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Math 1

Content Area: Mathematics

Grade Span: First Grade

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Prek-6

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COURSE OVERVIEW

Description		
<p>This course aims to: develop understanding of addition, subtraction, and strategies for addition and subtraction within 20; develop understanding of whole number relationships and place value, including grouping in tens and ones; develop understanding of linear measurement and measuring lengths as iterating length units; and reason about attributes of, and composing and decomposing geometric shapes.</p>		
Goals		
<p><i>Numbers & Operations in Base Ten</i></p> <ul style="list-style-type: none"> • <i>Extend the counting sequence.</i> • <i>Understand place value.</i> • <i>Use place value understanding and properties of operations to add and subtract.</i> <p><i>Operations & Algebraic Thinking</i></p> <ul style="list-style-type: none"> • <i>Represent and solve problems involving addition and subtraction.</i> • <i>Understand and apply properties of operations and the relationship between addition and subtraction.</i> • <i>Add and subtract within 20.</i> • <i>Work with addition and subtraction equations.</i> <p><i>Money</i></p> <ul style="list-style-type: none"> • <i>Identify the value of coins</i> • <i>Represent collections of coins and their value</i> <p><i>Geometry</i></p> <ul style="list-style-type: none"> • <i>Reason with shapes and their attributes.</i> <p><i>Measurement & Data</i></p> <ul style="list-style-type: none"> • <i>Measure lengths indirectly and by iterating length units.</i> • <i>Tell and write time.</i> • <i>Represent and interpret data.</i> <p><i>Mathematical Practices</i></p> <ul style="list-style-type: none"> • <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> 		
Scope and Sequence		
Unit	Topic	Length
Unit 1	Numbers & Operations in Base Ten (1-3)	26 lessons
Unit 2	Operations & Algebraic Thinking (4-10)	62 lessons
Unit 3	Money (11)	6 lessons
Unit 4	Geometry (12-14)	22 lessons
Unit 5	Measurement & Data (15-17)	22 lessons

Resources
<p>Core Text: Go Math</p> <p>Suggested Resources:</p> <p>iPads, Freckle, ABCya, center activities, manipulatives, SeeSaw, Waggle</p>

UNIT 1: Numbers and Operations In Base Ten

Summary and Rationale	
Developing understanding of whole number relationships and place value, including grouping in tens and ones.	
Recommended Pacing	
46 Days: Chapters 1-3	
State Standards	
Standard Number and Operations in Base Ten (NBT)	
CPI #	Cumulative Progress Indicator (CPI)
	Extend the counting sequence
1	Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.
Standard Number and Operations in Base Ten (NBT)	
CPI #	Cumulative Progress Indicator (CPI)
	Understand Place Value
2	Understand that the two digits of a two-digit number represent amounts of tens and ones.
2A	10 can be thought of as a bundle of ten ones — called a “ten.”
2B	2b The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
2C	The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
3	Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.
Standard Number and Operations in Base Ten (NBT)	
CPI #	Cumulative Progress Indicator (CPI)
	Use place value understanding and properties of operations to add and subtract.
4	Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models (e.g., base ten blocks) 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 and explain the reasoning used. Understand that in adding two digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
5	Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
6	Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used.
CPI #	Cumulative Progress Indicator (CPI)
	Add and subtract within 20.
7	Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g.,

	knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> There are multiple ways to represent numbers. Numbers can be compared in a variety of ways. There are multiple ways to add and subtract. 	
Unit Essential Questions	
<ul style="list-style-type: none"> How do you use place value to model, read, and write numbers to 120? How do you use place value to compare numbers? How can you add and subtract two-digit numbers? 	
Objectives	
<p>Students will know:</p> <ul style="list-style-type: none"> How to extend the counting sequence. Place value How to use place value understanding and properties of operations to add and subtract. <p>Students will be able to:</p> <ul style="list-style-type: none"> Count by ones to extend a counting sequence up to 120. Count by tens from any number to extend a counting sequence up to 120. Use models and write to represent equivalent forms of tens and ones. Use objects, pictures, and numbers to represent a ten and some ones. Use objects, pictures, and numbers to represent tens. Group objects to show numbers to 50 as tens and ones. Group objects to show numbers to 100 as tens and ones. Solve problems using the strategy make a model. Read and write numerals to represent a number of 100 to 110 objects. Read and write numerals to represent a number of 110 to 120 objects. Model and compare two-digit numbers to determine which is greater. Model and compare two-digit numbers to determine which is less. Use symbols for is less than "<", is greater than ">", and is equal to "=" to compare numbers. Solve problems using the strategy make a model. Identify numbers that are 10 less or 10 more than a given number. Add and subtract within 20. Draw a model to add tens. Draw a model to subtract tens. Use a hundred chart to find sums. Use concrete models to add ones or tens to a two-digit number. Make a ten to add a two-digit number and a one-digit number. Use tens and ones to add two-digit numbers. Solve and explain two-digit word problems using the strategy draw a picture. Use a hundred chart to find sums and differences. Add and subtract within 100, including continued practice with facts within 20. 	
Resources	
<p>Core Text: Go Math</p> <p>Suggested Resources: iPads, Freckle, ABCya, center activities, manipulatives, SeeSaw, Waggle</p>	

