Mathematics (1)

Mathematics

Grade(s) 1st, Duration 1 Year
Required Course

Course Overview

Mathematics (grade 1) courses typically help 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 and to make calculation predictions.

First grade mathematics has several important Big Ideas:

**Number uses, classification, and representation- Numbers can be used for different purposes, and numbers can be classified and represented in different ways.

**Numbers and the number line- The set of real numbers is infinite and ordered. Whole numbers, integers, and fractions are real numbers. Each real number can be associated with a unique point on the number line.

**The Base-Ten Numeration system- The base-ten numeration system is a scheme for recording numbers using digits 0-9, groups of 10, and place value.

**Equivalence- Any number, measurement, numerical expression, or equation can be represented in an infinite number of ways that have the same value.

**Comparison and relationships- Numbers, expressions, measures, and objects, can be compared and related to other numbers, expressions, measures, and objects in different ways.

**Operation meanings and relationships- there are multiple interpretations of addition, subtraction, multiplication, and division of rational numbers, and each operation is related to other operations.

**Patterns, relations, and functions- Relationships can be described and generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways. For some relationships, mathematical expressions and equations can be used to describe how members of one set are related to members of a second set.

**Geometric figures- Two- and three- dimensional objects with or without curved surfaces can be described, classified, and analyzed by their attributes. An object's location in space can be described quantitatively.

**Data collection and representation- Some questions can be answered by collecting and analyzing data, and the question to be answered determines the data that needs to be collected and how best to collect the data. Data can be represented visually using tables, charts, and graphs. the type of data determines the best choice of visual representation.

**Practice, Processes, and Proficiencies- Mathematics content and practices can be applied to solve problems.

Scope And Sequence

Timeframe	Unit	Instructional Topics
56 Day(s)	Operations and Algebraic Thinking **Developing understanding of addition, subtraction, and strategies for addition and subtraction within 20.	1. Understanding Addition 2. Understanding Subtraction 3. Five and Ten Relationships 4. Addition and Subtraction Facts to 12 5. Addition Facts to 20 6. Subtraction Facts to 20
44 Day(s)	Number and Operations in Base Ten ** Developing understanding of whole number relationships and place value, including grouping in tens and ones.	1. Counting and Number Patterns to 120 2. Tens and Ones 3. Comparing and Ordering Numbers to 100 4. Adding with Tens and Ones 5. Subtracting with Tens and Ones
26 Day(s)	Measurement and Data **Developing understanding of linear measurement and measuring lengths as iterating length units.	1. Length 2. Time 3. Using Data to Answer Questions
20 Day(s)	Geometry **Reasoning about attributes of, and composing and decomposing geometric shapes.	1. Geometry 2. Fractions of Shapes

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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, mini-whiteboards.

Prerequisites

Successful completion of Kindergarten math.

Course Details

Unit: Operations and Algebraic Thinking
**Developing understanding of addition, subtraction, and strategies for addition and subtraction within 20.

Duration: 56 Day(s)

Unit Overview

Represent and solve problems involving addition and subtraction.

Materials and Resources

Envision materials
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, mini-whiteboards.

Academic Vocabulary

topic 1-in all, inside, outside, part, whole, double, plus, add, sum addition sentence, equals,order, addend, join
topic 2 -missing part, subtract,difference,subtraction sentence, minus sign, equal sign,take away,compare, same amount
topic 4- near double, 2 less, 1 less, 0 less,
topic 5- doubles plus 1, doubles plus2,
topic 6- related facts, fact family,

Summative Assessment

Envision Topic Tests

Topic: Understanding Addition

Duration: 13 Day(s)

Topic Overview

Understand addition as putting together and adding to.
*Spatial patterns for numbers to 10
*Sums of 6-9
*Addition expressions and number sentences
*Story Problems
*Commutative property

Learning Targets

Spatial Patterns for Numbers to 10
Children will recognize two-part spatial patterns of numbers.

Making 6 and 7
Recognize parts of a number as a strategy for addition.

Making 8
Children will recognize parts of the number 8.

Making 9
Children will recognize parts of the number 9.

Introducing Addition Expressions and Number Sentences
Children will write addition expressions and number sentences to find the whole, given two parts.

Stories about Joining
Children write addition sentences to solve stories about joining.

Adding in any Order
Children will learn to add in any order.

Problem Solving: Use Objects
Children will use objects to solve story problems.

Topic: Understanding Subtraction

Duration: 14 Day(s)

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Topic Overview
  *Finding missing parts of 6-9
  *Subtraction number sentences and expression
  *Subtraction story problems
  *Connecting addition and subtraction
  *Connecting models and symbols

Learning Targets

Find missing parts of 6 and 7.
  Children will solve problems by finding the missing part.

