategically.</i> <i>Express regularity in repeated reasoning.</i> <i>Reason abstractly and quantitatively.</i></p>		
Scope and Sequence		
Unit	Topic	Length
Unit 1	Place Value and Mental Math Strategies	38 days
Unit 2	Addition and Subtraction	60 days
Unit 3	Money and Time	16 days
Unit 4	Measuring Length: Customary and Metric	24 days
Unit 5	Geometry and Fraction Concepts	17 days
Unit 6	Data	9 days
Resources		
<p>Core Text: Go Math! Suggested Resources: Freckle, ABCya, Waggle</p>		

UNIT 1: Place Value and Mental Math Strategies

Summary and Rationale	
Extending understanding of base-ten notation and building fluency with addition and subtraction.	
Recommended Pacing	
38 Days: Chapters 1, 2, 3, and 4	
State Standards	
Standard Number and Operations in Base 10 (NBT)	
CPI #	Cumulative Progress Indicator (CPI)
2.NBT.A Understand place value.	
1	Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.
1A	100 can be thought of as a bundle of ten tens — called a “hundred.”
1B	The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
2	Count within 1000; skip-count by 5s, 10s, and 100s.
3	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
4	Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.
2.NBT. B Use place value understanding and properties of operations to add and subtract.	
8	Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900
Standard: Operations and Algebraic Thinking (OA)	
CPI #	Cumulative Progress Indicator (CPI)
2.OA.A Represent and solve problems involving addition and subtraction.	
1	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
2.OA.B Add and subtract within 20.	
2	Fluently add and subtract within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers.
2.OA.C Work with equal groups of objects to gain foundations for multiplication.	
3	Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
4	Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

Instructional Focus

Unit Enduring Understandings

- Numbers represent quantities.
- Patterns can grow and repeat.
- Mathematics can be explained in the oral or written form.
- Relationships exist among the basic operations.

Unit Essential Questions

- Is math a language?
- What is mathematics?
- What is the best way to communicate mathematically?
- What is the best way to compute?

Objectives

Students will know:

- Number concepts
- Numbers to 1,000
- Basic addition facts.
- Basic subtraction facts.
- Relationship between addition and subtraction.
- Repeated addition.

Students will be able to:

- Group tens as hundreds.
- Write a 3-digit number for a group of tens.
- Show a 3-digit number using blocks.
- Write a 3-digit number.
- Identify the values of digits in numbers.
- Write 3-digit numbers using words.
- Demonstrate three ways to write a 3-digit number.
- Use blocks or quick pictures to show the value of a number in different ways.
- Count by 1s, 5s, and 10s with numbers less than 100.
- Count by 1s, 5s, and 10s with numbers less than 1000.
- Use place value to find 10 more, 10 less, 100 more, and 100 less than a 3-digit number.
- Make a model to solve a problem about comparing numbers.
- Use a number line to compare numbers.
- Use symbols to compare 3-digit numbers.
- Use doubles facts to find sums for near doubles facts.
- Recall different ways to remember sums.
- Make a ten to add.
- Identify how addition and subtraction are related.
- Recall different ways to remember differences.
- Use ten to subtract.
- Use equations to represent addition and subtraction problems.
- Identify even and odd numbers.
- Explain why an even number can be shown as the sum of two equal parts.
- Solve problems about equal groups.
- Write an addition equation for problems with equal groups.

Resources

Core Text: Go Math!

Suggested Resources: Freckle, ABCya,
Waggle

UNIT 2: Addition and Subtraction

Summary and Rationale	
Building fluency with addition and subtraction.	
Recommended Pacing	
60 days: Chapters 5, 6, 7, 8, 9, and 10	
State Standards	
Standard Numbers and Operations in Base Ten (NBT)	
CPI #	Cumulative Progress Indicator (CPI)
2.NBT.B Use place value understanding and properties of operations to add and subtract.	
5	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
6	Add up to four two-digit numbers using strategies based on place value and properties of operations.
7	Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds
Standard Operations and Algebraic Thinking (OA)	
CPI #	Cumulative Progress Indicator (CPI)
2.OA.A Represent and solve problems involving addition and subtraction.	
1	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> • Relationships exist among the basic operations. • Patterns can grow and repeat. • Mathematics can be explained in the oral and written form. 	
Unit Essential Questions	
<ul style="list-style-type: none"> • What is the best way to compute? • What is mathematics? • What is the best way to communicate mathematically? 	
Objectives	
Students will know: <ul style="list-style-type: none"> • Basic addition facts • Basic subtraction facts • Relationship between addition and subtraction • 2-Digit Addition and Subtraction • 3-Digit Addition and Subtraction 	
Students will be able to:	