UNIT 2: Operations & Algebraic Thinking

Summary and Rationale	
Developing understanding of addition, subtraction, and strategies for addition and subtraction within 20.	
Recommended Pacing	
80 days: Chapters 4-10	
State Standards	
Standard: Operation and Algebraic Thinking	
CPI #	Cumulative Progress Indicator (CPI)
	Represent and solve problems involving addition and subtraction.
1	Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
2	Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
CPI #	Cumulative Progress Indicator (CPI)
	Understand and apply properties of operations and the relationship between addition and subtraction.
3	Apply properties of operations as strategies to add and subtract.3 Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.) {Students need not use formal terms for these properties}
4	Understand subtraction as an unknown-addend problem. For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8.
CPI #	Cumulative Progress Indicator (CPI)
	Add and subtract within 20.
5	Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
6	Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).
CPI #	Cumulative Progress Indicator (CPI)
	Work with addition and subtraction equations.
7	Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.
8	Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 = \heartsuit - 3$, $6 + 6 = \heartsuit$.

Instructional Focus
Unit Enduring Understandings
<ul style="list-style-type: none"> • Addition is putting things together and subtraction is taking things apart. • There are multiple strategies for adding and subtracting numbers. • Addition and subtraction are related operations.
Unit Essential Questions
<ul style="list-style-type: none"> • How can you model adding within 20? • How can you subtract numbers from 20 or less? • How do you solve addition problems? • How do you solve subtraction problems? • How can relating addition and subtraction help you learn and understand facts within 20?
Objectives
<p>Students will know:</p> <ul style="list-style-type: none"> • How to represent and solve problems involving addition and subtraction. • The properties of operations and the relationship between addition and subtraction. • How to add and subtract within 20. • How to work with addition and subtraction equations. <p>Students will be able to:</p> <ul style="list-style-type: none"> • use pictures to solve subtraction problems • use concrete objects to solve <i>Take From</i> subtraction problems • solve <i>Take From</i> and <i>Take Apart</i> subtraction problems using the strategy <i>make a model</i> • compare pictorial groups to understand subtraction • model and compare groups to show the meaning of subtraction • identify how many are left when subtracting all or zero • model and record all the ways to take apart numbers within 10 • build fluency for subtraction within 10 • use count on 1, 2, or 3 as a strategy to find sums within 20 • use doubles as a strategy to solve addition facts with sums within 20 • use doubles to create equivalent but easier sums • use doubles plus 1 and doubles minus 1 as strategies to find sums within 20 • use the strategies count on, doubles, doubles plus 1, and doubles minus 1 to practice addition facts within 20 • use a ten frame to add ten and an addend less than ten • use make a ten as a strategy to find sums within 20 • use numbers to show how to use the make a ten strategy to add • solve real world addition problems using objects, drawings, or equations to represent the problem • use count back 1, 2, or 3 as a strategy to subtract • recall addition facts to subtract numbers within 20 • use addition as a strategy to subtract numbers within 20 • use make a 10 as a strategy to subtract • subtract by breaking apart to make a ten • solve subtraction problem situations using the <i>act it out</i> strategy • solve real-world subtraction problems • add addends in any order • use properties to add three addends • strategically group numbers to find the sum • develop a plan and solve addition word problems

Resources

Core Text: Go Math

Suggested Resources: iPads, Freckle, ABCya, center activities, manipulatives, SeeSaw, Waggle

