DASD Curriculum K-U-D
8th Grade Math

Standards	Eligible Content	Know	Understand	Do
CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations.	M08.B-E.3.1.1 Write and identify linear equations in one variable with one solution, infinitely many solutions, or no solutions. 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). M08.B-E.3.1.2 Solve linear equations that have rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	The difference between one solution, no solutions and infinite solutions. The process of inverse operations to solve problems. They should know vocabulary such as: expressions, equations, coefficients, terms, distributive property, and variables.	Properties of algebraic expressions are needed to interpret and evaluate equations.	Solve multistep equations for one variable, incuding using the distributive property and combining like terms. Identify solutions; one solution, no solutions, infinite solutions. Analyze real world scenarios and create and solve a mathematical model that represents them.
CC.2.1.8.E.1 Distinguish between rational and irrational numbers using their properties.	M08.A-N.1.1.1 Determine whether a number is rational or irrational. For rational numbers, show that the decimal expansion terminates or repeats (limit repeating decimals to thousandths). M08.A-N.1.1.2 Convert a terminating or repeating decimal to a rational number (limit repeating decimals to thousandths).	Vocabulary: Rational and Irrational number, Terminating decimals, non-terminating decimal, whole numbers, real numbers, natural numbers, integers, cubing, squaring That numerical values can be represented in different forms	Mathematical relationships, extending to rational and irrational numbers, can be identified, represented, and analyzed.	Categorizing numbers as either rational or irrational. Converting between fractions and decimals
CC.2.1.8.E.4 Estimate irrational numbers by comparing them to rational numbers.	M08.A-N.1.1.3 Estimate the value of irrational numbers without a calculator (limit whole number radicand to less than 144). Example: √5 is between 2 and 3 but closer to 2. M08.A-N.1.1.4 Use rational approximations of irrational numbers to compare and order irrational numbers. M08.A-N.1.1.5 Locate/identify rational and irrational numbers at their approximate locations on a number line.	The roots of perfect squares and perfect cubes. How to square 1-12 and cube 1-5. Vocabulary: square root, cube root, radical sign That numberical estimations can be used to compare and order numbers. The difference between rational and irrational numbers.	Mathematical relationships, extending to rational and irrational numbers, can be compared and estimated.	Calculating square and cube roots find the side lengths of squares and cubes Order rational/irrational numbers on number lines or from least to greatest and greatest to least.
CC.2.3.8.A.3 Understand and apply the Pythagorean Theorem to solve problems.	M08.C-G.2.1.1 Apply the converse of the Pythagorean theorem to show a triangle is a right triangle. M08.C-G.2.1.2 Apply the Pythagorean theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. (Figures provided for problems in three dimensions will be consistent with Eligible Content in grade 8 and below.) M08.C-G.2.1.3 Apply the Pythagorean theorem to find the distance between two points in a coordinate system. M08.B-E.1.1.2 Use square root and cube root symbols to represent solutions to equations of the form x2=p and x3=p, where p is a positive rational number. Evaluate square roots of perfect squares (up to and including 122) and a cube roots of perfect cubes (up to and including 53) without a calculator.	Unit Vocabulary - Pythagorean Theorem, Leg, hypotenuse - and that the Pythagorean theorem can be used to find the side lengths of right triangles, identify right triangles and the distance between two points.	Pythagorean Thereom allow us to calculate attributes of right triangles and distance between points on the coordinate plane.	Apply the converse of the Pythagorean theorem to show a triangle is a right triangle Apply the Pythagorean theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. Apply the Pythagorean theorem to find the distance between two points in a coordinate system. Use similar right triangles to show and explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane

