Mathematics (2)

Mathematics

Grade(s) 2nd, Duration 1 Year
Required Course

Course Overview

Second grade students will extend understanding of base-ten notation, build fluency with addition and subtraction, use standard units of measure, and describe and analyze shapes.

Mathematics (grade 2) courses typically continue to build a conceptual foundation in number, operation, and quantitative reasoning; patterns, relationships, and algebraic thinking; geometry and spatial reasoning; and measurement. These courses often require students to develop their numerical fluency, particularly in addition and subtraction, and to solve problems using those operations as well as estimation.

Scope And Sequence

Timeframe	Unit	Instructional Topics
32 Day(s)	Operations and Algebraic Thinking	1. 1: Understanding Addition and Subtraction 2. 2: Addition Strategies 3. 3: Subtraction Strategies 4. 4: Working with Equal Groups
68 Day(s)	Number and Operations in Base Ten	1. 5: Place Value to 100 2. 6: Mental Addition 3. 7: Mental Subtraction 4. 8: Add Two-Digit Numbers 5. 9: Subtracting Two-Digit Numbers 6. 10: Place Value to 1,000 7. 11: Three-Digit Addition and Subtraction
10 Day(s)	Geometry	1. 12: Geometry
32 Day(s)	Measurement and Data	1. 13: Counting Money 2. 14: Money 3. 15: Measuring Length 4. 16: Time, Graphs, and Data

Materials and Resources

EnVision math resources, manipulative kits, and teacher-created materials as needed. Classroom sets are located in the classroom.

Teachers use a variety of technological resources including web sites, IPads, Successmaker, Promethean Planet lessons, Rocket Math, mini-whiteboards.

Prerequisites

Kindergarten and First Grade Curriculum

Course Details

Unit: Operations and Algebraic Thinking

Duration: 32 Day(s)

Unit Overview

Students will understand addition and subtraction, use addition and subtraction strategies, and work with equal groups.

Materials and Resources

Envision math series topics 1-4 teacher's guides, located in classrooms. Student work pages to be ordered each year. Math center activity books and manipulatives, located in classrooms. Online/cd resources available.

Academic Vocabulary

Part, whole, add, sum, addition sentence, plus, equals, join, subtract, difference, subtraction sentence, minus, separate, more, fewer, related, fact family

Doubles, near doubles, addend, number sentence

Array

Summative Assessment

End of topic tests.

Topic: 1: Understanding Addition and Subtraction

Duration: 9 Day(s)

Topic Overview

Students will
*Understand and write number sentences
*Understand and write stories about joining, separating and comparing
*Connect addition and subtraction
*Problem solve using objects

Learning Targets

Writing addition number sentences
Children will join two groups and write addition number sentences to tell how many in all.

Stories about joining
Children will model joining stories and write an addition number sentence.

Writing subtraction number sentences
Children will solve problems by writing subtraction number sentences.

Stories about separating
Children will write subtraction sentences to solve stories about seperating groups.

Stories about comparing
Children will write subtraction sentences to solve stories about comparing groups.

Connecting addition and subtraction
Children will write related addition and subtraction facts.

Problem solving: use objects
Children will use counters to model and solve addition and subtraction problems.

Topic: 2: Addition Strategies	**Duration:** 9 Day(s)

Topic Overview
Students will
* Add 0, 1, 2
* Add doubles and near doubles
* Add in any order
* Add three numbers
* Make 10 to add
* Problem Solve by drawing a picture and writing a number sentence

Learning Targets
Adding 0,1, 2
    Children master addition facts involving 0, 1, 2.

Doubles
    Children master addition facts in which both addends are the same.

Near Doubles
    Children master addition facts where the addends are one apart.

Adding in any order
    Children will use the communitve property to find sums.

Adding three numbers
    Children find the sum of three addends using any order.

Making 10 to add
    Children will find sums by making ten when adding.

Problem solving: Draw a picture and write a number sentence
    Children will draw a picture and write a number sentence to solve the story problem.

