

Saddlebrook Preparatory School  
*Mathematics Curriculum-4<sup>th</sup> Grade*

**A. Major Concepts/Content.**

The purpose of this class is to develop an understanding of the different ways numbers are represented and used in the real world. The content will include but not be limited to, the following:

- Using language and symbols
- Comparing and ordering numbers
- Fractions and decimals
- Whole numbers, mixed numbers
- Number systems
- Operation of numbers
- Addition, Subtraction, Multiplication, Division of whole numbers, decimals, fractions, and mixed numbers
- Properties of numbers
- Problem solving

**B. Course Requirements**

These requirements include the benchmarks from the Sunshine State Standards that are most relevant to fourth grade. After successfully completing this grade, the student will:

**1. Demonstrate the relative size of whole numbers, commonly used fractions, decimals and percents.**

- Uses language and symbols ( $>$ ,  $<$ ,  $=$ ) to compare numbers in the same form and in two different forms such as  $\_ < 1$ .
- Compares and orders whole numbers through millions or more, using concrete materials, number lines, drawings, and numerals.
- Compares and orders commonly used fractions and decimals to hundredths using concrete materials, drawings, and numerals.
- Locates whole numbers, fractions, mixed numbers, and decimals on a number line.

**2. Demonstrate an understanding of concrete and symbolic representations of whole numbers, fractions, decimals and percents.**

- Translates problem situations into diagrams and models using whole numbers, fractions, mixed numbers and decimals to hundredths including money notation.

**3. Demonstrates that numbers can be represented in a variety of equivalent forms using whole numbers, decimals, fractions, and percents.**

- Uses concrete materials to model equivalent forms of whole numbers, fractions, and decimals.
- Identifies equivalent forms of numbers.
- Knows that two numbers in different forms are equivalent or non-equivalent, using whole numbers, decimals, fractions, and mixed numbers.

**4. The student uses place-value concepts of grouping based upon powers of ten (thousandths, hundredths, tenths, ones, tens, hundreds, thousands) within the decimal number system.**

- Knows the value of a given digit in numbers from hundredths to millions, including writing and interpreting expanded forms of numbers.

**5. Demonstrates the effects of addition, subtraction, and multiplication on whole numbers, decimals, and fractions, including mixed numbers, and the effects of division on whole numbers, including the inverse relationship of multiplication and division.**

- Recalls (from memory) basic multiplication facts and related division facts.
- Knows the inverse relationship of multiplication and division and demonstrates that relationship by writing related fact families.
- Explains and demonstrates the multiplication and division of whole numbers using manipulatives, drawings, and algorithms.
- Explains and demonstrates the addition and subtraction of common fractions using concrete materials, drawings, story problems, and algorithms.
- Explains and demonstrates the addition and subtraction of decimals (to hundredths) using concrete materials, drawings, story problems, and algorithms.
- knows the properties of numbers including the following: the identity, commutative, and associative properties of addition the zero and identity properties of multiplication
- The commutative, associative, and distributive properties of multiplication.

- predicts the relative size of solutions in the following: addition, subtraction, multiplication, and division of whole numbers addition and subtraction of common fractions addition and subtraction of decimals to hundredths

**6. Demonstrates the appropriate operation to solve specific problems involving addition, subtraction, and multiplication of whole numbers, decimals, and fractions, and division of whole numbers.**

- Uses problem-solving strategies to determine the operation(s) needed to solve one- and two-step problems involving addition, subtraction, multiplication, and division of whole numbers, and addition and subtraction of decimals and fractions.

**7. Demonstrates ability to add, subtract, and multiply whole numbers, decimals, and fractions, including mixed numbers, and divide whole numbers to solve real-world problems, uses appropriate methods of computing, such as mental mathematics, paper and pencil, and calculator.**

- Solves real-world problems involving addition, subtraction, multiplication, and division of whole numbers, and addition and subtraction of decimals and fractions using an appropriate method (for example, mental math, pencil and paper, calculator).
- Explains the reason for choosing a particular computing method for a particular problem.
- Solves real-world multiplication problems with whole numbers (three digits by one digit) using concrete materials, drawings, and pencil and paper.
- Solves real-world division problems having divisors of one digit and dividends of three digits, with or without remainders.
- Solves real-world problems involving the addition or subtraction of decimals (to hundredths) or common fractions with like or unlike denominators.

**8. Demonstrates and uses concrete and graphic models to develop procedures for solving problems related to measurement including length, weight, time, temperature, perimeter, area, volume, and angle.**

- Knows measurement concepts and can use oral and written language to communicate them.
- Uses a wide variety of models (for example, manipulatives, and diagrams) and applies counting procedures to investigate measurements of length, area, volume, and perimeter.

