Jackson County Core Curriculum Collaborative (JC4)	
8th Grade Math	
Standard	**Learning Targets in Student Friendly Language**
8.NS.1	I can identify whether a number is rational or irrational by whether its decimal form is exact, repeating, or does not repeat.
	I can convert a rational number to a decimal.
	I can convert a terminating or repeating decimal into a fraction.
	I can classify rational and irrational numbers.
	I can describe the difference between rational and irrational numbers.
8.NS.2	I can estimate rational and irrational numbers in order to compare their relative size and location on a number line.
	I can use reasoning to determine between which two consecutive whole numbers a square root will fall on a number line.
	I can estimate the value of an irrational number.
8.EE.1	I can describe and apply the properties of integer exponents to expressions.
	I can explain the properties of integer exponents to generate equivalent numerical expressions.
	I can apply the properties of integer exponents to generate equivalent numerical expressions.
8.EE.2	I can solve one-step equations requiring square or cube roots and determine when the solution is rational or irrational.
	I can evaluate square roots of small perfect squares.
	I can evaluate cube roots of small perfect cubes.
	I can justify that a non-perfect square is irrational such as square root of 2.
	I can solve equations that include taking square roots and cube roots.
8.EE.3	I can estimate and compare very large and very small quantities using scientific notation.
	I can rewrite numbers in standard form into scientific notation.
	I can expand numbers written in scientific notation into standard form.
	I can compare the magnitude of two or more numbers written in scientific notation.
8.EE.4	I can describe when and where to use scientific notation and choose appropriate units for very large and very small numbers.
	I can add, subtract, multiply or divide numbers written in scientific notation.
	I can find appropriate units for very large and small quantities.
	I can identify and interpret various ways scientific notation is displayed on calculators.
8.EE.5	I can compare, contrast, and interpret multiple representations of proportional relationships (graphs, tables, equations, and verbal models).
	I can compare different proportional relationships represented in multiple ways such as a graph, table, or equation.
	I can graph a proportional relationship and interpret the slope of the graph as the unit rate.
8.EE.6	I can use similar triangles to explain why the slope *m* is the same between any two distinct points on a non-vertical line and to derive the equations y = mx and y = mx+b.
	I can explain, using similar triangles, why the slope of a line is the same between any two points on a non-vertical line.
	I can determine the slope of a line from a graph, table, and linear equation.
	I can use similar triangles to derive an equation of the form y = mx for a line through the origin.
	I can use similar triangles to derive an equation of the form y = mx + b for a line intercepting the vertical axis at b (the y-intercept).
8.EE.7	I can write, solve, and interpret the solution set of multi-step linear equations in one variable.
8.EE.7.a	I can determine the solution to a linear equation using the properties of real numbers.

	I can give examples of linear equations with one solution, infinitely many solutions, or no solution.
8.EE.7.b	I can solve linear equations with rational number coefficients.
	I can expand expressions using the distributive property and/ or collecting like terms to find the solution of an equation.
8.EE.8	I can write, solve, and interpret the solutions to systems of linear equations with two variables graphically and algebraically.
8.EE.8.a	I can explain why the solution to a system of two linear equations in two variables is the point of intersection of their graphs.
	I can describe the point of intersection between two lines as the point that satisfies both equations.
	I can explain how to recognize, from their graphs, if the solution set has one, zero, or an infinite number of points.
8.EE.8.b	I can use algebraic reasoning (simple substitution) and the properties of real numbers to solve a system of linear equations.
	I can estimate the point(s) of intersection for a system of two equations in two unknowns by graphing the equations.
	I can solve simple cases of systems of two linear equations in two variables by inspection.
8.EE.8.c	I can solve real-world and mathematical problems that lead to pairs of simultaneous linear equations and interpret the solution in the context of the problem.
8.F.1	I can determine if a relation is a function using a table, graph, or set of ordered pairs.
	I can reason whether a table or graph models a function or not.
	I can apply a function rule for any input that produces exactly one output.
	I can generate a set of ordered pairs (input and output) from a function and use them to graph the function on the coordinate plane.
8.F.2	I can compare and contrast multiple representations (tables, graphs, equations, and verbal models) of two functions.
	I can determine the properties of a function written in algebraic form (e.g. rate of change, y-intercept interpretation, linear vs. non-linear).
	I can determine the properties of a function represented as a graph.
	I can determine the properties of a function when given the inputs and outputs in a table.
8.F.3	I can explain that the equation y=mx+b is the equation of a linear function whose graph is a straight line, where m is the slope and b is the y-intercept.
	I can create examples of nonlinear functions using multiple representations.
	I can compare the characteristics of linear and nonlinear functions using various representations.
8.F.4	I can construct a function to model a linear relationship from a table of values, two points, or verbal description.
	I can determine the rate of change and initial value of the function from two (x,y) values, a verbal description, values in a table, or graph.
	I can explain that the y-intercept is the initial value where x=0.
	I can explain the meaning of the rate of change and initial value of a linear function in terms of the situation it models.
	I can construct a function to model a linear relationship between two quantities.
8.F.5	I can create and interpret a graph of a function that describes the relationship between two variables.
	I can interpret parts of a story to coincide with parts of the function displayed on a graph.

