

# Mathematics Curriculum Guide

## Kindergarten

### A. Number Sense

Students will understand the number system is the basis of mathematics. Students develop this understanding by comparing groups of objects in a set up to 10, which in turn develops the concept of counting, naming, and ordering objects. As preparation for learning about fractions, students practice dividing sets into equal groups and shapes into equal parts.

Students will:

- Count objects in a set and use objects, pictures and numerals to represent whole numbers to 20.
  - Arrange objects in order according to the number in each set.
  - Identify ordinal position to fifth.
  - Count forward and backward.
- Count by ones, fives, and tens to one hundred.
- Introduce counting by twos.
- Introduce even and odd numbers.
- Count and write numbers to 100.
- Identify and write a two-digit number for a set of objects.
- Read number words to ten.
- Match a number and its word name to ten.
- Know that larger numbers describe sets with more objects in them than sets described by smaller numbers.
- Divide sets of twenty or fewer objects into equal groups.
- Divide shapes into equal parts (half and fourths).
- Match sets of objects to show one-to-one correspondence.
- Find the number that is one more than or one less than any whole number up to 20.
  - Indicate numbers for one more or one less up to 100.
- Use correctly the words one/many, none/some/all, more/less, most/least, and equal to/more than/less than.
  - Identify right and left.
- Show equivalent forms of whole numbers from 10 to 20 as groups of tens and ones using objects, diagrams and numerals.

### B. Computation

Students will learn how to add and subtract numbers to be fluent in computation. They use objects to join sets together and to remove objects from sets.

- Model addition by joining sets of objects (for any two sets with fewer than 10 objects when joined) and model subtraction by removing objects from sets for numbers less than 10 by using a number line.

- Illustrate and solve addition facts with sums from zero to ten.
- Illustrate and solve subtraction facts with ten as the greatest beginning number.
- Show relationship between addition and subtraction (fact families) with ten being the largest number.
- Recognize the effect of zero in addition and subtraction.

### **C. Algebra and Functions**

Students will understand patterns, rules, and symbols that introduce the language of Algebra. Students at this grade level will sort and classify objects according to various rules and make simple patterns with numbers and shapes.

- Verbally describe mathematical relationships involving addition and subtraction situations for numbers less than 10.
- Create, extend, and give the rule for simple patterns with numbers and shapes.

### **D. Geometry**

Students will identify and describe the feature and positions of simple shapes (circle, oval, triangle, square, rectangle, hexagon, trapezoid, rhombus, parallelogram, and cube).

- Identify, describe, sort, compare and classify objects by shape, size, number of vertices and other attributes.
  - Identify congruent and similar shapes.
  - Construct three-dimensional shapes with a given sets of blocks.
  - Copy a given simple shape.
  - Sort and identify sorting rule.
- Identify the positions of objects in space and use the terms inside, outside, between, above, below, near, far, under, over, up, down, behind, in front of, next to, to the left of and the right of.

### **E. Measurement**

Students will understand the importance of measurement and time because of its uses in many aspects of everyday life. They compare objects by their length, capacity, weight, and temperature.

- Make direct comparisons of the length and weight of objects and recognize which object is shorter, longer, taller, lighter, or heavier.
  - Order physical objects according to size.
  - Recognize the need for a standard unit of length.
  - Estimate capacity using cups, pints, liters and quarts.
- Identify concepts of time, (before/after, shorter/longer, morning, afternoon, evening, today, yesterday, tomorrow, week, month, year and time to the hour.)
  - Use a calendar and identify its parts.
  - Identify the days of the week and the months of the year.
  - Identify the numbers, hour hand and minute hand on a clock.
  - Tell and show time to the hour.
  - Identify and give the values of pennies, nickels, dimes, and quarters.
  - Identify half-dollars and one-dollar bills.

- Recognize and write the dollar and cent signs.

## **F. Data/Analysis and Probability**

Students will understand that data are all around us -in newspapers and magazines, in television news, and commercials. Students need to learn how to understand data.

- Record and organize information and answer questions about data using objects, and pictures in context.
- Collect and organize objects and information.
- Construct, describe and interpret picture graphs and graphs using objects.
- Complete and interpret a bar graph.

## **G. Problem Solving**

Students will make decisions about how to set up a problem. Students solve problems in reasonable ways and justify their reasoning.

- Choose an approach, materials and “**Super Seven Strategies**” to use in solving problems
  - Guess & Check
  - Draw a Picture
  - Make an Organized List
  - Look For a Pattern
  - Make a Table or Chart
  - Use Logical Reasoning
  - Work Backward
- Use tools such as objects or drawings to model problems.
- Explain the reasoning used with concrete objects and pictures.
- Students will check their work and make corrections.
- Understand and use grade level appropriate math vocabulary and symbols.
- Identify and manipulate patterns.
- Act out the problem.