- Know about varied time intervals, including decades, hours, minutes, and seconds.
- Investigates angle measures using models and manipulatives for the common angles of  $45^\circ$ ,  $90^\circ$ , and  $180^\circ$  (straight angle) and uses these angles as reference points for measures of other angles.

**9. Demonstrates the ability to use direct (measured) and indirect (not measured) measures to calculate and compare measurable characteristics.**

- Devises nonstandard, indirect ways to compare lengths (for example, compare the height of a cylinder to the distance around it).
- Uses customary and metric units to compare length, weight, and capacity or volume.
- Uses multiplication or division to convert units of measure within either the customary or metric system (for example:  $100\text{ cm} = 1\text{ m}$ ).
- Knows an appropriate unit of measure to determine the dimension(s) of a given object (for example, standard - student chooses feet or inches instead of yards to measure a classroom desk; nonstandard - student chooses a pencil or his or her hand to measure a classroom desk).
- Knows an appropriate unit of measure (standard or nonstandard) to measure weight and capacity.

**10. Demonstrates which units of measurement, such as seconds, square inches, dollars per tank full, to use with answers to real-world problems.**

- Selects an appropriate measurement unit for labeling the solution to real-world problems.

**11. Demonstrates a verbal description draws and/or models two- and three-dimensional shapes and uses appropriate geometric vocabulary to write a description of a figure or a picture composed of geometric figures.**

- Uses appropriate geometric vocabulary to describe properties and attributes of two- and three-dimensional figures (for example, faces, edges, vertices, diameter).
- Draws and classifies two-dimensional figures having up to eight or more sides.
- Uses manipulatives to solve problems requiring spatial visualization.
- Knows symmetry, congruency, and reflections in geometric figures.
- Knows how to justify that two figures are similar or congruent.
- Compares the concepts of area and perimeter using concrete materials (for example, color tiles, grid paper) and real-world situations (for example, carpeting a floor, fencing a yard).
- Applies the concepts of area and perimeter to solve real-world and mathematical problems.

- Knows how area and perimeter are affected when geometric figures are combined.

**12. The student predicts, illustrates, and verifies which figures could result from a flip, slide, or turn of a given figure.**

- Identifies and performs flips, slides, and turns given angle ( $90^\circ$ ,  $180^\circ$ ) and direction (clockwise or counterclockwise) of turn, using concrete and graphic materials (for example, pattern blocks, geoboards, grid paper).
- Knows the effect of a flip, slide, or turn ( $90^\circ$ ,  $180^\circ$ ) on a geometric figure.

**13. Demonstrates a wide variety of patterns and relationships through models, such as manipulatives, tables, graphs, rules using algebraic symbols.**

- Describes, extends, and creates numerical and geometric patterns using a variety of models (for example, lists, tables, charts).
- Poses, solves, and explains problems by identifying a predictable visual or numerical pattern such as:

Input 1 2 3 7                      Output \$3 \$6 \$9

**14. Demonstrates and generalizes a pattern, relation, or function to explain how a change in one quantity results in a change in another.**

- Knows mathematical relationships in patterns (for example, the second shape is the first shape turned  $90^\circ$ ).
- Analyzes number patterns and states rules for relationships (for example, 2, 4, 7, 9, 12 the rule is: +2, +3, +2, +3,).
- Discusses, explains, and analyzes the rule that applies to the pattern.

**15. The student solves problems by generating, collecting, organizing, displaying, and analyzing data using histograms, bar graphs, circle graphs, line graphs, pictographs, and charts.**

- Knows the purpose of different parts of a graph (for example, titles, labels, and intervals, key).
- Chooses reasonable titles and labels for graphs.
- Interprets and compares information from different types of graphs including graphs from content-area materials and periodicals.
- Generates questions, collects responses, and displays data on a pictograph, circle graph, bar, double bar, or line graph.

- Interprets and completes circle graphs using common fractions.
- Analyzes and explains orally or in writing the implications of data displays.

**16. Demonstrates ability to determine range, mean, median, and mode from sets of data.**

- Identifies the mean, median and mode from a set of data.
- Identifies the range on a line graph.

**17. The student uses models, such as tree diagrams, to display possible outcomes and to predict events.**

- Determines the number of possible combinations of given items and displays them in an organized way.
- Represents all possible outcomes for a simple probability situation or event using models such as organized lists, charts, or tree diagrams.
- Calculates the probability of a particular event occurring from a set of all possible outcomes.

**18. Demonstrates ability to answer class or personal questions, collects information, and interprets the results using statistics (range, mean, median, and mode) and pictographs, charts, bar graphs, circle graphs, and line graphs.**

MA.E.3.2.1:

- Designs a class survey to collect data.
- Creates an appropriate graph to display data (for example, pictographs, bar graphs, line graphs, circle graphs).
- Determines appropriate statistical measures for data (range, mean, median, mode).
- Explains the results using statistics (range and measures of central tendency).

