**8th Grade Mathematics**

District Essential Standards and Learning Targets

2.1 Apply the properties of integer exponents to generate equivalent numerical expressions.

- I can simplify expressions using product rule.
- I can simplify expressions using quotient rule.
- I can simplify expressions using the power rule.
- I can simplify expressions using zero exponent rule.
- I can simplify expressions using negative exponent rule.
- I can simplify an expression using multiply exponent rules.

3.2 Describe and solve linear equations in one variable with one solution ($x = a$), infinitely many solutions ($a = a$), or no solutions ($a = b$). Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).

- I can solve equations by combining like terms.
- I can solve equations by using the distributive property.
- I can solve mutli-step equations with variables on both sides.
- I can determine the number of solutions - one, infinitely many, and none.
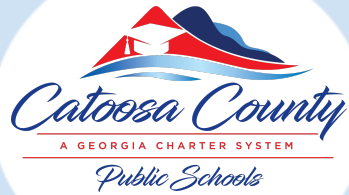
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3.3 Create and solve linear equations and inequalities in one variable within a relevant application.

- I can write an equation from a real world problem.
- I can solve an inequality.
- I can write inequalities from a real world problem.
- I can solve inequalities from a real world problem.
- I can interpret the solution of an equation/ inequality in a real world problem.

4.1 Use the equation y = mx (proportional) for a line through the origin to derive the equation y = mx + b (non-proportional) for a line intersecting the vertical axis at b.

- I can identify positive, negative, zero, and undefined slope from a graph.
- I can find slope and y-intercept from a graph.
- I can find slope and y-intercept from a table/two points.
- I can find slope and y-intercept from an equation.
- I can identify proportional vs non-proportional relationships.

8.2 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles within authentic, mathematical problems in two and three dimensions.

- I can use the pythagorean theorem to prove if a triangle is a right triangle.
- I can use the pythagorean theorem to find the hypotenuse.
- I can use the pythagorean theorem to find the missing leg.

8.3 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system in practical, mathematical problems.

- I can use Pythagorean Theorem to find the distance between two points on a coordinate plane.
- I can use the Pythagorean Theorem to find the unknown distance in real world problems.
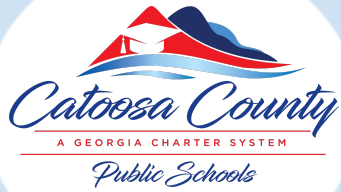
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5.2 Within realistic situations, identify and describe examples of functions that are linear or nonlinear. Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

- I can determine if a function is linear/non-linear (graph).
- I can model (graph) functions that are linear/non-linear and increasing/decreasing given a real world situation. (e.g. - Dist/Time Graphs)

5.4 Compare properties (rate of change and initial value) of two functions used to model an authentic situation each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).

- I can identify a relation as a function or not a function.
- I can compare properties of functions by **rate of change** in equations, graphs, tables, and word problems.
- I can compare properties of functions by **initial value** in equations, graphs, tables, and word problems.

5.5 Write and explain the equations $y = mx + b$ (slope-intercept form), $Ax + By = C$ (standard form), and $(y - y_1) = m(x - x_1)$ (point-slope form) as defining a linear function whose graph is a straight line to reveal and explain different properties of the function.

- I can identify slope and y-intercept from a linear equation in standard form.
- I can identify slope and y-intercept from a linear equation in point-slope form.

5.8 Graph and analyze linear functions expressed in various algebraic forms and show key characteristics of the graph to describe applicable situations.

- I can graph the equation $y = mx + b$
- I can explain rate of change and initial value by its relationship to a graph.
- I can explain rate of change and initial value by describing its relationship to a table.
- I can explain rate of change and initial value by describing its relationship to an equation.
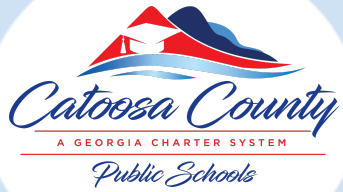
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7.1 Interpret and solve relevant mathematical problems leading to two linear equations in two variables.

- I can solve a system of equations by graphing; including one solution, no solutions, and infinitely many solutions.
- I can solve a system of equations by elimination.
- I can solve a system of equations by substitution.
- I can write a system of equations to represent a real world situation.
- I can interpret the solution of a system of equations.