Coal City Unit District #1
Math 8
Math Curriculum

MA.8:1 **Students will be able to identify numbers that are not rational, and approximate them using rational numbers. (NS)**

MA.8:1-1   Identify whether numbers are rational or irrational.
MA.8:1-2   Approximate irrational numbers. (e.g. approximate the 3rd root of 10)
MA.8:1-3   Plot approximations of irrational numbers on a number line. (e.g. graph the 3rd root of 10)

MA.8:2 **Students will be able to solve problems involving radicals and integer exponents. (EE)**

MA.8:2-1   Generate equivalent numerical expressions using the properties of integer exponents, both positive and negative. (i.e. $3^2 \times 3^{-6} = 3^{-4}$)
MA.8:2-2   Evaluate square roots of perfect squares (1-15) and cube roots of perfect cubes (1-10), demonstrating knowledge that the square/cube roots that do not simplify to an integer are irrational.

MA.8:3 **Students will be able to analyze and use scientific notation to solve various problems. (EE)**

MA.8:3-1   Converting numbers in standard notation to scientific notation or vice versa.
MA.8:3-2   Compare numbers written in scientific notation.
MA.8:3-3   Add and subtract numbers in scientific notation.
MA.8:3-4   Multiply and divide numbers in scientific notation.

MA.8:4 **Students will be able to identify connections between proportional relationships, lines, and linear equations. (EE)**

MA.8:4-1   Graph linear equations.
MA.8:4-2   Identify the slope and y–intercept of a graphed line.
MA.8:4-3   Compare slopes when given two different proportional relationships represented in two different ways. (e.g. compare a distance-time equation and a distance-time graph to determine which of two moving objects has greater speed.)

MA.8:5   **Students will be able to solve linear equations and solve pairs of simultaneous linear equations. (EE)**

    MA.8:5-1   Solve linear equations in one variable that include using the distributive property and adding like terms within the equation, in one variable.

    MA.8:5-2   Solve simultaneous equations using algebra. (e.g. using the substitution or the elimination method)

    MA.8:5-3   Solve simultaneous equations by graphing.

MA.8:6   **Students will be able to define, evaluate, and compare functions. (F)**

    MA.8:6-1   Define/identify a function.

    MA.8:6-2   Compare the rate of change of functions given in different forms. (e.g. algebraically, graphically, numerically in tables, or by verbal descriptions)

    MA.8:6-3   Identify, graph or write a linear function in the form $y=mx+b$.

MA.8:7   **Students will be able to use functions to model relationships between quantities. (F)**

    MA.8:7-1   Construct a function to model a linear relationship between two quantities.

    MA.8:7-2   Describe qualitatively the functional relationship between two quantities by analyzing a graph. (e.g. looking at a graphed line, $y=5x$ or $y=2x$)

MA.8:8   **Students will be able to recognize congruence and similarity using physical models, transparencies, or geometry software. (G)**

    MA.8:8-1   Identify a shape or point that is reflected, translated, rotated, or dilated on the rectangular coordinate system.

    MA.8:8-2   Graph a shape or point that is reflected, translated, rotated, or dilated on the rectangular coordinate system.

    MA.8:8-3   Determine if two figures are congruent when given either their angles or side lengths.

MA.8:9   **Students will be able to apply the Pythagorean Theorem. (G)**

MA.8:9-1   Determine if a right triangle exists when given the lengths of the three sides of the triangle.
MA.8:9-2   Find a missing leg or hypotenuse of a right triangle given the other 2 side lengths.
MA.8:9-3   Solve real world problems using the Pythagorean Theorem for 2 or 3 dimensional figures.
MA.8:9-4   Find the distance between two points in a coordinate system by using the Pythagorean Theorem.

MA.8:10   **Students will be able to solve mathematical and real world problems involving volume of cylinders, cones, and spheres. (G)**

MA.8:10-1   Apply the formula for volume of a cylinder to solve mathematical and real world problems.
MA.8:10-2   Apply the formula for volume of a cone to solve mathematical and real world problems.
MA.8:10-3   Apply the formula for volume of a sphere to solve mathematical and real world problems.

MA.8:11   **Students will be able to investigate patterns in bivariate data. (SP)**

MA.8:11-1   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.
MA.8:11-2   Informally fit a straight line for scatter plots that suggest a linear association.
MA.8:11-3   Solve problems in the context of bivariate data, interpreting the slope and intercept, by using the equation of a linear model (e.g. in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height)
MA.8:11-4   Interpret stem and leaf plots.
MA.8:11-5   Interpret histograms.