Find missing parts of 8.
  Children will find a missing part of 8 when one part is known.

Find missing parts of 9.
  Children will use subtraction to find the missing part of 9 when one part is known.

Introducing subtraction expressions and number sentences.
  Children will write and solve subtraction number sentences.

Stories about taking away
  Children will tell and acto out stories about taking away to find how many are left.

Stories about comparing
  Children will tell and act out comparing stories to find how two groups are diferent.

Stories about missing parts.
  Children will find missing part when one part and the whole are given.

All kinds of subtraction stories.
  Children will write subtraction sentences to represent different kinds of subtraction stories.

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

Connecting models and symbols
  Children will write and identify different subtraction sentences that are true for the same model.

Problem solving : Act it Out
  Children will use counters to act out and solve subtraction story problems.

Topic: Five and Ten Relationships | **Duration:** 8 Day(s)

Topic Overview
  *Representing and recognizing numbers on a ten-frame
  *Recognizing parts of 10 and finding missing parts of 10
  *Making a table

Learning Targets

Representing Numbers on a Ten-Frame
  Children will use counters and a ten-frame to model numbers up to 10.

Recognizing Numbers on a Ten-Frame
  Children will learn to recognize numbers on a ten-frame, noting the relationships of those numbers to 5 and 10.

Parts of 10
  Children will show 10 as two parts.

Finding missing Parts of 10
  Children will use counters and a part-part-whole mat to find missing parts of 10.

Problem Solving: Make a Table
  Children will make tables to solve problems.

Topic: Addition and Subtraction Facts to 12 | **Duration:** 13 Day(s)

Topic Overview
  *Adding and subtracting with 0, 1, 2
  *Adding with doubles and doubles plus 1
  *Making 5 and 10 on a ten frame
  *Thinking addition and subtraction 8-12

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Learning Targets

Adding with 0, 1, 2
Children will count on to add, starting with the greater number.

Doubles
Children will recognize doubles as a strategy for remembering sums.

Near Doubles
Children will use doubles facts to learn near doubles facts.

Facts with 5 on a Ten-Frame
Children will use a ten-frame to write addition facts with 5.

Making 10 on a Ten-Frame
Children will use two ten frames to model addition facts.

Subtracting with 0, 1, 2
Children will master concepts of 0 less than, 1 less than, and 2 less than when subtracting 0,1, or 2.

Thinking Addition
Children will learn to use doubles addition facts to master related subtraction facts.

Thinking Addition to 8 to Subtract
Children will understand how addition facts to 8 relate to subtraction facts to 8.

Thinking Addition to 12 to Subtract
Children will write related addition and subtraction facts to 12.

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

Topic: Addition Facts to 20   **Duration:** 12 Day(s)

Topic Overview
*Addition doubles, +1, and +2
*Making 10 to add 9 and 8
*Adding 3 numbers

Learning Targets

Doubles
Children will recognize the doubles relationship and use it as a strategy for remembering addition facts with two like addends.

Doubles plus 1
Children will master additon facts where the addends are 1 apart.

Doubles plus 2
Children will master addition facts where the addends are 2 apart.

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

Making 10 to add.
Children will master addition facts where one addend is close to 10.

Making 10 to add 9
Children will master addition facts where one addend is 9.

Making 10 to add 8.
Children will master addition facts where one addend is 8.

Adding three numbers.
Children will use the associative and commutative properties to add three numbers.

Word Problems with three addends.
Children will solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20.

Topic: Subtraction Facts to 20   **Duration:** 10 Day(s)

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Topic Overview
  *Making 10 to subtract
  *Using related facts
  *Fact families
  *Use addition to subtract
  *Subtraction facts

Learning Targets
  Making 10 to Subtract
    Children will make 10 to subtract.

  More with Making 10 to Subtract
    Children will make 10 to solve subtraction story problems.

  Using Related Facts
    Find subtraction facts to 18 and learn the relationship between addition and subtraction.

  Fact Families
    Use a part-part-whole model to find the subtraction facts and addition facts in a fact family.

  Using Addition to Subtract
    Use a related addition fact to find the missing part in a subtraction problem.

  Subtraction Facts
    Use related addition facts to solve subtraction problems.

  Problem Solving: Draw a Picture and Write a Number Sentence
    Draw Pictures and write number sentences to solve addition and subtraction story problems.

Unit: Number and Operations in Base Ten
  ** Developing understanding of whole number relationships and place value, including grouping in tens and ones.

Duration: 44 Day(s)

Unit Overview
  Extend the counting sequence.

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, mini-whiteboards.

