Mathematics Curriculum

Second Grade

A. Number Sense
    The students will understand the number system as the basis of mathematics. Students will develop this understanding by first using sets of objects and then moving on to writing numbers in figures.
    The students will:
    *   Count, read, write, compare, and plot on a number line whole numbers to at least 1000.
    *   Count by ones, twos, threes, fours, fives, tens, twenty-fives and hundreds to at least 1000
    *   Show the number that is ten more or ten less than any number 10 through 90.
    *   Match the ordinal numbers, first, second, third, etc. with an ordered set of at least 100 items.
    *   Use words, models, standard form and expanded from to represent place value and to show equivalent forms of whole numbers up to at least 1,000 as groups of hundreds, tens and ones.
    *   Identify numbers as even or odd by placing that number of objects in two groups of the same size and recognizing that for even numbers no object will be left over and for odd numbers one object will be left over.
    *   Identify the pattern of numbers in each group.
    *   Compare whole numbers up to 100 and arrange them in numerical order.
    *   Recognize fractions as parts of a whole or parts of a group.
    *   Recognize, name, and compare unit fractions.
    *   Estimate numbers to the nearest 10.

B. Computation
    Students learn about the whole numbers up to 100. They also learn how to add and subtract them. They use objects to join sets together and to remove objects from sets. They also learn to add and subtract with figures using mental arithmetic.
    The students will:
    *   Solve problems involving addition and subtraction of whole numbers less than 1000 fluently using a standard algorithmic approach and show the inverse relationship between addition and subtraction.
    *   Model addition and subtraction facts of numbers less than 20 with objects, pictures, and a number line.
    *   Model addition and subtraction of whole numbers with and without regrouping less than 100 with pictures and objects.

- Understand and use the inverse relationship between addition and subtraction.
- Use estimation to decide whether answers are reasonable in addition problems.
- Use mental arithmetic to add or subtract.
- Show proficiency in addition and subtraction facts to 18.
- Learn multiplication facts up to times 5.

C. Algebra and Functions

Students will know that algebra is a language of patterns, rules, and symbols. Students at this level make simple patterns with numbers and continue these number patterns using addition and subtraction. They will also relate word problems to number sentences and use rules for addition to check results.

The students will:
- Write equations to solve single and multi-step addition and subtraction word problems.
- Create, extend, and give a rule for number patterns using addition and subtraction.
- Use the commutative and associative rules for addition to show that numbers can be added in any order and will not change the sum.

D. Geometry

Students will learn about geometric shapes and develop a sense of space. Students will investigate how shapes are made from other shapes and recognize geometric shapes in the world around them.

The students will:
- Recognize, identify and describe attributes of common shapes and solids.
- Identify and draw congruent two-dimensional shapes in any position.
- Describe and compare properties of simple and compound figures composed of triangles, rectangles, and squares.
- Recognize geometric shapes and structures in the environment and specify their locations.
- Identify and name the following geometric shapes: square, rectangle, circle, triangle, hexagon, pentagon, octagon, parallelogram, and trapezoid.
- Identify and name the following three dimensional shapes: cube, sphere, rectangular prism, pyramid, cylinder, and cone
- Identify and draw lines of symmetry.

E. Measurement

Students will study measurement because of its uses in many aspects of everyday life. Students measure in order to compare objects' length, area, weight, temperature, etc. They learn why we use standard units of length and measure objects using these units. In a similar way, they learn how to measure weight, capacity, and temperature in standard units. They also learn about time and how to tell the time on a clock . Students will learn about money.

The students will:

- Measure and estimate length to the nearest inch, foot, yard, centimeter, and meter.
- Describe the relationships among inch, foot, yard, centimeter, and meter.
- Decide which unit of length is most appropriate in a given situation.
- Tell time to the hour, half hour, 5 minutes, and 1 minute.
- Compute elapsed time.
- Calculate perimeter and area.
- Estimate and measure capacity using cups, pints, quarts, gallons, pounds, and kilograms.
- Read a thermometer in Celsius and Fahrenheit.
- Describe relationships of time: seconds in a minute, minutes in an hour, hours in a day, days in a week, and days/ weeks/ months in a year.
- Find the value of a collection of pennies, nickels, dimes, quarters, and dollars.

F. Data Analysis and Probability

The 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.
The students will:

- Compare data displayed in tables and picture graphs within the table or graph and with data on other tables and graphs to address a single question.
- Collect and record numerical data in systematic ways.
- Represent, compare, and interpret data using tables, tally charts, and bar graphs.

G. Problem Solving

Students will understand mathematics is problem solving. In all mathematics, students use problem-solving skills: they choose how to approach a problem, they explain their reasoning, and they check their results. As they develop their skills with numbers, geometry, or measurement, students move from simple ideas to more complex ones by taking logical steps that build a better understanding of mathematics.
The students will:

- Use the Super Seven Strategies: guess & check, draw a picture, make an organized list, look for a pattern, make a table or chart, use logical reasoning, and work backward.
- Understand and use grade level appropriate math vocabulary and symbols.
- Build new mathematical knowledge through problem solving.
- Make and investigate hypothetical mathematical situations.
- Organize and consolidate their mathematical thinking through communication to peers, teachers, and others.