Topic: 3: Subtraction Strategies	**Duration:** 8 Day(s)

Topic Overview
Students will
* Subtract 0,1,2
* Think of addition to subtract doubles
* Think addition to 10 to subtract
* Think addition to 18 to subtract
* Make 10 to subtract
* Problem solve using two-question problems

Learning Targets
Subtracting 0, 1, 2
    Children will subtract 0, 1, 2 from a number by applying the concepts of zero less than, one less than, and two less than a number.

Thinking addition to subtract doubles
    Children will use addition doubles facts to subtract.

Thinking addition to ten to subtract
Children will find differences by using related addition facts to ten.

Thinking addition to 18 to subtract
Children will find diferences by using related addition facts to 18.

Making 10 to subtract
Children will use the make ten strategy to subtract.

Problem solving: two question problems
Children will solve two question problems by using the answer to the first question to answer the second question.

Topic: 4: Working with Equal Groups	**Duration:** 6 Day(s)

Topic Overview
Students will
* Solve repeated addition problems
* Build Arrays
* Practice repeated addition
* Problem solve by drawing a picture and writing a number sentence

Learning Targets
Repeated Addition
Children model repeated addition to write number sentences.

Building Arrays
Children build arrays to model repeated addition situations.

Practicing Repeated Addition
Children will use repeated addition to solve problems.

Problem Solving: Draw a picture and write a number sentence
Children will draw pictures and write number sentences to solve addition problems.

Unit: Number and Operations in Base Ten	**Duration:** 68 Day(s)

Unit Overview
Students will understand place value to 100, use mental addition and subtraction, add and subtract two-digit numbers, understand place value to 1,000, and solve three-digit addition and subtraction problems.

Materials and Resources
Envision math series teacher's guide 5-11, located in classrooms. Math center activity kits and manipulatives, located in classrooms. Student work pages, to be ordered each year.

Academic Vocabulary
Digits, number word, greater than, less than, equal to, before, after, even, odd

Mental math, tens digit, next ten

Regroup, number line

Hundreds, thousand, expanded form, standard form, compare, order

Summative Assessment
End of topic tests.

Topic: 5: Place Value to 100	**Duration:** 9 Day(s)

Topic Overview
Students will
* Make models for tens and ones
* Read and write numbers
* Use symbols to compare numbers
* Count to 100
* Understand 10 more and 10 less
* Understand odd and even numbers
* Problem solve using data from a chart

Learning Targets
Models for Tens and Ones
Children will group objects into tens and ones to show two-digit numbers.

Reading and Writing Numbers
Children will read and write number words for numbers 0-99.

Using Symbols to Compare Numbers
Children will compare two-digit numbers using symbols.

Counting to 100
Children will identify and write numbers that are one before and one after given numbers. They will also count on and count back to identify missing numbers to 100.

10 More or 10 Less
Children will identify and write numbers that are 10 more and 10 less than given numbers.

Even and Odd Numbers
Children will learn to identify even and odd numbers.

Problem Solving: Use Data from a Chart
Children will use data from a chart to solve problems.

Topic: 6: Mental Addition

Duration: 8 Day(s)

Topic Overview
Students will
* Add tens
* Add ones
* Add tens and ones
* Add on a hundreds chart
* Add multiples of 10
* Problem Solve by looking for a pattern

Learning Targets

Adding tens
Children will mentally add multiples of 10 to a two-digit number.

Adding ones
Children will mentally add a two-digit number and a one-digit number.

Adding tens and ones
Children will add a two-digit number using mental math.

Adding on a Hundred Chart
Children will use a hundred chart to add 2 two-digit numbers.

Adding multiples of 10
Children will add using multiples of 10.

Problem Solving: Look for a pattern
Children will use number patterns to solve problems.

Topic: 7: Mental Subtraction

Duration: 7 Day(s)

Topic Overview
Students will
* Subtract Tens
* Find parts of 100
* Subtract on a hundred chart
* Subtract multiples of 10
* Problem Solve by finding missing or extra information

Learning Targets

Subtracting Tens
Children will subtract multiples of 10 from two-digit numbers using mental math.