Academic Vocabulary
  Topic 7- digit, row, column, skip count
  Topic 8- tens, ones, digit, break apart a ten
  Topic 9- 1 more, 1 less, 10 more, 10 less, equal to, less than, greater than
  Topic 10- regroup
  Topic 11- regroup

Summative Assessment
  Envision Topic Tests

Topic: Counting and Number Patterns to 120

Duration: 9 Day(s)

Topic Overview
  *Making and using numbers 11-19
  *Counting by 10's to 120
  *Counting on a hundreds chart
  *Skip Counting

Learning Targets
  Making numbers 11-19
    Children will read, count, and write numbers 11-19.

  Using Numbers 11-19
    Children will show numbers 11-19 as 1 or 2 more or fewer than another number.

  Counting by 10's to 120
    Children will count groups of 10, up to 12 tens, and write how many.

  counting on a hundred chart
    Children will count on a hundred chart.

  Using Skip counting

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Required Course

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Children will skip count to find the total number of items arranged in sets of 2s, 5s, and 10s.

Problem Solving : Look for a pattern

Children will solve problems by finding patterns in a table of related number parts.

Topic: Tens and Ones | **Duration:** 9 Day(s)

Topic Overview
*Counting 10's with leftovers
*Numbers made with 10's
*Tens and Ones
*Expanded form
*Ways to make numbers

Learning Targets
Counting with Groups of 10 and Leftovers
  Children will read and write two-digit numbers as groups of 10 and some left over.

Numbers Made with Tens
  Children will count groups of 10, up to 10 tens, and write how many.

Tens and Ones
  Children will use groups of tens and ones to show and write a given two-digit number.

Expanded Form
  Children will model a two-digit number and write its expanded form.

Ways to Make Numbers
  Children will break apart a ten to make 10 ones and write new representations in expanded form.

Problem Solving: Make an Organized List
  Children will use groups of tens and ones to show and write a given two-digit number.

Topic: Comparing and Ordering Numbers to 100 | **Duration:** 8 Day(s)

Topic Overview
*1 more, 1 less; 10 more, 10 less
*Making numbers on a hundred chart
*Comparing numbers using <, >, =
*Ordering three numbers

Learning Targets
1 more, 1 less, 10 more, 10 less
  Children will write the numbers that are 1 more or 1 less and 10 more or 10 less than a two-digit number.

Making numbers on a hundred chart.
  Children will use a hundred chart to show the relationships of 1 more thatn, 1 less than, 10 more than, and 10 less than a given number.

Comparing numbers with >, <, =
  Children will compare two-digit numbers using symbols.

Ordering three numbers
  Children will order numbers from least to greatest, given 3 two-digit numbers.

Problem Solving: Make an Organized List
  Children will make an organized list showing possible solutions.

Topic: Adding with Tens and Ones | **Duration:** 9 Day(s)

Topic Overview
*Adding groups of 10
*Adding 10's on a hundreds chart and to 2 digit numbers
*Mental math to add 10's
*Adding 2 digit numbers

Learning Targets
Adding Groups of 10
  Children will add two multiples of 10 for sums to 100.

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Adding Tens on a Hundred Chart
Children will use a hundred chart to add multiples of 10 to two-digit numbers.

Adding Tens to Two-Digit Numbers
Children will add a multiple of 10 to a two-digit number.

Using Mental math to Add Tens
Children will add two-digit numbers and multiples of ten mentally.

Adding to a Two-Digit Number
Children will add one-digit numbers to two-digit numbers with and without regrouping and record the sum in horizontal form.

Problem Solving: Draw a Picture and Write a Number Sentence
Children will solve problems by drawing pictures and writing number sentences.

Topic: Subtracting with Tens and Ones	**Duration:** 9 Day(s)

Topic Overview
*Subtracting groups of 10
*Subtracting 10's on a hundreds chart
*Subtracting tens from 2 digit numbers
*Use mental math to subtract tens
*Subtracting from a 2 digit number

Learning Targets
Subtracting groups of 10.
Children will subtract 10 from multiples of 10 in the range 10-90.

Subtracting tens on a hundred chart
Children will use a hundred chart to subtract multiples of 10 from two-digit numbers.

Subtracting tens from two-digit numbers
Children will subtract a multiple of 10 from a two-digit number.

Using mental math to subtact tens.
Children will subtract multiples of 10 from two-digit numbers using mental math.

Subtracting from a two-digit number
Children will subtract one-digit numbers from two-digit numbers with and without regrouping and record the difference in horizontal form.

Problem solving: draw a picture and write a number sentence
Children will draw a picture and write a number sentence to solve subtraction story problems.

Unit: Measurement and Data	**Duration:** 26 Day(s)
Developing understanding of linear measurement and measuring lengths as iterating length units.	

Unit Overview
Measure lengths indirectly and by iterating length units.