UNIT 3: Money

Summary and Rationale	
Develop an understanding of coins and their value.	
Recommended Pacing	
6 Days: Chapter 11	
State Standards	
CPI #	Cumulative Progress Indicator (CPI)
	Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and c symbols appropriately.
1	Tell the value of a penny, a nickel, and a dime.
2	Find the value of a group of coins with pennies, nickels, and dimes.
3	Find the value of a group of coins that includes quarters.
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> Students will understand that numbers represent quantities. 	
Unit Essential Questions	
<ul style="list-style-type: none"> Is math a language? 	
Objectives	
Students will know: <ul style="list-style-type: none"> How to start at a given number, count forward and backwards within 120 by ones. How to skip count by 2s to 20 and 5s to 100. Students will be able to: <ul style="list-style-type: none"> Tell the value of a penny, a nickel, and a dime. Find the value of a group of coins with pennies, nickels, and dimes. Find the value of a group of coins that includes quarters. 	
Resources	
Core Text: Go Math Suggested Resources: iPads, Freckle, ABCya, center activities, manipulatives, SeeSaw, Waggle	

UNIT 4: Geometry

Summary and Rationale	
Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.	
Recommended Pacing	
22 - 24 Days: Chapters 12, 13, 14	
State Standards	
CPI #	Cumulative Progress Indicator (CPI)
	Reason with shapes and their attributes.
1	Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.
2	Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.
3	Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> • Students will understand that shapes are named based on their characteristics. • Shapes can be 2 dimensional or 3 dimensional. • Shapes can be sorted based on their characteristics. • Shapes can be combined or broken apart to make new shapes. 	
Unit Essential Questions	
<ul style="list-style-type: none"> • What is the best way to use geometry? • How do you identify and describe three-dimensional shapes? • How do you sort and describe two-dimensional shapes? 	
Objectives	
Students will know: <ul style="list-style-type: none"> • How to identify and describe shapes • How to analyze, compare, create and compose shapes Students will be able to: <ul style="list-style-type: none"> • Identify and describe three-dimensional shapes according to defining attributes. • Compose a new shape by combining three-dimensional shapes. • Use composite three-dimensional shapes to build new shapes. • Identify three-dimensional shapes used to build a composite shape using the strategy act it out. • Identify two-dimensional shapes on three-dimensional shapes. • Use defining attributes to sort shapes. • Describe attributes of two-dimensional shapes. • Use objects to compose new two-dimensional shapes. 	

- Compose a new shape by combining two-dimensional shapes.
- Make new shapes from composite two-dimensional shapes using the strategy act it out.
- Decompose combined shapes into shapes.
- Decompose two-dimensional shapes into parts.
- Identify equal and unequal parts (or shares) in two-dimensional shapes.
- Partition circles and rectangles into two equal shares.
- Partition circles and rectangles into four equal shares.

Resources

Core Text: Go Math

Suggested Resources: iPads, Freckle, ABCya, center activities, manipulatives, SeeSaw, Waggle

Unit 5: Measurement & Data

Summary and Rationale	
Developing understanding of linear measurement and measuring lengths as iterating length units	
Recommended Pacing	
22 days- Chapter 15-17	
State Standards	
CPI #	Cumulative Progress Indicator (CPI)
	Measure lengths indirectly and by iterating length units.
1	Order three objects by length; compare the lengths of two objects indirectly by using a third object.
2	Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps.
CPI #	Cumulative Progress Indicator (CPI)
	Tell and write time.
3	Tell and write time in hours and half-hours using analog and digital clocks.
CPI #	Cumulative Progress Indicator (CPI)
	Represent and interpret data
4	Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. I
Instructional Focus	
Unit Enduring Understandings	
<ul style="list-style-type: none"> • Different items are measured in different units. • Measurement precision is necessary. • Data can be displayed in a variety of ways. 	
Unit Essential Questions	
<ul style="list-style-type: none"> • How can you measure length and tell time? • How can graphs and charts help you organize, represent, and interpret data? 	
Objectives	
<p>Students will know:</p> <ul style="list-style-type: none"> • How to measure lengths indirectly and by iterating length units. • How to tell and write time. • How to represent and interpret data. <p>Students will be able to:</p> <ul style="list-style-type: none"> • Order objects by length. • Use the Transitivity Principle to measure indirectly. • Measure length using nonstandard units. • Make a nonstandard measuring tool to measure length. • Solve measurement problems using the strategy act it out. • Write times to the hour shown on analog clocks. • Write times to the half hour shown on analog clocks. • Tell times to the hour and half hour using analog and digital clocks. • Use the hour hand to draw and write times on analog and digital clocks. 	

- Analyze and compare data shown in a picture graph where each symbol represents one.
- Make a picture graph where each symbol represents one and interpret the information.
- Analyze and compare data shown in a bar graph.
- Make a bar graph and interpret the information.
- Analyze and compare data shown in a tally chart.
- Make a tally chart and interpret the information.
- Solve problem situations using the strategy make a graph.

Resources

Core Text: Go Math

Suggested Resources: iPads, Freckle, ABCya, center activities, manipulatives, SeeSaw, Waggle