

Investigations in Data, Number and Space

Math Curriculum Unit Topics 2001-2002

Kindergarten

Mathematical Thinking at Kindergarten (Introduction)

- Becoming familiar with a variety of mathematical materials and their attributes
- Developing and using strategies for counting
- Beginning to connect numerals and number names to the quantities they represent
- Introducing routines that will be revisited throughout the year, focusing on counting, data collections, and developing a sense of time

Pattern Trains and Hopscotch Paths (Exploring Pattern)

- Recognizing, describing, reading, copying, creating, extending, comparing, and recording patterns
- Predicting (and confirming) what comes next in a pattern
- Exploring the idea of the unit of a pattern
- Creating, following, and interpreting patterns using physical movements
- Copying, building, extending, and recording patterns that grow (or shrink) in some predictable way

Collecting, Counting and Measuring (Developing Number Sense)

- Thinking about what, when, why, and how people count
- Recognizing numerals and number names, and connecting them to the quantities they represent
- Developing strategies for counting, comparing, and keeping track of quantities
- Representing quantities with objects, pictures, numerals, and words
- Developing and using language to describe and compare lengths (longer, shorter, the same) and amounts (less, least, more, most, same, equal)
- Measuring by direct comparison (e.g. directly comparing two objects to determine which is longer)
- Becoming familiar with combinations of numbers up to about 6

MATHEMATICAL EMPHASIS IN KINDERGARTEN BY UNIT

Mathematical Thinking at Kindergarten (Introduction)

Students are introduced to the routines of daily attendance, calendar, survey questions, and the Counting Jar, which are used as ongoing activities throughout the year. They explore some of the materials they will be using to model mathematics. This unit introduces a way of approaching mathematics that emphasizes thinking, strategy use, communication, and collaboration.

Mathematical Emphases

- Counting and keeping track
- One-to-one correspondence
- Beginning to connect numerals and number names to the quantities they represent
- Creating a set of a given size
- Recording numerical information
- Counting and comparing two quantities
- Exploring materials (color tiles, pattern blocks, Geoblocks, interlocking cubes) and their attributes
- Describing geometric shapes
- Developing a sense of time (days, weeks)
- Using the calendar as a tool for keeping track of time and events
- Collecting and recording data

Pattern Trains and Hopscotch Paths (Exploring Pattern)

Students investigate what makes a pattern and how we can predict what will come next. They copy, create, and extend linear patterns, including pattern paths based on hopscotch, and place linear patterns in a rectangular border. Students also explore patterns that grow or shrink in regular and predictable ways.

Mathematical Emphases

- Observing and describing attributes (such as size, color, shape, quantity)
- Describing similarities and differences of an arrangement
- Discriminating between patterns and random arrangements or designs
- Describing, copying, extending, and constructing patterns
- Predicting and verifying what comes next in a pattern
- Recording patterns

- Identifying and constructing the unit of a pattern
- Decomposing patterns (into units)
- Continuing a pattern by adding units
- Comparing patterns
- Creating, representing, and interpreting patterns using physical (hopping and jumping) movements
- Making a linear pattern in a rectangular frame
- Copying, building, extending, and recording patterns that grow (or shrink) in some predictable way
- Determining a rule for how a pattern grows (or shrinks)
- Counting a set of objects
- Combining two amounts
- Comparing two amounts

Collecting, Counting, and Measuring (Developing Number Sense)

Students count sets of classroom materials, make counting books, count and compare the number of letters in their names, and play mathematical games that involve counting and accumulating amounts. They begin to explore ways to use pictures, numerals, objects, and words to represent the quantities they count. Students are introduced to measurement concepts as they directly compare objects by length.

Mathematical Emphases

- Thinking about what, when, why, and how people count
- Recognizing numerals and number names and connecting numerals to the quantities they represent
- Developing strategies for counting and keeping track of quantities
- Creating a set of a given size
- Representing quantities with objects, pictures, numerals, or words
- Discussing the measure of length
- Developing and using language to describe and compare lengths (*longer, shorter, the same*)
- Measuring by direct comparison
- Sorting objects into two categories, according to length or quantity
- Recording or representing mathematical information
- Using terms to describe and compare amounts (*less, least, more, most, same, equal*)
- Comparing two or more quantities to find which is more
- Keeping track of the size of a growing collection
- Finding the total of two single-digit numbers
- Ordering quantities from least to most or most to least
- Becoming familiar with combinations of numbers up to about 6
- Finding different ways to visualize and arrange a set of 6 objects

- Recording arrangements of objects