Finding Parts of 100
Children will find the missing part of 100 by counting up from the given part.

Subtracting on a Hundred Chart
Children will find the difference between two-digit numbers less than 100.

Subtracting Multiples of 10
Students will subtract using multiples of 10.

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Problem Solving: Missing or Extra Information
Children will determine whether they can solve problems with missing information or extra tinformation.

Topic: 8: Add Two-Digit Numbers	**Duration:** 11 Day(s)

Topic Overview
Students will
* Regroup 10 ones for 1 ten
* Model to add two- and one-digit numbers
* Add two- and one-digit numbers
* Model to add two-digit numbers
* Add two-digit numbers
* Add on a number line
* Add more than two numbers
* Understand ways to add
* Problem solve by drawing a picture and writing a number sentence

Learning Targets

Regrouping 10 Ones for 1 Ten
Children will use models to add a one-digit number to a two-digit number.

Models to Add Two- and One-Digit Numbers
Children will use concrete models to add a one-digit number to a two-digit number and decide if regrouping is needed.

Adding Two- and One-Digit Numbers
Children will add a one-digit number to a two-digit number, regroup if necessary, and record the process in a vertical addition frame.

Models to Add Two-Digit Numbers
Children will use place-value models and the standard algorithm to add 2 two-digit numbers.

Adding Two-Digit Numbers
Children will use the standard algorithm symbolically to add two-digit numbers, with and without regrouping.

Adding on a Number Line
Children will use number lines to model two-digit addition.

Adding More than Two Numbers
Children will use paper and pencil to add 3 and 4 two-digit numbers.

Ways to Add
Children will use different methods to help them solve addition problems.

Problem Solving: Draw a Picture and Write a Number Sentence
Children will draw pictures and write number sentences to solve addition problems.

Topic: 9: Subtracting Two-Digit Numbers	**Duration:** 11 Day(s)

Topic Overview
Students will
* Regroup 1 ten for 10 ones
* Model to subtract two-and one-digit numbers
* Subtract two- and one-digit numbers
* Model to subtract two-digit numbers
* Subtract two-digit numbers
* Subtract on a number line
* Use addition to check subtraction
* Use different ways to subtract
* Problem Solve using two-question problems

Learning Targets

Regrouping 1 ten for 10 ones
Children will regroup 1 ten as 10 ones when subtracting.

Model to subtract two-and one-digit numbers
Children will use models to subtract a one-digit number from a two-digit number with or without regrouping.

Subtracting two- and one-digit numbers
Children will subtract a one-digit number from a two-digit number with and without regrouping using the standard algorithm.

Models to subtract two-digit numbers
Children will use models to subtract two-digit numbers, with and without regrouping.

Course Summary
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Subtracting two-digit numbers
Children will use the standard subtraction algorithm to subtract a two-digit number from another two-digit number.

Subtracting on a number line
Children will use number lines to model two-digit subtraction.

Using addition to check subtraction
Children will relate addition to subtraction by using one operation to check the other.

Ways to Subtract
Children will use different methods to solve two-digit subtraction problems.

Problem solving: Two-question problems
Children will solve two-question problems. They will select the operation to solve each question.

Topic: 10: Place Value to 1,000 **Duration:** 11 Day(s)

Topic Overview
Students will
* Build 1,000
* Count hundreds, tens, and ones
* Read and write numbers to 1,000
* Change numbers by hundreds and tens
* Understand patterns with numbers on a hundreds chart
* Skip count by 5, 10, 100, 1,000
* Compare Numbers
* Order Numbers
* Problem solve by looking for a pattern

Learning Targets
Building 1,000
　Children will count by hundreds to 1,000.

Counting hundreds, tens and ones
　Children will use place-value models to show numbers up to 1,000.

Reading and writing numbers to 1,000
　Children will identify and record three-digit numbers in expanded form, standard form, and number word form.

Changing numbers by hundreds and tens
　Children will add and subtract multiples of 10 or 100 to and from a three-digit number without regrouping.

