DASD Curriculum KUD
6th Grade Math

Standards	Eligible Content	Know	Understand	Do
Standards	**Eligible Content**	**Facts, Formula, Vocab**	**Big ideas, concepts, principles, generalization**	**Numeracy, literacy, thinking strategies**
CC.2.1.6.E.3 Develop and/or apply number theory concepts to find common factors and multiples.	**M06.A-N.2.2.1** Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. **M06.A-N.2.2.2** Apply the distributive property to express a sum of two whole numbers, 1 through 100, with a common factor as a multiple of a sum of two whole numbers with no common factor. Example: Express 36+8 as 4(9+2)	Vocabulary: common multiples (Least common multiple), and factors (Greatest common factor), least common multiple, greatest common factor, distributive property	Mathematical relationships among numbers can be represented, compared, and analyzed.	Finding the Greatest Common Factor Finding the Least Common Multiple Apply the Distributive Property
CC.2.1.6.E.4 Apply and extend previous understandings of numbers to the system of rational numbers.	**M06.A-N.3.1.3** Locate and plot integers and other rational numbers on a horizontal or vertical number line; locate and plot pairs of integers and other rational numbers on a coordinate plane. **M06.A-N.3.1.1** Represent quantities in real-world contexts using positive and negative numbers, explaining the meaning of 0 in each situation (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge). **M06.A-N.3.1.2** Determine the opposite of a number and recognize that the opposite of the opposite of a number is the number itself (e.g., –(–3) = 3; 0 is its own opposite). **M06.A-N.3.2.1** Write, interpret, and explain statements of order for rational numbers in real-world contexts. Example: Write – 3°C > – 7°C to express the fact that – 3°C is warmer than – 7°C. **M06.A-N.3.2.2** Interpret the absolute value of a rational number as its distance from 0 on the number line and as a magnitude for a positive or negative quantity in a real-world situation. Example: For an account balance of – 30 dollars, write |– 30| = 30 to describe the size of the debt in dollars, and recognize that an account balance less than – 30 dollars represents a debt greater than 30 dollars. **M06.A-N.3.2.3** Solve real-world and mathematical problems by plotting points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	Vocabulary: Positive number, negative number, opposite numbers, rational numbers, Absolute Value, Inequalities, greater than, less than, greater than or equal to, less than or equal to. The absolute value of a number is its distance from zero All four quadrants of the coordinate plane Correspondence between the signs of a pair of coordinates and the quadrant of the corresponding point. Opposites have the same absolute value because they have the same distance from zero	Mathematical relationships among numbers can be represented, compared, and analyzed.	Plot positive and negative numbers on a veritcal and horizontal number line Graphing inequalties to show possible values Use absolute value to find the distance from zero Use absolute value notation Plot pairs of signed number coordinates in the plane Use coordinates to calculate horizontal and vertical distances between two points

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CC.2.1.6.E.1 Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	**M06.A-N.1.1.1** Interpret and compute quotients of fractions (including mixed numbers), and solve word problems involving division of fractions by fractions. Example 1: Given a story context for (2/3) ÷ (3/4), explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = (a/b) × (d/c) = ad/bc.) Example 2: How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi? Example 3: How many 2 1/4-foot pieces can be cut from a 15 1/2-foot board?	Vocabulary: Divisor, Dividend, Quotient, Reciprocal, Factor, Multiple, Product, Evaluate, Numerator, and Denominator. Reciprocal- a/b * b/a = 1	Fractional quantities can be estimated, analyzed, and computed using appropriate strategies.	Situations that involve division; ""How many in each group?"" when group size is unknown, or ""How many groups?"" when the number of groups is unknown Understand that the sizes of the numerator and denominator affect the size of their quotient Understand that dividing by a fraction (a/b) is the same as multiplying by its reciprocal" Compute quotients of fractions Use division to find an unknown area or volume measurement Critique the reasoning of others about division situations and represenations Solve division problems involving fractions set in real-world contexts Use specific terminology when interpreting, represent, and describing division situations
CC.2.1.6.E.2 Identify and choose appropriate processes to compute fluently with multi‑digit numbers.	**M06.A-N.2.1.1** Solve problems involving operations (+, −, ×, and ÷) with whole numbers, decimals (through thousandths), straight computation, or word problems.	Vocabulary: At least, partial products, long division, precision, accuracy, operation, partial quotients, place value, and at most. Long division standard algorithm Using Area model to solve multiplication Partial Quotients Method Going over the rules for the 4 standard operations in regards to decimals. Place value and the properties of operations Algorithms for addition, subtraction, and multiplication Efficient algorithms for multiplication from whole numbers to decimals Representations of decimals Situations that involve division; "How many in each group?" when group size is unknown, or "How many groups?" when the number of groups is unknown Know that the sizes of the divisor and dividend affect the size of their quotient	Whole and decimal numerical quantities can be estimated, analyzed, and computed using appropriate strategies.	Use an efficient algorithm for division and extend their use of other base-ten algorithms to decimals of arbitrary length Find the sums and differences of decimals to hundredths, and products of a decimal and whole number Calculate sums of two decimals by representing each number as a base-ten diagram Estimate products of a whole number and a decimal Interpret diagrams, and to interpret results of calculations in the contexts from which they arose Solve division problems using standard algorithm Solve division problems involving decimals set in real-world contexts Use specific terminology when interpreting, represent, adn describing division situations