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CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions.	M08.B-E.1.1.3 Estimate very large or very small quantities by using numbers expressed in the form of a single digit times an integer power of 10 and express how many times larger or smaller one number is than another. Example: Estimate the population of the United States as 3 × 108 and the population of the world as 7 × 109 and determine that the world population is more than 20 times larger than the United States' population. M08.B-E.1.1.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Express answers in scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology (e.g., interpret 4.7EE9 displayed on a calculator as 4.7 × 109).	That Scientific Notation represents very large and very small numbers. How to apply exponent rules to generate equivalent expressions. Exponent, base, power, monomials, Scientific Notation, Standard Form	Estimates of very large and very small numbers can be expressed as mathematical expressions of a single digit times a power of 10.	Add, subtract, multiply and divide numbers in Scientific Notation Use appropriate units Use exponent rules to multiply and divide with Scientific Notation.
CC.2.2.8.B.1 Apply concepts of radicals an	M08.B-E.1.1.1 Apply one or more properties of integer exponents to generate equivalent numerical expressions without a calculator. M08.B-E.1.1.2 Use square root and cube root symbols to represent solutions to equations of the form x2=p and x3=p, where p is a positive rational number. Evaluate square roots of perfect squares (up to and including 122) and a cube roots of perfect cubes (up to and including 53) without a calculator. M08.B-E.1.1.3 Estimate very large or very small quantities by using numbers expressed in the from of a single digit times an integer power of 10 and express how many times larger or smaller one number is than another. M08.B-E.1.1.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Express answers in scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g. use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology (e.g., interpret 4.7EE9 displayed on a calculator as 4.7 x 109.	Solving problems involving radicals and integer exponents, Rational and Irrational number, Terminating decimals, non-terminating decimal, whole numbers, real numbers, natural numbers, integers, cubing, squaring	Properties of algebraic expressions are needed to generate equivalent expressions.	Apply one or more properties of integer exponents to generate equivalent numerical expressions without a calculator (with final answers expressed in exponential form with positive exponenets) Estimate very large or very small quantities by using numbers expressed in the form of a single digit times an integer power of 10 and express how many times larger or smaller one number is than another.

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CC.2.2.8.C.1 Define, evaluate, and compare functions.	M08.B-F.1.1.1 Determine whether a relation is a function. M08.B-F.1.1.2 Compare properties of two functions, each represented in a different way (i.e., algebraically, graphically, numerically in tables, or by verbal descriptions). M08.B-F.1.1.3 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.	Being able to explain the difference between linear and nonlinear functions (Constant rate of change and the proportionality of linear relationships). Using the understanding of a function to analyze and interpret functions in a given context.	Mathematical relationships can be identified, compared and interpreted.	Define, evaluate, and compare functions displayed algebraically, graphically, or numerically in tables or by verbal descriptions. Given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change. Analyze and interpret functions from a: Table Graph Relation Equation
CC.2.2.8.C.2 Use concepts of functions to model relationships between quantities	M08.B-F.2.1.1 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. M08.B-F.2.1.2 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 or determine a graph that exhibits the qualitative features of a function that has been described verbally.	How to interpret Slope and Relationships between two variables Functional Relationships between quantities Graph linear functions.	Represent or interpret functional relationships between quantities using tables, graphs, and descriptions.	Use functions to model relationships between quantities.
CC.2.2.8.B.2 Understand the connections between proportional relationships, lines, and linear equations.	M08.B-E.2.1.1 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.	Students will write, solve, and/or graph linear equations using various methods	Linear relationships between two variables can be analyzed and described using slope.	Understand the connections between proportional relationships, lines, and linear equations.

