Content Scope & Sequence

SCOTT FORESMAN
Investigations
IN NUMBER, DATA, AND SPACE®

How Many Of Each? (Addition, Subtraction, and the Number System 1)

Mathematical Emphases

❶ **Counting and Quantity** Developing strategies for accurately counting a set of objects by ones
Math Focus Points
- Counting a set of up to 20 objects by ones
- Practicing the rote counting sequence forward and backward, from 1 to 30
- Connecting number names and written numbers to the quantities they represent
- Developing and analyzing visual images for quantities up to 10

❷ **Counting and Quantity** Developing an understanding of the magnitude and position of numbers
Math Focus Points
- Ordering a set of numbers and quantities up to 12
- Comparing two quantities up to 20 to see which is larger
- Developing an understanding of how the quantities in the counting sequence are related: each number is 1 more or 1 less than the number before or after it

❸ **Number Composition** Composing numbers up to 10 with 2 addends
Math Focus Points
- Finding and exploring relationships among combinations of numbers up to 10
- Recording combinations of two numbers that make a certain total
- Solving a problem with multiple solutions
- Solving a problem in which the total and one part are known

❹ **Whole-Number Operations** Making sense of and developing strategies to solve addition problems with small numbers
Math Focus Points
- Visualizing and retelling the action in an addition situation
- Modeling the action of an addition problem with counters or drawings
- Finding the total of two or more quantities up to a total of 20 by counting all, counting on, or using number combinations
- Seeing that adding the same two numbers (e.g., 4 and 3) results in the same total, regardless of context (e.g., number cubes, cards, objects)

❺ **Whole-Number Operations** Using manipulatives, drawings, tools, and notation to show strategies and solutions
Math Focus Points
- Using the number line as a tool for counting
- Introducing standard notation for comparing quantities (greater than, less than, and equal to)
- Introducing and using standard notation (1 and 5) to represent addition situations
- Recording a solution to a problem
- Representing number combinations with numbers, pictures, and/or words

This Unit also focuses on
- Exploring the characteristics of cubes, pattern blocks, Geoblocks, and Power Polygons

Classroom Routines focus on
- Developing strategies for counting accurately
- Using the calendar as a tool for keeping track of time
- Developing vocabulary to talk about time (morning, noon, midday, afternoon, etc.) and sequence (first, next, last, before, after, and so on)
- Collecting and recording data
- Estimating quantities up to about 30
- Adding or subtracting small amounts to/from a familiar number
- Connecting written numbers and number names
- Using the number line as a tool for counting
- Practicing the rote counting sequence forward and backward
- Developing and analyzing visual images for quantities up to 10
- Recreating an arrangement of objects
- Finding the total of two or more single-digit quantities

Assessed Benchmarks

- Count a set of up to 20 objects
- Compare and order quantities up to 12
- Combine two small quantities
- Interpret (retell the action and sequence) and solve addition story problems
- Find more than one combination of two addends for a number up to 10 (e.g., 7 is 4 and 3 and is also 5 and 2)

Making Shapes and Designing Quilts (2-D Geometry)

Mathematical Emphases

❶ Features of Shape Describing, identifying, and comparing 2-D shapes
Math Focus Points
- Noticing shapes in the environment
- Describing, comparing, and naming 2-D shapes
- Developing visual images of and language for describing 2-D shapes
- Identifying common attributes of a group of shapes
- Identifying characteristics of triangles and quadrilaterals
- Identifying and making triangles and quadrilaterals of different shapes and sizes
- Recognizing that there are many types of quadrilaterals (e.g., rectangles, trapezoids, squares, rhombi)

❷ Features of Shape Composing and decomposing 2-D shapes
Math Focus Points
- Covering a region without gaps or overlaps using multiple shapes
- Decomposing shapes in different ways
- Finding different combinations of shapes that fill the same area
- Examining how shapes can be combined to make other shapes
- Altering designs to use more or fewer pieces to cover the same space
- Seeing relationships between squares and triangles

This Unit also focuses on
- Counting a set of objects
- Finding the sum of multiple addends
- Using a repeated unit to create a pattern
- Seeing how changing the unit affects the whole pattern

Classroom Routines focus on
- Developing strategies for counting accurately
- Using the calendar as a tool for keeping track of time
- Developing vocabulary to talk about time (morning, noon, midday, afternoon, etc.) and sequence (first, next, last, before, after, during, and so on.)
- Collecting and recording data
- Estimating quantities up to about 30
- Adding or subtracting small amounts to/from a familiar number
- Connecting written numbers and number names
- Using the number line as a tool for counting
- Practicing the rote counting sequence forward and backward
- Identifying names and attributes of 2-D shapes