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CC.2.1.6.D.1 Understand ratio concepts and use ratio reasoning to solve problems.	**M06.A-R.1.1.1** Use ratio language and notation (such as 3 to 4, 3:4, 3/4) to describe a ratio relationship between two quantities. Example 1: "The ratio of girls to boys in a math class is 2:3 because for every 2 girls there are 3 boys." Example 2: "For every five votes candidate A received, candidate B received four votes." **M06.A-R.1.1.2** Find the unit rate a/b associated with a ratio a:b (with b ≠ 0) and use rate language in the context of a ratio relationship. Example 1: "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." Example 2: "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger." **M06.A-R.1.1.3** Construct tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and/or plot the pairs of values on the coordinate plane. Use tables to compare ratios.	Vocabulary: Ratio, Double Number Line, Equivalent Ratios, Per, table, Unit Rate, and Tape Diagram Ratios: _to_ _for every_ A ratio is an association between two quantities, 3 Way to Write: a/b a to b a:b A quantity is a measurement that can be specified by a number and a unit All ratios that are equivalent to a : b can be made by multiplying both a : b and by the same non-zero number	Mathematical relationships and patterns between numbers can be represented, compared, and analyzed.	Students use tables, double number lines, and descrete diagrams to represent equivalent ratios Ask and answer questions about ratios of each quantity and the total of the two. Explain features of ratio diagrams Compare situations with different rates, same rate and different rates, and equivalent ratios Describe and represent ratio associations Represent doubling and tripling of quantities in a ratio Justify whether ratios are or aren't equivalent and why information is needed to solve a ratio problem Representation of ratios Analyze contexts that are often expressed in terms of ratios
CC.2.1.6.D.1 Understand ratio concepts and use ratio reasoning to solve problems.	**M06.A-R.1.1.4** Solve unit rate problems including those involving unit pricing and constant speed. Example: If it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed? **M06.A-R.1.1.5** Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percentage.	Vocabulary: Unit Price, Unit Rate, Speed, Tape Diagram, and Percentage. Example: Meters per second and finding good/better/best deals Percentages- Always out of 100 Equivalent ratios have the same unit rates Unit rates are per 1 One of 2 values may be more useful than the other in reasoning abaout a given situation. Equivalent ratios are produced by multiplying a unit rate. The connection between percentages and equivalent ratios.	Mathematical relationships and patterns between numbers can be represented, compared, and analyzed.	Find equivalent ratios, unit ratios, unit rates and percentages from multiple contexts with reference to benchmark percentages, tape diagrams, and other mathematical representation. Find equivalent ratios. Find unit rates for ratios. Calculate a a percentage based on a ratio and its unit rate.

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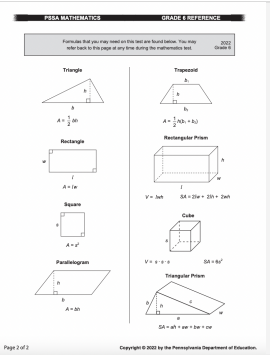
CC.2.3.6.A.1 Apply appropriate tools to solve real-world and mathematical problems involving area, surface area, and volume.	**M06.C-G.1.1.1** Determine the area of triangles and special quadrilaterals (i.e., square, rectangle, parallelogram, rhombus, and trapezoid). Formulas will be provided. **M06.C-G.1.1.2** Determine the area of irregular or compound polygons. Example: Find the area of a room in the shape of an irregular polygon by composing and/or decomposing. **M06.C-G.1.1.3** Determine the volume of right rectangular prisms with fractional edge lengths. Formulas will be provided. **M06.C-G.1.1.4** Given coordinates for the vertices of a polygon in the plane, use the coordinates to find side lengths and area of the polygon (limited to triangles and special quadrilaterals). Formulas will be provided. **M06.C-G.1.1.5** Represent three-dimensional figures using nets made of rectangles and triangles. **M06.C-G.1.1.6** Determine the surface area of triangular and rectangular prisms (including cubes). Formulas will be provided.	Vocabulary: Quadrilateral, Parallelogram, base (of a parallelogram or triangle), height, compose, decompose, area, polygon, vertex, edge, face, prism, and pyramid Composition and decomposition of shapes "dot" notation instead of "cross" notation for multiplication	Geometric relationships can be described, analyzed, and classified based on spacial reasoning and/or visualization.	Assemble and draw nets for polyhedra and use nets to determine surface areas Use formulas to find area Find the areas of polygons by decomposing and rearranging them to make figures whose areas they can determine. Find the surface areas of polyhedra with triangular and rectangular surfaces Describe the features of polyhedra and their nets. Justify claims about the base, height, or areas of shapes
				