- Break apart a number to make it easier to add.
- Make an addend a ten to help solve an addition problem.
- Break apart addends to add tens and then add ones or add on tens and ones separately.
- Regroup in addition.
- Record 2-digit addition.
- Show and record the steps when adding 2-digit numbers.
- Write addition problems two different ways.
- Use bar models to determine the unknown whole number in an addition equation.
- Write an equation to represent an addition problem.
- Add 3 numbers.
- Add the sum of 2 whole numbers to the sum of 2 other whole numbers.
- Break apart a number to make subtraction easier.
- Break apart numbers to make subtraction easier.
- Understand how to model regrouping for subtraction.
- Record 2-digit subtraction.
- Subtract 2-digit numbers.
- Subtract problems two ways.
- Use addition to solve subtraction problems.
- Draw a diagram to solve subtraction problems.
- Write an equation to represent a problem.
- Model multi-step problems.
- Write a real-world that can be shown by an equation.
- Find unknown numbers in an equation.
- Tell if both sides of an equation are equal or not equal.
- Use a model to show adding 3-digit numbers.
- Break apart addends to add hundreds, tens, and then ones.
- Regroup ones in addition.
- Regroup tens in addition.
- Regroup ones and tens in addition.
- Make a model to help solve subtraction problems.
- Regroup tens in subtraction.
- Regroup hundreds in subtraction.
- Regroup hundreds and tens in subtraction.
- Regroup when there are zeros in the starting number.

Resources

Core Text: Go Math!

Suggested Resources: Freckle, ABCya,
Waggle

UNIT 3: Money and Time

Summary and Rationale	
Using standard units of measure.	
Recommended Pacing	
16 days: Chapters 11 & 12	
State Standards	
Standard Measurement and Data (MD)	
CPI #	Cumulative Progress Indicator (CPI)
2.MD.C Work with time and money.	
7	Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
8	Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?
Standard Numbers and Operations in Base Ten (NBT)	
CPI #	Cumulative Progress Indicator (CPI)
2.NBT.A Understanding place value.	
2	Fluently add and subtract within 20 using mental strategies. ² By end of Grade 2, know from memory all sums of two one-digit numbers.
Standard Operations and Algebraic Thinking (OA)	
CPI #	Cumulative Progress Indicator (CPI)
2.OA.A Represent and solve problems involving addition and subtraction.	
1	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> • Relationships exist among the basic operations. • Patterns can grow or repeat. • Mathematics can be explained in the oral or written form. 	
Unit Essential Questions	
<ul style="list-style-type: none"> • What is the best way to compute? • What is mathematics? • What is the best way to communicate mathematically? 	
Objectives	
Students will know: <ul style="list-style-type: none"> • Money • Time Students will be able to: <ul style="list-style-type: none"> • Find the value of a group of coins. • Solve a problem by acting it out. 	

- Use coins to show the value of a dollar.
- Tell the values of \$1, \$5, and \$10 dollar bills. Find the value of a group of bills.
- Solve problems involving money.
- Tell time to 15 minutes on an analog or digital clock.
- Tell time and write time to the nearest five minutes.
- Practice telling time on digital and analog clocks.
- Tell and write time using A.M. and P.M.

Resources

Core Text: Go Math!

Suggested Resources: Freckle, ABCya,
Waggle

UNIT 4: Measuring Length: Customary and Metric

Summary and Rationale	
Using standard units of measure.	
Recommended Pacing	
24 days: Chapters 13 & 14	
State Standards	
Standard Measurement and Data (MD)	
CPI #	Cumulative Progress Indicator (CPI)
2.MD.A Measure and estimate lengths in standard units.	
1	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
2	Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
3	Estimate lengths using units of inches, feet, centimeters, and meters.
4	Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
2.MD.B Relate addition and subtraction to length.	
5	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
6	Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.
2.MD.D Represent and interpret data	
9	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> • Relationships exist among the basic operations. • Patterns can grow or repeat. • Mathematics can be explained in the oral or written form. • Patterns can grow or repeat. • There are standard and nonstandard units of measure. • Technology is a tool that can be used to assist them. 	
Unit Essential Questions	
<ul style="list-style-type: none"> • What is mathematics? • What is the best way to communicate mathematically? • What is the best way to compute? • What is the most effective way to solve a problem? • What is the best way to measure? 	