Assessed Benchmarks
- Fill a given region in different ways with a variety of shapes
- Use geometric language to describe and identify important features of familiar 2-D shapes
- Identify and describe triangles
- Describe and sort 2-D shapes
- Compose and decompose shapes

Solving Story Problems (Addition, Subtraction, and the Number System 2)

Mathematical Emphases

❶ Number Combinations Composing numbers up to 15 with two or more addends
Math Focus Points
- Finding as many 2-addend combinations of a number as possible
- Proving that all of the possible combinations have been found
- Solving a problem in which the total and one part are known
- Finding and exploring relationships among combinations of numbers up to 15
- Developing the strategy of counting on

❷ Whole-Number Operations Making sense of and developing strategies to solve addition and subtraction problems with small numbers
Math Focus Points
- Developing counting on as a strategy for combining two numbers
- Visualizing and retelling the action in addition and subtraction situations involving removal
- Finding the total of two or more quantities up to a total of 20 by counting all, counting on, or using number combinations
- Estimating whether an amount is more or less than a given quantity
- Modeling the action of an addition or subtraction (removal) problem with counters or drawings
- Subtracting one number from another, with initial totals of up to 12
- Developing strategies for solving addition and subtraction (removal) problems
- Seeing that subtracting the same two numbers (e.g., 6 from 10) results in the same difference regardless of context (e.g., number and dot cubes, cards, objects)

❸ Number Composition Representing numbers by using equivalent expressions
Math Focus Point
- Generating equivalent expressions for a number

❹ Counting and Quantity Developing strategies for accurately counting a set of objects by ones
Math Focus Points
- Practicing the rote counting sequence forward and backward, starting from any number 1–60
- Developing and analyzing visual images for quantities
- Accurately counting a set of objects by ones, up to 60
- Practicing the oral counting sequence from 1 to 100
- Writing the sequence of numbers (as high as students know)
- Identifying and using patterns in the sequence of numbers to 100

❺ Whole-Number Computation Using manipulatives, drawings, tools, and notation to show strategies and solutions
Math Focus Points
- Recording solutions to a problem
- Using numbers and standard notation (+, -, =) to record
- Connecting written numbers and standard notation (+, -, =) to the quantities and actions they represent
- Using the equal sign to show equivalent expressions
- Using the number line as a tool for counting
- Developing methods for recording addition and subtraction (removal) strategies
- Seeing the 100 chart as a representation of the counting numbers to 100

This Unit also focuses on
- Considering attributes that can be measured (i.e., length, perimeter, area)
- Measuring area by filling an outline with same-sized objects
- Recording, organizing, and interpreting numerical information
- Considering the relationship between the size of an object with the number of objects it takes to cover a shape

Classroom Routines focus on
- Using the calendar as a tool for keeping track of time
- Collecting and recording data
- Connecting written numbers and number names
- Using the number line as a tool for counting
- Practicing the forward and backward counting sequences with numbers up to 60
- Developing and analyzing visual images for quantities
- Recreating an arrangement of objects
- Finding the total of two or more single-digit quantities
- Exploring relationships among combinations
- Finding the total of two or more equal groups

Assessed Benchmarks
- Find at least five combinations of two addends for a number up to 15
- Combine two small quantities
- Interpret (retell the action and sequence) and solve addition and subtraction story problems
- Subtract one small quantity from another
- Represent numbers by using equivalent expressions
- Count a set of 40 to 50 objects
- Rote count, read, and write numbers to 65

What Would You Rather Be? (Data Analysis)

Mathematical Emphases

❶ Data Analysis Sorting and classifying
Math Focus Points
- Describing attributes of objects
- Using attributes to sort a set of objects
- Looking carefully at a group of objects to determine how they have been sorted

❷ Data Analysis Representing data
Math Focus Points
- Making a representation to communicate the results of a survey
- Making sense of data representations, including pictures, bar graphs, tallies, and Venn diagrams
- Comparing what different representations communicate about a set of data
- Using equations to show how the sum of the responses in each category equals the total responses collected
- Organizing data in numerical order

❸ Data Analysis Describing data
Math Focus Points
- Describing and comparing the number of pieces of data in each category or at each value and interpreting what the data tell you about the group
- Understanding that the sum of the pieces of data in all the categories equals the number of people surveyed
- Using data to compare how two groups are similar or different

❹ Data Analysis Designing and carrying out a data investigation
Math Focus Points
- Interpreting results of a data investigation
- Choosing a survey question
- Making a plan for gathering data
- Collecting and keeping track of survey data

Classroom Routines focus on
- Developing strategies for counting accurately
- Using the calendar as a tool for keeping track of time
- Developing vocabulary to talk about time (morning, noon, midday, afternoon, etc.) and sequence (first, next, last, before, after, etc.)
- Collecting and recording data
- Making sense of a variety of representations of data
- Connecting written numbers and number names
- Using the number line as a tool for counting
- Using the 100 chart as a tool for counting
- Practicing the forward and backward counting sequences with numbers up to 60
- Developing and analyzing visual images for quantities
- Identifying and naming coins

What Would You Rather Be?