CC.2.2.6.B.1 Apply and extend previous understandings of arithmetic to algebraic expressions.	**M06.B-E.1.1.1** Write and evaluate numerical expressions involving whole-number exponents. **M06.B-E.1.1.2** Write algebraic expressions from verbal descriptions. Example: Express the description “five less than twice a number” as 2y – 5. **M06.B-E.1.1.3** Identify parts of an expression using mathematical terms (e.g., sum, term, product, factor, quotient, coefficient, quantity). Example: Describe the expression 2(8 + 7) as a product of two factors. **M06.B-E.1.1.4** Evaluate expressions at specific values of their variables, including expressions that arise from formulas used in real-world problems. Example: Evaluate the expression b2 – 5 when b = 4. **M06.B-E.1.1.5** Apply the properties of operations to generate equivalent expressions. Example 1: Apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x. Example 2: Apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6(4x + 3y). Example 3: Apply properties of operations to y + y + y to produce the equivalent expression 3y.	Vocabulary: Variable, coefficient, equation, expression, equivalent, term, independent variable, dependent variable, coordinate plane, exponent, horizontal axis, vertical axis, and origin A variable represents an unknown value. Distributive property How to determine whether two expressions are equivalent. The different parts of an equation and expressions.	Properties of algebraic expressions are needed to generate equivalent expressions.	Write expressions with whole-number exponents, whole-number, fraction, or variable bases. Determine whether pairs of numerical/algebraic expressions are equivalent using the distributive property and explain reasoning Use diagrams to identify values of variables for which two linear expressions are equal. Write linear expressions and represent them with area diagrams Evaluating variable exponential expressions Identifiying parts of an equation/expression

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CC.2.2.6.B.2 Understand the process of solving a one-variable equation or inequality and apply to real-world and mathematical problems.	**M06.B-E.2.1.1** Use substitution to determine whether a given number in a specified set makes an equation or inequality true. **M06.B-E.2.1.2** Write algebraic expressions to represent real-world or mathematical problems. **M06.B-E.2.1.3** Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q, and x are all non-negative rational numbers. **M06.B-E.2.1.4** Write an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem and/or represent solutions of such inequalities on number lines.	What makes a linear equation true or false. Understand that a solution to an equation in one variable is a number that makes the equation true when the number is substituted for all instances of the variable. Balanced and unbalanced "hanger diagrams" Solutions in the original contexts Inverse operations	Properties of algebraic expressions are needed to interpret and evaluate equations and inequalities.	Solve equations where variables are rational numbers that can produce complex fractions. Reason about solving the linear equations Write linear equations to represent situations Create balanced and unbalanced "hanger diagrams" Represent linear expressions with tape diagrams
CC.2.2.6.B.3 Represent and analyze quantitative relationships between dependent and independent variables.	**M06.B-E.3.1.1** Write an equation to express the relationship between the dependent and independent variables. Example: In a problem involving motion at a constant speed of 65 units, write the equation d = 65t to represent the relationship between distance and time. **M06.B-E.3.1.2** Analyze the relationship between the dependent and independent variables using graphs and tables and/or relate these to an equation.	Graphing in quadrant I X-axis and y-axis Relationships between independent and dependent variables	Mathematical relationships can be represented and compared in various ways.	Identify independent and dependent variables Graphing independent and dependent variables Match tables, graphs and equations
CC.2.4.6.B.1 Demonstrate an understanding of statistical variability by displaying, analyzing, and summarizing distributions.	**M06.D-S.1.1.1** Display numerical data in plots on a number line, including line plots, histograms, and box-andwhisker plots. **M06.D-S.1.1.2** Determine quantitative measures of center (e.g., median, mean, mode) and variability (e.g., range, interquartile range, mean absolute deviation). **M06.D-S.1.1.3** Describe any overall pattern and any deviations from the overall pattern with reference to the context in which the data were gathered. **M06.D-S.1.1.4** Relate the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	Vocabulary: Numerical data, categorical data, dot plot, statistical question, variability, distribution, frequency/frequency table, center/measure of center, spread, histrogram, bins, symmetrical, peak, outliers cluster, Skew, mean, Mean absolute deviation (MAD) median, mode, range, quartile, interquartile range (IQR), box plot, intervals, and 5 number summary Q3-Q1=IQR 5 Number Summary- Low Value, 1st Quartile, Median, 3rd Quartile, High Value How distribution of data is organized (symmetrical, peaks, gaps, clusters, frequency) The process to finding the measures of center (mean, median, mode, range) The process to finding the five number summary (low value, 1st quartile, median, 3rd quartile, high value) How outliers effect the given data	Data can be modeled and used to make inferences.	Make and interpret histograms, bar graphs, tables of frequencies, and box plots Finding the best measure of center using mean, median, mode, and range Create dot plots, histograms, bar graphs, and box plots to display data Interpret data represented in dot plots, histograms, bar graphs, and box plots