Objectives

Students will know:

- Length in customary units
- Length in metric units

Students will be able to:

- Use concrete models to measure the lengths of objects in inches.
- Use concrete models to measure the lengths of objects in centimeters.
- Make an inch ruler and use it to measure the lengths of objects.
- Estimate the lengths of objects by mentally partitioning the lengths into inches.
- Estimate the lengths of objects by mentally partitioning the lengths into centimeters.
- Measure the lengths of objects to the nearest inch using an inch ruler.
- Measure the lengths of objects to the nearest inch using a centimeter ruler.
- Solve addition and subtraction problems involving the lengths of objects by using the strategy: *draw a diagram*.
- Measure the lengths of objects in both inches and feet to explore the inverse relationship between size and number of units.
- Measure the lengths of objects in both centimeters and meters to explore the inverse relationship between size and number of units.
- Estimate the lengths of objects in feet.
- Estimate the length of objects in yards.
- Estimate the length of objects in meters.
- Estimate lengths to solve measurement problems.
- Select appropriate tools for measuring different lengths.
- Measure the lengths of objects and use a line plot to display the measurement data.

Resources

Core Text: Go Math!

Suggested Resources: Freckle, ABCya,
Waggle

Unit 5: Geometry and Fraction Concepts

Summary and Rationale	
Using reasoning to sort and draw shapes and their attributes Dividing a whole into equal parts and understanding fair shares	
Recommended Pacing	
Chapter 15 and Chapter 16: 17 days	
State Standards	
Standard: Geometry	
CPI #	Cumulative Progress Indicator (CPI)
2.G.A Reason with shapes and their attributes	
1	Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.5 Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
2	Partition a rectangle into rows and columns of same-size squares and count to find the total number of them
3	Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> • Relationships exist among the basic operations. • Models/Diagrams and/or number sentences represent information that can be used to solve a problem. • Mathematics can be explained in the oral or written form. • Shapes are named based on their characteristics. • Fractions can represent part of a whole or part of a group 	
Unit Essential Questions	
<ul style="list-style-type: none"> • What is the best way to use geometry? • How do we show and write fair shares? • How do we show and write parts of a whole? 	
Objectives	
<p>Students will know:</p> <ul style="list-style-type: none"> • attributes of shapes • that shapes can be partitioned to represent fractions • fractions are part of a whole <p>Students will be able to:</p> <ul style="list-style-type: none"> • identify and name 3d shapes and objects that match • identify and describe 3d shapes according to the number of faces, edges, and vertices • identify 3-4-5-6 sided figures by the number of sides and angles • identify number of sides and angles of a polygon • draw 2 dimensional figures • sort 2 dimensional figures according to their attributes 	

- identify and name equal parts of circles and rectangles as halves, thirds or fourths
- partition shapes to show halves, thirds and fourths
- identify and describe one equal part as a half of, a third of, or a fourth of a whole
- solve problems involving wholes divided into equal shares by using the strategy draw a diagram

Resources

Core Text: Go Math!

Suggested Resources: Freckle, ABCya,
Waggle

Unit 6: Data

Summary and Rationale	
Describing and Analyzing Data Sets	
Recommended Pacing	
Chapter 17: 9 Days	
State Standards	
Standard: Measurement and Data	
CPI #	Cumulative Progress Indicator (CPI)
2.MD.D Represent and interpret data	
9	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.
10	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems ⁴ using information presented in a bar graph.
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> • Relationships exist among the basic operations. • Models and/or number sentences represent information that can be used to solve a problem. • Mathematics can be explained in the oral or written form. • Patterns can grow or repeat. • Data can be represented in multiple ways. 	
Unit Essential Questions	
<ul style="list-style-type: none"> • What is the best way to compute? • What is the most effective way to solve a problem? • What is the best answer? • What is the best way to communicate mathematically? • What is the best way to use data? How do we know? How certain do we need to be? • What is mathematics? 	
Objectives	
<p>Students will know:</p> <ul style="list-style-type: none"> • data can be represented in numerous ways • various techniques can be used to collect data <p>Students will be able to:</p> <ul style="list-style-type: none"> • collect data in a survey and use a tally chart to record data from a survey • interpret data in a picture graph and use that information to solve problems • make picture graphs to represent data • interpret data in bar graphs and use that information to solve problems • make bar graphs to represent data • make a picture graph and a bar graph using a scale of 1 	

Resources
Core Text: Go Math! Suggested Resources: Freckle, ABCya, Waggle