Assessed Benchmarks
- Sort a group of objects according to a given attribute
- Represent a set of data with two categories
- Interpret a variety of data representations with two categories
- Describe a set of data, including how many are in each group, which group is greater, and how many people responded to the survey

Fish Lengths and Animal Jumps (Measurement)

Mathematical Emphases

❶ Linear Measurement Understanding length
Math Focus Points
- Understanding what length is and how it can be measured
- Measuring lengths using different-sized units
- Identifying the longest dimension of an object
- Comparing lengths to determine which is longer
- Identifying contexts in which measurement is used
- Understanding the meaning of at least in the context of linear measurement

❷ Linear Measurement Using linear units
Math Focus Points
- Developing accurate measurement techniques
- Describing measurements that are in between whole numbers of units
- Understanding that measurements of the same length should be the same when they are measured twice or by different people using the same unit
- Understanding that measuring an object using different-length units will result in different measurements
- Measuring length by iterating a single unit

❸ Linear Measurement Measuring with standard units
Math Focus Point
- Using inch tiles to measure objects in inches

This Unit also focuses on
- Solving story problems about comparing lengths
- Classroom Routines focus on
- Developing strategies for counting accurately
- Using the calendar as a tool for keeping track of time
- Developing vocabulary to talk about time (morning, noon, midday, afternoon, etc.) and sequence (first, next, last, before, after, and so on)
- Collecting and recording data
- Connecting written numbers and number names
- Using the 100 chart as a tool for counting
- Practicing the forward and backward counting sequences with numbers up to 60
- Developing and analyzing visual images for quantities
- Identifying and naming coins
- Collecting, counting, representing, describing, and comparing data
- Interpreting different representations of data including: pictures, bar graphs, tallies, and Venn diagrams

Assessed Benchmarks
- Demonstrate accurate measuring techniques when measuring a distance with nonstandard or standard units. These techniques include starting at the beginning, ending at the end, leaving no gaps or overlaps, measuring in a straight line, and keeping track of the number of units.
- Know at least one way of describing a measurement that falls between two whole numbers
- Understand that the same results should be obtained when the same object is measured twice, or when two different people measure the same object (using the same unit)
- Understand that using different-sized units will result in different numbers

Number Games and Crayon Puzzles (Addition, Subtraction, and the Number System 3)

Mathematical Emphases

❶ Number Composition Composing numbers up to 20 with 2 or more addends
Math Focus Points
- Developing fluency with the 2-addend combinations of 10
- Finding relationships among different combinations of numbers up to 20
- Using $5 + 5$ to reason about other combinations of 10
- Finding as many 2-addend combinations of a number as possible
- Trying to prove that all the possible 2-addend combinations of a number have been found

❷ Whole-Number Operations Making sense of and developing strategies to solve addition and subtraction problems with small numbers
Math Focus Points
- Solving related story problems
- Solving a problem in which the total and one part are known
- Adding 2 or more single-digit numbers
- Visualizing, retelling, and modeling the action in addition and subtraction (removal) situations
- Subtracting one number from another, with initial totals of up to 12
- Developing strategies for solving addition and subtraction story problems
- Solving addition and subtraction story problems

❸ Representing Mathematical Thinking Using manipulatives, drawings, tools, and notation to show strategies and solutions
Math Focus Points
- Using numbers and standard notation $(+, -, =)$ to record
- Developing strategies for recording solutions to story problems

This Unit also focuses on
- Generating equivalent expressions for a number
- Develop strategies for counting and combining groups of dots
- Reasoning about more, less, and equal amounts
- Finding a solution that fits several clues