Patterns with numbers on hundreds charts
　Children will find, identify, and apply number patterns to numbers on a hundred chart.

Skip counting by 5, 10, 100 to 1,000
　Children will skp count by different amounts on the number line and use the patterns to identify the numbers that come next.

Comparing numbers
　Children will compare three-digit numbers using the symbols <,=,>.

Ordering numbers
　Children will order 3 three-digit numbers from least to greatest and greatest to least.

Problem solving: Look for a Pattern
　Children solve problems by finding number patterns.

Topic: 11: Three-Digit Addition and Subtraction **Duration:** 11 Day(s)

Topic Overview
Students will:
* Explore adding three-digit numbers
* Use mental math
* Make models for adding three-digit numbers
* Add three-digit numbers
* Explore subtracting three-digit numbers
* Use mental math to find missing parts
* Make models for subtracting three-digit numbers
* Subtract three-digit numbers
* Problem Solve using logical reasoning

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Learning Targets

Exploring Adding Three-Digit Numbers
Children will explore different strategies for adding three-digit numbers.

Mental Math
Children will add three-digit numbers mentally without regrouping.

Models for Adding with Three-Digit Numbers
Children will use place-value blocks to add 2 three-digit numbers with regrouping.

Adding Three-Digit Numbers
Children will use paper and pencil to add 2 three-digit numbers with regrouping.

Exploring Subtracting Three-Digit Numbers
Children will explore different strategies to subtract three-digit numbers.

Mental Math: Ways to Find Missing Parts
Children will be given a quantity and one of its parts, and then will find the missing part by counting on or counting back.

Models for Subtracting with Three-Digit Numbers
Children will use models to subtract three-digit numbers with regrouping.

Subtracting Three-Digit Numbers
Children will subtract three-digit numbers using a standard algorithm.

Problem Solving: Use Logical Reasoning
Children will use logical reasoning to solve problems.

Unit: Geometry

Duration: 10 Day(s)

Unit Overview
Students will describe and analyze solid and plane shapes using geometry.

Materials and Resources
Envision math series teacher's guide 12, located in classrooms. Math center activity kits and manipulatives, located in classrooms. Student work pages, to be ordered each year.

Academic Vocabulary
Sphere, pyramid, cylinder, cone, cube, rectangular prism, solid figure, flat surface, face, edge, vertex (vertices)

Plane shapes, circle, square, triangle, rectangle, polygon

Angle, side, quadrilateral, pentagon, hexagon

Trapezoid, parallelogram

Rows, columns

Summative Assessment
End of unit test

Topic: 12: Geometry

Duration: 10 Day(s)

Topic Overview
Students will
* Understand flat surfaces, vertices, and edges
* Relate plane shapes to solid figures
* Understand polygons and angles
* Make new shapes
* Cut shapes apart
* Divide rectangles into equal squares
* Problem Solve using reasoning

Learning Targets

Flat Surfaces, Vertices, and Edges
Children will identify solid figures by their faces or flat surfaces, edges, and vertices.

Relating Plane Shapes to Solid Figures
Children will identify the plane shapes that form the flat surfaces of solid figures.

Polygons and Angles
Children will identify and draw polygons (triangles, quadrilaterals, pentagons, and hexagons) and list their attributes.

Making New Shapes

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Children will recognize and name trapezoids, parallelograms, and hexagons, put shapes together to make new shapes, and identify the number of sides and vertices in each shape.

Cutting Shapes Apart
Children will cut shapes apart to make new shapes.

Dividing Rectangles into Equal Squares
Children will divide rectangles into equal squares and count how many squares are needed to completely partition the rectangle.

Whole and Equal Parts
Children will determine whether a shape has been divided into equal or unequal parts. If the parts are equal, children will count the number of parts.

Problem Solving: Use Reasoning
Children will use clues to solve riddles about plane shapes and solid figures.

Unit: Measurement and Data

Duration: 32 Day(s)

Unit Overview
Students will identify coins; count money; add, subtract, and estimate sums and differences with money; measure length; and use time, graphs and data.