	I can sketch a graph that shows the qualitative features of a function described verbally.
	I can create a story that matches the qualitative features of a given graph.
8.G.1	I can verify, by measuring and comparing lengths, angle measures, and parallelism of a figure and its image, that after a rigid transformation corresponding line segments have the same length, corresponding angles have the same measure, and corresponding parallel lines remain parallel.
	I can use prime notation to describe an image after a translation, reflection, or rotation.
	I can define and identify rotations, reflections, and translations.
	I can determine the center of rotation.
	I can identify direction and degree of rotation.
	I can identify the line of reflection.
8.G.1.a	I can accurately transform lines and line segments on the coordinate plane using rotations, reflections, and translations, and the correct notation.
	I can explain the preservation of the side lengths of a figure through a given transformation.
	I can identify corresponding sides of transformed figures.
	I can demonstrate that with rigid transformations, lines are taken to lines and line segments are taken to line segments of equal length.
8.G.1.b	I can accurately transform angles on the coordinate plane using rotations, reflections, and translations, and the correct notation.
	I can identify corresponding angles of transformed figures.
	I can justify that corresponding angles have the same measure.
8.G.1.c	I can accurately transform parallel lines on the coordinate plane using rotations, reflections, and translations, and the correct notation.
	I can explain that the distance between two parallel lines will be preserved after a translation, rotation, or reflection of the parallel lines.
	I can verify, by the slope criterion, that corresponding parallel lines remain parallel.
8.G.2	I can define the congruency of two-dimensional figures in terms of rigid transformations.
	I can describe a sequence of rotations, reflections, and translations that demonstrate the congruence between two figures.
	I can use congruency statements to determine whether corresponding sides of figures are congruent.
	I can explain how rigid transformations can be used to prove that two figures are congruent.
	I can perform a series of rigid transformations to prove or disprove that two given figures are congruent.
8.G.3	I can describe the effects of dilations, translations, rotations, and reflections on two-dimensional figures in the coordinate plane.
	I can discover the specific ways in which a transformation will change the coordinates of pre-images.
	I can describe the changes occurring to the x- and y- coordinates of a figure after a translation.
	I can describe the changes occurring to the x- and y- coordinates of a figure after a reflection.
	I can describe the changes occurring to the x- and y- coordinates of a figure after a rotation.
	I can describe the changes occurring to the x- and y- coordinates of a figure after a dilation.
8.G.4	I can define the similarity of two-dimensional figures in terms of transformations.
	I can describe a sequence of transformations that create a given image from a given pre-image.
	I can explain how transformations, including rotations, reflections, dilations, and translations, can be used to prove that two figures are similar.

8.G.5	I can create and defend informal arguments to justify facts about the angle sum and exterior angles of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similar triangles.
	I can informally prove that the sum of any triangle's interior angles will be 180 degrees.
	I can informally prove that the sum of any triangle's exterior angles will be 360 degrees.
	I can make conjectures regarding the relationships and measurements of the angles created when two parallel lines are cut by a transversal.
	I can defend an argument for how many corresponding pairs of angles in two triangles must be congruent in order for the triangles to be similar.
8.G.6	I can explain a proof of the Pythagorean Theorem and its converse.
	I can use visual models to demonstrate the relationship of the three side lengths of any right triangle.
	I can identify the legs and hypotenuse of a right triangle.
	I can use algebraic reasoning to relate a visual model to the Pythagorean Theorem.
	I can explain a proof of the converse of the Pythagorean Theorem.
8.G.7	I can determine the unknown side lengths in a right triangle problem using the Pythagorean Theorem.
	I can apply the Pythagorean Theorem to find an unknown side length of a right triangle.
	I can draw a diagram and use the Pythagorean Theorem to solve real-world problems involving right triangles.
8.G.8	I can determine the distance between two points in a coordinate plane using the Pythagorean Theorem.
	I can determine how to create a right triangle from two points on a coordinate graph.
	I can use the Pythagorean Theorem to solve for the distance between the two points.
8.G.9	I know and can apply the formulas for volumes of cones, cylinders, and spheres.
	I can derive the volume formulas for cylinders and cones.
	I can informally prove the relationship between the volume of a sphere and the volume of a circumscribed cylinder.
	I can solve real-world problems involving the volume of cylinders, cones, and spheres.
8.SP.1	I can model bivariate data in a scatter plot showing the different types of associations (clustering, outliers, positive and negative association, linear and nonlinear association).
	I can describe patterns such as clustering, outliers, positive or negative association, linear and nonlinear association.
	I can explain what the different patterns mean in specific contexts.
	I can construct scatter plots for data that involve two different variables.
	I can interpret the patterns of association in the context of the data sample.
8.SP.2	I can informally sketch a line of fit on a scatter plot, justify the location of the line; and explain why or why not a given line is a good fit.
	I can explain how straight lines are used to model relationships between two quantitative variables.
	I can recognize whether or not data plotted on a scatter plot represents a linear association.
	I can draw a straight trend line to approximate the linear relationship between the plotted points of two data sets.
	I can informally assess the model fit by judging the closeness of the data points to the line.
8.SP.3	I can solve problems using a linear equation to model bivariate measurement data in context.
	I can determine the equation of the trend line that approximates the linear relationship between the plotted points of two data sets.

	I can interpret the slope and intercept of the trend line in the context of the collected data.
	I can use the equation of the linear model of the data to summarize the given data and make predictions regarding additional data points.
8.SP.4	I can construct a two-way table to display bivariate categorical data and explain how they can be used to see patterns of association in categorical data.
	I can create a two-way table to record the frequencies of bivariate categorical values.
	I can determine the relative frequencies for rows and/or columns of a two-way table.
	I can use the relative frequencies and context of the problem to describe possible associations between the two sets of data.
Key:	
Yellow Highlight = Critical Area	
Blue Font Color = Long Term Learning Goal	
Black Font Color = Short Term (possibly daily) learning target WITHOUT condition and criteria.	