Classroom Routines focus on
- Developing strategies for counting accurately
- Using the calendar as a tool for keeping track of time
- Developing vocabulary to talk about time (morning, noon, midday, afternoon, etc.) and sequence (first, next, last, before, after, etc.)
- Collecting and recording data
- Estimating quantities up to about 30
- Adding or subtracting small amounts to/from a familiar number
- Investigating numbers that can (and cannot) be made into groups of two
- Counting, describing, and comparing data
- Making sense of a variety of representations of data
- Connecting written numbers and number names
- Using the 100 chart as a tool for counting
- Using the number line as a tool for counting
- Practicing the forward and backward counting sequences with numbers up to 100
- Developing and analyzing visual images for quantities
- Finding the total of two or more single-digit quantities
- Developing fluency with the addition combinations that make 10
- Using known combinations (i.e., combinations that make 10) to combine numbers
- Using standard notation $(+, -, =)$ to write equations
- Collecting, counting, representing, describing, and comparing data
- Interpreting different representations of data including: pictures, bar graphs, tallies, and Venn Diagrams

Assessed Benchmarks
- Find at least five 2-addend combinations of 10
- Combine two small quantities by at least counting on
- Interpret (retell the action and sequence) and solve addition and subtraction story problems
- Subtract one small quantity from another

Color, Shape, and Number Patterns (Patterns and Functions)

Mathematical Emphases

❶ Repeating Patterns Constructing, describing, and extending repeating patterns

Math Focus Points
- Identifying what comes next in a repeating pattern
- Using the word pattern to describe some kind of regularity in a sequence

❷ Repeating Patterns Identifying the unit of a repeating pattern

Math Focus Points
- Representing a repeating unit in more than one way (for example, representing a red–blue–red–blue cube pattern with the movements clap–slap knees–clap–slap knees)
- Comparing repeating and nonrepeating sequences
- Describing a repeating pattern as a sequence built from a part that repeats over and over called the unit
- Identifying the unit of a repeating pattern
- Extending a repeating pattern by adding on units to the pattern
- Identifying what comes several steps beyond the visible part of a repeating pattern
- Comparing repeating patterns that have the same structure (for example, ABC), but different elements (for example, red–blue–green and yellow–orange–black)
- Comparing repeating patterns that have the same length of unit, but different structures (for example, red–blue–green and red–red–blue both have 3-element units)

❸ Number Sequences Constructing, describing, and extending number sequences with constant increments generated by various contexts

Math Focus Points
- Associating counting numbers with elements of a repeating pattern
- Determining the element of a repeating pattern associated with a particular counting number
- Determining and describing the number sequence associated with one of the elements in the unit of a repeating pattern (e.g., the numbers associated with B in an AB pattern are 2, 4, 6, 8 . . .)
- Modeling a constant rate of increase with concrete materials
- Describing how a number sequence represents a situation with a constant rate of change
- Extending a number sequence associated with a situation with a constant rate of change
- Determining how and why the same number sequences can be generated by different contexts

Classroom Routines focus on
- Developing strategies for counting accurately
- Using the calendar as a tool for keeping track of time
- Developing vocabulary to talk about time (morning, noon, midday, afternoon, etc.) and sequence (first, next, last, before, after, etc.)
- Collecting and recording data
- Naming and telling time to the hour on digital and analog clocks
- Associating times on the hour with daily events
- Connecting written numbers and number names
- Using the 100 chart as a tool for counting
- Using the number line as a tool for counting
- Practicing the forward and backward counting sequences with numbers up to 100
- Connecting standard notation ($+$, $-$, $=$) to the actions and relationships they represent
- Creating a story problem for a given expression
- Developing strategies for adding and subtracting small numbers
- Solving related problems
- Collecting, counting, representing, describing, and comparing data
- Interpreting different representations of data including: pictures, bar graphs, tallies, and Venn diagrams

Assessed Benchmarks

- Construct, describe, and extend a repeating pattern with the structure AB, ABC, AAB, or ABB
- Identify the unit of a repeating pattern for patterns with the structure AB or ABC
- Describe how various AB or ABC patterns are alike (e.g., How is a red-blue pattern like a yellow-green pattern?)
- Determine what comes several steps beyond the visible part of an AB, ABC, AAB, or ABB repeating pattern
- Construct, extend, and describe a pattern that has a constant increase for the sequences 1, 3, 5, ...; 2, 4, 6, ...; 1, 4, 7, ...; 2, 5, 8, ...; and 3, 6, 9, ... through counting and building

Twos, Fives, and Tens (Addition, Subtraction, and the Number System 4)

