

8th Grade Math Syllabus

School: Smoky Mountain Elementary School

Teacher: Mrs. Gilland

Room: E131

School Year: 2026 - 2027

1st 9 Weeks

- **8.G.1** Describe the effects of translations, rotations, reflections, and dilations on two-dimensional figures using coordinates.
- **8.G.2** Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.
- **8.EE.5** Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.
- **8.EE.6** Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; know and apply the equation $y=mx$ for a line through the origin and the equation $y=mx+b$ for a line intercepting the vertical axis at b .
- **8.EE.7** Solve linear equations in one variable.
- **8.EE.8** Analyze and solve systems of two linear equations graphically.
- **8.EE.9** By graphing on the coordinate plane or by analyzing a given graph, determine the solution set of a linear inequality in one or two variables.

2nd 9 Weeks

Unit 3: Functions

This unit introduces students to the concept of a function, a fundamental idea in mathematics. They'll learn to identify functions, represent them in different ways, and understand linear functions.

Tennessee State Standards:

- **8.F.1** Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.
- **8.F.2** Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and another linear function represented by an algebraic expression, determine which function has the greater rate of change.
- **8.F.3** Know and interpret the equation $y=mx+b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function $A=s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4), and (3,9), which are not on a straight line.
- **8.F.4** Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x,y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
- **8.F.5** Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g. where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.
- **8.EE.1** Know and apply the properties of integer exponents to generate equivalent numerical expressions.
- **8.EE.3** Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities and to express how many times as much one is than the other.
- **8.EE.4** Using technology, solve world-real problems with numbers expressed in decimal and scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (For example, use millimeters per year for seafloor spreading).

Unit 1: The Number System

This unit focuses on expanding students' understanding of the real number system by introducing irrational numbers. Students will learn to distinguish between rational and irrational numbers and work with integer exponents.

Tennessee State Standards:

- **8.NS.1** Know that real numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually or terminates, and convert a decimal expansion which repeats eventually or terminates into a rational number.
 - **8.NS.2** Use rational approximations of irrational numbers to compare the size of irrational numbers by locating them approximately on a number line diagram. Estimate the value of irrational expressions.
 - **8.EE.2** Use square root and cube root symbols to represent solutions to equations of the form $x^2=p$ and $x^3=p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes.
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Unit 4: Geometry

Students in this unit will explore geometric concepts including transformations, the Pythagorean Theorem, and volume. They will apply these concepts to solve both mathematical and real-world problems.

Tennessee State Standards:

- **8.G.3** Explain a model of the Pythagorean Theorem and its converse.
- **8.G.4** Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
- **8.G.5** Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.
- **8.G.6** Apply the formulas for the volumes of cones, cylinders, and spheres to solve real-world and mathematical problems.

Unit 5: Statistics and Probability

This unit focuses on data analysis and probability. Students will learn to construct and interpret scatter plots, understand patterns of association, and use two-way tables.

Tennessee State Standards:

- **8.SP.1** Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
- **8.SP.2** Know that straight lines are widely used to linear model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
- **8.SP.3** Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.
- **8.SP.4** Find probabilities of and represent sample spaces for compound events using organized lists, tables, tree diagrams, and simulation.

4th 9 Weeks

During this time we will be practicing for the TCAP Test which will be given April 12th - 30th. We will have 3 weeks left after TCAP at which time we will be doing STEM Activities.

Case Benchmark Testing:

1st Test - Oct. 1st - Oct.9th

2nd Test - Dec. 9th - Dec. 17th

3rd Test - March 2nd - March 12th

Grading Policy

- 90-100 A
- 80-89 B
- 70-79 C
- 60-69 D
- Below 59 F

Grades will be taken on the following:

- Mastery Connect Test
- Edulastic Spiral Review
- Study Island Practice Sessions

Classroom Expectations

- **Be Respectful:** Treat your classmates, your teacher, and the classroom with respect.
- **Be Responsible:** Come to class prepared with all necessary materials and be on time.
- **Be Engaged:** Participate actively in discussions and activities. Ask questions and share your ideas.

Materials Needed

* Notebook specifically for math

- Pencil
- Loose-leaf paper
- Optional: Colored pencils or markers

This syllabus is subject to change at the teacher's discretion.