

Saddlebrook Preparatory School
Mathematics Curriculum-5th 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.

MA.A.1.2.2

- Uses symbols ($>$, $<$, $=$) to compare numbers in the same and different forms such as $0.5 < 3/4$.
- Compares and orders whole numbers using concrete materials, number lines, drawings, and numerals.
- Compares and orders commonly used fractions, percents, and decimals to thousandths using concrete materials, number lines, drawings, and numerals.

- Locates whole numbers, fractions, mixed numbers, and decimals on the same number line.

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

MA.A.1.2.3

- Translates problem situations into diagrams, models, and numerals using whole numbers, fractions, mixed numbers, decimals, and percents.

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

MA.A.1.2.4

- Knows that numbers in different forms are equivalent or nonequivalent, using whole numbers, decimals, fractions, mixed numbers, and percents.

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.

MA.A.2.2.1

- Knows that place value relates to powers of 10.

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.

MA.A.3.2.1

- Explains and demonstrates the multiplication of common fractions using concrete materials, drawings, story problems, symbols, and algorithms.
- Explains and demonstrates the multiplication of decimals to hundredths using concrete materials, drawings, story problems, symbols, and algorithms.
- Predicts the relative size of solutions in the following:
addition, subtraction, multiplication, and division of whole numbers
addition, subtraction, and multiplication of fractions, decimals, and mixed numbers, with particular attention given to fraction and decimal multiplication (for example, when two numbers less than one are multiplied, the result is a number less than either factor)
- Explains and demonstrates the inverse nature of multiplication and division, with particular attention to multiplication by a fraction (for example, multiplying by $\frac{1}{4}$ yields the same result as dividing by 4).

- Explains and demonstrates the commutative, associative, and distributive properties of multiplication 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.

MA.A.3.2.2

- 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, subtraction, and multiplication 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.

MA.A.3.2.3

- Solves real-world problems involving addition, subtraction, multiplication, and division of whole numbers, and addition, subtraction, and multiplication of decimals, fractions, and mixed numbers using an appropriate method (for example, mental math, pencil and paper, calculator).

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.

MA.B.1.2.1.

- Knows measurement concepts and can use oral and written language to communicate them.
- Extends conceptual experiences into patterns to develop formulas for determining perimeter, area, and volume.
- knows varied units of time that include centuries and seconds.
- Classifies angle measures as acute, obtuse, right, or straight.
- investigates measures of circumference using concrete materials (for example, uses string or measuring tape to measure the circumference of cans or bottles).

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

MA.B.2.2.1

- Finds the length or height of “hard-to-reach” objects by using the measure of a portion of the objects (for example, find the height of a room or building by finding the height of one block or floor and multiplying by the number of blocks or floors).
- Uses customary and metric units to compare length, weight or mass, and capacity or volume.

10. The student solves real-world problems involving estimates of measurements, including length, time, weight, temperature, money, perimeter, area, and volume.

MA.B.3.2.1

- Knows how to determine whether an accurate or estimated measurement is needed for a solution.
- Solves real-world problems involving estimated measurements, including the following: • length to nearest quarter-inch, centimeter • weight to nearest ounce, gram • time to nearest one-minute interval • temperature to nearest five-degree interval • money to nearest \$1.00
- Knows how to estimate the area and perimeter of regular and irregular polygons.
- Knows how to estimate the volume of a rectangular prism

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

MA.B.4.2.1

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

12. 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.

MA.C.1.2.1

- uses appropriate geometric vocabulary to describe properties and attributes of two- and three-dimensional figures (for example, obtuse and acute angles; radius; equilateral, scalene, and isosceles triangles.).
- Draws and classifies two-dimensional figures having up to ten or more sides and three-dimensional figures (for example, cubes, rectangular prisms, pyramids).
- Knows the characteristics of and relationships among points, lines, line segments, rays, and planes.
- 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.

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

MA.C.2.2.2

- Identifies and performs flips, slides, and turns given angle (90° , 180° , 270°) and direction (clockwise or counterclockwise) of turn.
- Knows the effect of a flip, slide or turn (90° , 180° , 270°) on a geometric figure.
- Explores tessellations.

14. The student identifies and plots positive ordered pairs (whole numbers) in a rectangular coordinate system (graph).

MA.C.3.2.2:

- Knows how to identify, locate, and plot ordered pairs of whole numbers on a graph or on the first quadrant of a coordinate system.

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

MA.D. 1.2.1.

- Describes, extends, creates, predicts, and generalizes numerical and geometric patterns using a variety of models (for example, lists, tables, graphs, charts, diagrams, calendar math).
- Poses and solves problems by identifying a predictable visual or numerical pattern such as: Day 1 2 3 4 ... n Number of Calls 4 7 10??
- Explains and expresses numerical relationships and pattern generalizations, using algebraic symbols (for example, in the problem above, the number of calls on the nth day can be expressed as $3n+1$). A.D.1.2.1

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

MA.D.1.2.2

- Knows mathematical relationships in patterns (for example, Fibonacci numbers: 1, 1, 2, 3, 5, 8,).
- Analyzes and generalizes number patterns and states the rule for relationships (for example, 1, 4, 9, 16, the rule: +3, +5, +7, ...; or “squares of the whole numbers”).
- Applies the appropriate rule to complete a table or a chart, such as: IN1 2 3 9 OUT1 4 9?

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

- Knows which types of graphs are appropriate for different kinds of data (for example, bar graphs, line, or circle graphs)
- Interprets and compares information from different types of graphs including graphs from content-area materials and periodicals

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

MA.E.1.2.2

- Uses a stem-and-leaf plot from a set of data to identify the range, median, mean, and mode.
- Uses range and measures of central tendency in real-world situations

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

MA.E.2.2.1

- 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

20. 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 survey to collect data.
- As a class project, discusses ways to choose a sample representative of a large group such as a sample representative of the entire school.
- Creates an appropriate graph to display data, including titles, labels, scales, and intervals.
- Interprets the results using statistics (range and measures of central tendency).