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CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations.	M08.B-E.2.1.2 Use similar right triangles to show and explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane. M08.B-E.2.1.3 Derive 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. M08.B-E.3.1.1 Write and identify linear equations in one variable with one solution, infinitely many solutions, or no solutions. 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). M08.B-E.3.1.2 Solve linear equations that have rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. M08.B-E.3.1.3 Interpret solutions to a system of two linear equations in two variables as points of intersection of their graphs because points of intersection satisfy both equations simultaneously. M08.B-E.3.1.4 Solve systems of two linear equations in two variables algebraically and estimate solutions by graphing the equations. Solve simple cases by inspection. M08.B-E.3.1.5 Solve real-world and mathematical problems leading to two linear equations in two variables.	Compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed	Linear relationships between equations can be analyzed, evaluated, and compared in various ways.	Use similar right triangles to show and explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane. Given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair. Derive 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. Write and identify linear equations in one variable with one solution, infinitely many solutions, or no solutions. 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). Solve linear equations that have rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.
CC.2.4.8.B.1 Analyze and/or interpret bivariate data displayed in multiple representations.	M08.D-S.1.1.1 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 correlation, linear association, and nonlinear association. M08.D-S.1.1.2 For scatter plots that suggest a linear association, identify a line of best fit by judging the closeness of the data points to the line.	To use Lines of Best Fit to interpret bivariate data. To look for patterns and use appropriate unit vocabulary to interpret data.	Data can be modeled and used to make inferences.	Create and interpret scatter plots. Identify line of best fit and write an equation for the line.

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CC.2.4.8.B.2 Understand that patterns of association can be seen in bivariate data utilizing frequencies.	M08.D-S.1.1.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. Example: 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. M08.D-S.1.2.1 Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible associations between the two variables. Example: Given data on whether students have a curfew on school nights and whether they have assigned chores at home, is there evidence that those who have a curfew also tend to have chores?	A two-way table and relative frequency.	Data can be interpreted and analyzed through patterns.	Create and interpret Two-way Tables 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 correlation, linear association, and nonlinear association. For scatter plots that suggest a linear association, identify a line of best fit by judging the closeness of the data points to the line. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.
CC.2.3.8.A.1 Apply the concepts of volume of cylinders, cones, and spheres to solve real‐world and mathematical problems.	M08.C-G.3.1.1 Apply formulas for the volumes of cones, cylinders, and spheres to solve real-world and mathematical problems. Formulas will be provided.	Formulas for cylinders, cones and spheres can be used to find the volume, height or radius of the geomatric figures.	Geometric relationships can be described, analyzed, evaluated, and classified based on spacial reasoning and/or visualization.	Apply volume formulas of cones, cylinders, and spheres to solve real world problems
CC.2.2.8.B.3 - Analyze and solve linear equations and pairs of simultaneous linear equations.	M08.B-E.3.1.3 - Interpret solutions to a system of two linear equations in two variables as points of intersection of their graphs because points of intersection satisfy both equations simultaneously. M08.B.3.1.4 - Solve systems of two linear equations in two variables algebraically and estimate solutions by graphing the equations. Solve simple cases by inspection. M08.B-E.3.1.5 - Solve real-world and mathematical problems leading to two linear equations in two variables.	That a system of equations can be solved by graphing, substitution and elimination	Linear relationships between equations can be analyzed, evaluated, and compared in various ways.	Answer a systems of equations from a graph, show that they ordered pair satisfies both equations, solving systems of equations on a graph, solving a systems of equations using substitution and elimation, create, interpret, and solve word problems involving a system of equations
CC.2.3.8.A.2 Understand and apply congruence, similarity, and geometric transformations using various tools.	M08.C-G.1.1.1 Identify and apply properties of rotations, reflections, and translations. M08.C-G.1.1.2 Given two congruent figures, describe a sequence of transformations that exhibits the congruence between them. M08.C-G.1.1.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. M08.C-G.1.1.4 Given two similar two-dimensional figures, describe a sequence of transformations that exhibits the similarity between them.	Angle measures are preserved in rotations, reflections, and translations Apply properties of geometric transformations to verify congruence or similarity.	Geometric relationships on the coordinate plane can be described, analyzed, evaluated, and classified based on spacial reasoning and/or visualization.	Identify and apply properties of rotations, reflections, and translations. Given two congruent figures, describe a sequence of transformations that exhibits the congruence between them. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. Given two similar two-dimensional figures, describe a sequence of transformations that exhibits the similarity between them.