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, mini-whiteboards.

Academic Vocabulary
Topic 12- longest, shortest, taller, shorter, estimate, measure
Topic 13- hour hand, hour, minute hand, minute, o'clock, half hour, schedule
Topic 14- picture graph, bar graph, data, tally mark

Summative Assessment
Envision Topic Tests

Topic: Length	**Duration:** 9 Day(s)

Topic Overview
*Comparing and ordering by length
*Indirect measurement
*Measuring using units
*Measuring using different units

Learning Targets

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Comparing and Ordering by Length
  Children will compare and order lengths of objects.

Indirect Measurement
  Children will indirectly compare objects by length.

Using Units to Estimate and Measure Length
  Children will estimate, measure, and compare lengths of objects by using a nonstandard unit.

More Measuring Length
  Children will use connecting cubes as nonstandard units to measure and compare the lengths and heights of objects.

Problem Solving: Use Reasoning
  Children will use nonstandard units to measure the lenght of different objects.

Measuring Using Different Units
  Children will estimate and measure the lengths of objects in different units.

Topic: Time	**Duration:** 7 Day(s)

Topic Overview
  *Understanding hour and minute hands
  *Telling and writing time to the hour and half hour

Learning Targets
  Understanding the Hour and Minute Hands
    Children will identify the hour and minute hands on a clock and tell time to the hour.

  Telling and Writing Time to the Hour
    Children will tell and write time to the hour using digital and analog clocks.

  Telling and Writing Time to the Half Hour
    Children will show and tell time to the half hour.

  Problem Solving: Use Data from a Table
    Children will read and use a schedule.

Topic: Using Data to Answer Questions	**Duration:** 10 Day(s)

Topic Overview
  *Use data from real graphs, picture graphs, and bar graphs
  *Collecting data using tally marks
  *Making real graphs, and picture graphs

Learning Targets
  Using data from real graphs
    Children will use a real-object graph to answer questions and draw conclusions.

  Using data from picture graphs
    Children will use a picture graph to answer questions and draw conclusions.

  Using data from bar graphs
    Children will use a bar graph to answer questions and draw conclusions.

  Collecting data using tally marks.
    Children will record data using tally marks.

  Making real graphs
    Children will collect a set of data and organize it in a real graph.

  Making picture graphs
    Children will organize and analyze data using a picture graph.

  Problem solving : Make a graph
    Use data in a table to complete a bar graph.

Unit: Geometry	**Duration:** 20 Day(s)
**Reasoning about attributes of, and composing and decomposing geometric shapes.	

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Unit Overview
Reason with shapes and their attributes.

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, mini-whiteboards.

Academic Vocabulary
Topic 15- plane shapes, hexagon, trapezoid, sort, side, corner, solid figure, cube, rectangular prism, sphere, cylinder, cone, flat surface, vertex (vertices), pyramid
Topic 16- equal parts, halves, fourths, quarters, half of, fourth of, two of, four of

Summative Assessment
Envision Topic Tests

Topic: Geometry	**Duration:** 13 Day(s)

Topic Overview
*Identifying properties of plane shapes
*Building with shapes and making new shapes
*Identify, sort, and build with solid figures
*Flat surfaces and vertices

Learning Targets
Identifying Plane Shapes
    Children will identify and name standard plane shapes and recognize them in the environment.

Problem Solving: Make an Organized List
    Children will make organized lists to solve problems.

Properties of Plane Shapes
    Children will sort plane shapes and identify their properties.

Building with Shapes
    Children will combine plane shapes to make different pictures.

Making New Shapes from Shapes
    Children will combine two-dimensional geometric shapes to make new two-dimensional geometric shapes.

Identifying Solid Figures
    Children will identify and name standard geometric solids and recognize them in the environment.

Flat Surfaces and Vertices
    Children will count the number of flat surfaces and vertices on geometric solids.

Sorting Solid Figures
    Children will identify geometric solids (sphere, cone, cylinder, rectangular prism, and cube), and sort by various attributes.

Building with Solid Figures
    Children will combine solid figures to make new solid figures.

Problem Solving: Use Reasoning
    Children will identify defining and non-defining attributes of plane shapes and solid figures.

Topic: Fractions of Shapes	**Duration:** 7 Day(s)

Topic Overview
*Making equal parts
*Describe equal parts of whole objects
*Making halves and fourths of rectangles and circles

Learning Targets
Making equal parts
    Children will determine whether a shape is divided into equal or unequal parts.

Describing equal parts of whole objects
    Children will describe equal parts of a shape.

Making halves and fourths of rectangles and circles
    Children will identify halves and fourths of circles and rectangles.

Problem solving : Draw a Picture
    Children will draw pictures to solve problems related to parts of a whole.

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