Materials and Resources
Envision math series teacher's guide 13-16, located in classrooms. Math center activity kits and manipulatives, located in classrooms. Student work pages, to be ordered each year.

Academic Vocabulary
Half dollar, quarter, dime, nickel, penny, coins, cents

Greatest value, least value

Dollar bill, dollar coin, dollar sign, decimal point

Tally mark

Estimate

Unit, length, inch (in.), width, height, nearest inch

Centimeter (cm), nearest centimeter

Feet (ft.), yard (yd)

Minute hand, minute, hour hand, hour, half hour, A.M., P.M.

Quarter past, half past, quarter to

Bar graph, data

Line plot

Symbol, pictograph

Summative Assessment
End of unit tests

Topic: 13: Counting Money

Duration: 7 Day(s)

Topic Overview
Students will
* Identify coins and their values
* Count collections of coins
* Write ways to show the same amount
* Write amounts greater than one dollar using dollar sign and decimal
* Problem Solve by making an organized list

Learning Targets
Coins
Children will identify the value of a group of half-dollars, quarter, dimes, nickels, and pennies.

Counting Collections of Coins
Children will count collections of coins that include half-dollars, quarters, dimes, nickels, and pennies.

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Ways to Show the Same Amount
Children will show the same amount of money using diefferent sets of coins.

One Dollar
Children will count money amounts greater than one dollar and write the amount with a dollar sign and a decimal point.

Problem Solvng: Make an Ogranized List
Children will make an organized list to find different combinations of coins.

Topic: 14: Money	**Duration:** 6 Day(s)

Topic Overview
Students will:
* Add money
* Subtract money
* Estimate sums and differences
* Problem solve by trying, checking, and revising

Learning Targets
Adding Money
Children will complete and record addition problems using two-digit coin amounts.

Subtracting Money
Children will subtract using two-digit coin amounts.

Estimating Sums and Differences
Children will estimate the sum and differences of 2 two-digit numbers.

Problem Solving: Try, Check, and Revise
Children will solve problems involving adding and subtracting money by using hte try, check, and revise strategy.

Topic: 15: Measuring Length	**Duration:** 11 Day(s)

Topic Overview
Students will:
* Explore length with nonstandard units
* Estimate and measure with inches
* Estimate and measure with centimeters
* Measure length with inch, foot, and yard
* Add and subtract in measurement
* Compare lengths
* Problem solve using objects

Learning Targets
Exploring Length
Children will measure the lengths of ojbects using nonstandard units.

Inches
Children will estimate and measure items using inches.

Centimeters
Children will estimate and measure length and height using centimeters.

Inches, Feet, and Yards
Children will estimate and measure items that are about an inch, foot, and yard.

Centimeters and Meters
Children will estimate and measure the lengths and heights of objects in centimeters and meters.

Measuring Length
Children will estimate and measure the lengths and heights of objects using different units.

Adding and Subtracting in Measurement
Children will use addition and subtraction to solve measurement problems.

Comparing Lengths
Children will measure to compare length and express the length difference in a standard length unit.

Problem Solving: Use Ojbects
Children will use string and rulers to measure to the nearest inch the length of paths that are not straight.

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Grade(s) 2nd, Duration 1 Year
Required Course

| **Topic:** 16: Time, Graphs, and Data | **Duration:** 8 Day(s) |

Topic Overview
Students will:
* Tell time to five minutes
* Tell time before and after the hour
* Organize data
* Graph lengths
* Make and use a pictograph to solve problems
* Problem solve using a graph

Learning Targets

Telling Time to Five Minutes
Children will learn to associate numerals on an analog clock face with increments of five minutes.

Telling Time Before and After the Hour
Children will read and express time in terms of quarter and half past an hour and before an hour.

Organizing Data
Children will represent a set of data in a tally chart and in a bar graph.

Graphing Lengths
Children will use rulers to measure objects and graph the results.

Pictographs
Children will make and use a pictograph to solve problems.

Problem Solving: Use a Graph
Children will use picture graphs and bar graphs to solve problems.