Mathematical Emphases

❶ **Counting and Quantity** Developing strategies for accurately counting a set of objects by ones and by groups
Math Focus Points
- Counting and keeping track of amounts up to 60
- Counting on from a known quantity
- Organizing objects to count them more efficiently
- Identifying and using patterns in the number sequence and on the 100 chart
- Identifying, reading, writing, and sequencing numbers to 100 and beyond
- Counting and combining things that come in groups of 1, 2, 4, 5, and 10
- Counting by 2s, 5s, and 10s
- Exploring a 2:1 (the number of hands in a group of people) and a 5:1 relationship (the number of fingers and hands in a group)
- Counting by numbers other than 1
- Developing strategies for organizing sets of objects so that they are easy to count and combine
- Developing meaning for counting by groups of 10

❷ **Whole-Number Operations** Using manipulatives, drawings, tools, and notation to show strategies and solutions
Math Focus Points
- Using addition notation (+, =) to record
- Recording strategies for counting and combining
- Considering notation for equivalent expressions (e.g., $7 + 8 = 10 + 5$)

❸ **Computational Fluency** Knowing addition combinations of 10
Math Focus Points
- Developing fluency with the 2-addend combinations of 10
- Solving a problem in which the total (10) and one part are known

This Unit also focuses on
- Adding single-digit numbers
- Thinking about numbers to 20 in terms of how they relate to 10 (e.g., $10 + \_\_$ or < 10)
- Determining equivalent expressions for a given expression (e.g., $7 + 8 = 10 + \_\_$)
- Considering a 2-digit number as tens and ones

Classroom Routines focus on
- Developing strategies for counting accurately
- Using the calendar as a tool for keeping track of time
- Developing vocabulary to talk about time (morning, noon, midday, afternoon, etc.) and sequence (first, next, last, before, after, etc.)
- Collecting and recording data
- Naming and telling time to the hour on digital and analog clocks
- Associating times on the hour with daily events
- Connecting written numbers and number names
- Using the 100 chart as a tool for counting
- Using the number line as a tool for counting
- Practicing the forward and backward counting sequences with numbers up to 100
- Counting by 5s and 10s
- Connecting standard notation (+, -, =) to the actions and relationships they represent
- Creating a story problem for a given expression
- Developing strategies for adding and subtracting small numbers
- Solving related problems
- Developing and analyzing visual images for quantities
- Finding the total of two or more single-digit quantities

Assessed Benchmarks
- Identify, read, write, and sequence numbers to 105
- Begin to count by groups in meaningful ways
- Gain fluency with the 2-addend combinations of 10

Blocks and Books (3-D Geometry)

Mathematical Emphases

❶ Features of Shape Describing and comparing 2-D and 3-D shapes
Math Focus Points
- Developing vocabulary to describe 3-D shapes and their attributes
- Comparing size, shape, and orientation of objects
- Identifying the characteristics of 3-D objects by touch
- Describing a rectangular prism
- Comparing rectangular prisms
- Observing and describing characteristics of 3-D shapes
- Recognizing shapes in the world
- Describing 3-D structures

❷ Features of Shape Exploring the relationships between 2-D and 3-D shapes
Math Focus Points
- Matching a 3-D object to a 2-D outline of one of its faces
- Matching a 3-D object to a 2-D picture of the object
- Making 3-D objects out of 2-D pieces
- Making a 2-D representation of a 3-D object or structure
- Building a 3-D construction from a 2-D representation

This Unit also focuses on
- Relating the size and shape of an object to its use
- Planning a geometric structure with limited space and materials
- Visualizing and estimating the paces and turns required to follow a particular path
- Giving, following, and recording directions for following a path
- Counting and adding to compare the distances of different paths

Classroom Routines focus on
- Developing strategies for counting accurately
- Using the calendar as a tool for keeping track of time
- Developing vocabulary to talk about time (morning, noon, midday, afternoon, and so on) and sequence (first, next, last, before, after, and so on)
- Collecting and recording data
- Counting, describing, and comparing data
- Estimating quantities up to about 30
- Adding or subtracting small amounts to/from a familiar number
- Investigating numbers that can (and cannot) be made into groups of two
- Making sense of a variety of representations of data
- Naming and telling time to the hour on digital and analog clocks
- Associating times on the hour with daily events
- Developing visual images of, and language for describing, 2-D shapes
- Identifying names and attributes of 2-D shapes
- Collecting, counting, representing, describing, and comparing data
- Interpreting different representations of data, including pictures, bar graphs, tallies, and Venn diagrams
- Connecting standard notation (+, -, =) to the actions and relationships they represent
- Creating a story problem for a given expression
- Developing strategies for adding and subtracting small numbers
- Solving related problems

Assessed Benchmarks
- Attend to features of 3-D shapes, such as overall size and shape, the number and shape of faces, and the number of corners
- Match a 2-D representation to a 3-D shape or structure