



**Dover Area School District Curriculum K-U-D**  
**Algebra 1**

Standards	Eligible Content	Know	Understand	Do
<p>CC.2.1.8.E.1 Distinguish between rational and irrational numbers using their properties.</p> <p>CC.2.1.8.E.4 Estimate irrational numbers by comparing them to rational numbers.</p> <p>CC.2.1.HS.F.2: Apply properties of rational and irrational numbers to solve real-world or mathematical problems.</p>	<p>A1.1.1.1 Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, and exponents).</p> <p>A1.1.1.1.1 Compare and/or order any real numbers.</p>	<p>Recognize number sets in the number systems</p> <p>Algebraic properties</p> <p>Expressions, equations, and inequalities (applied to real life situations)</p> <p>Operation based vocabulary</p> <p>All representations of numbers have a numerical value in a common form</p>	<p>Solutions to equations and inequalities are the numerical values that will make the equation true</p> <p>Numbers belong to different groups/categories</p> <p>Words or phrases can be represented by numbers and variables</p> <p>Properties are used to simplify expressions</p>	<p>Compare and/or order any real numbers. Note: Rational and irrational may be mixed.</p> <p>Simplify/evaluate expressions involving properties/laws of exponents, roots, and/or absolute values to solve problems.</p>
<p>CC.2.2.8.B.1: Apply concepts of radicals and integer exponents to generate equivalent expressions.</p> <p>CC.2.1.HS.F.1 Apply and extend the properties of exponents to solve problems with rational exponents.</p>	<p>A1.1.1.3 Use exponents, roots, and/or absolute values to solve problems.</p> <p>A1.1.1.3.1 Simplify/evaluate expressions involving properties/laws if exponents, roots, and/or absolute values to solve problems.</p>	<p>Order of operations</p> <p>Inverse operations</p> <p>Operation based vocabulary</p> <p>Absolute value</p> <p>Perfect square</p> <p>All representations of numbers have a numerical value in a common form</p> <p>Distinguish the difference between perfect and non-perfect square</p> <p>Absolute value represents the distance the number is from zero</p>	<p>Properties are used to simplify expressions</p>	<p>Simplify/evaluate expressions involving properties/laws of exponents, roots, and/or absolute values to solve problems.</p> <p>Solve two-step equations and inequalities.</p>
<p>CC.2.1.HS.F.3: Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays.</p> <p>CC.2.1.HS.F.4: Use units as a way to understand problems and to guide the solution of multi-step problems.</p> <p>CC.2.1.HS.F.5: Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</p> <p>CC.2.2.8.B.3: Analyze and solve linear equations and pairs of simultaneous linear equations.</p> <p>CC.2.2.8.C.1: Define, evaluate, and compare functions.</p> <p>CC.2.2.8.C.2: Use concepts of functions to model relationships between quantities.</p> <p>CC.2.2.HS.C.3: Write functions or sequences that model relationships between two quantities.</p> <p>CC.2.2.HS.D.7: Create and graph equations or inequalities to describe numbers or relationships.</p> <p>CC.2.2.HS.D.8: Apply inverse operations to solve equations or formulas for a given variable.</p> <p>CC.2.2.HS.D.9: Use reasoning to solve equations and justify the solution method.</p> <p>CC.2.2.HS.D.10: Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.</p> <p>CC.2.2.7.B.3: Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.</p>	<p>A1.1.2.1.1 Write, solve, and/or apply a linear equation (including problem situations).</p> <p>A1.1.2.1.2 Use and/or identify an algebraic property to justify any step in an equation-solving process. Note: Linear equations only."</p> <p>"A1.1.2.1.3 Interpret solutions to problems in the context of the problem situation.</p> <p>Note: Linear equations only."</p> <p>A1.1.1.4.1 Use estimation to solve problems.</p>	<p>Equations have various numbers of solution</p> <p>Equation based vocabulary - variable, constant, coefficient, solution, inverse operation</p>	<p>A real world scenario can be represented and solved using an equation</p> <p>Properties of equality are used to solve equations</p>	<p>Write, solve, and/or apply a linear equation (including problem situations).</p> <p>Use and/or identify an algebraic property to justify any step in an equation-solving process.</p> <p>Use estimation to solve problems</p> <p>Interpret solutions to problems in the context of the problem situation.</p>



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<p>CC.2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</p> <p>CC.2.2.HS.D.7: Create and graph equations or inequalities to describe numbers or relationships.</p> <p>CC.2.2.HS.D.9: Use reasoning to solve equations and justify the solution method.</p> <p>CC.2.2.HS.D.10: Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.</p>	<p>A1.1.3.1.3 Interpret solutions to problems in the context of the problem situation. Note: Linear inequalities only.</p> <p>A1.1.3.1.1 Write or solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).</p> <p>A1.1.3.1.2 Identify or graph the solution set to a linear inequality on a number line.</p>	<p>Inequalities have various solutions solutions can be represented graphically</p> <p>Equations based vocabulary</p>	<p>Inequalities can have a range of solutions and can be represented visually on a number line</p>	<p>Write and/ or solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities)</p> <p>Identify or graph the solution set to a linear inequality on a number line</p> <p>Interpret solutions to problems in the context of the problem situation.</p>
<p>CC.2.2.8.C.1 Define, evaluate, and compare functions.</p> <p>CC.2.2.8.C.2: Use concepts of functions to model relationships between quantities.</p> <p>CC.2.2.HS.C.1: Use the concept and notation of functions to interpret and apply them in terms of their context.</p> <p>CC.2.2.HS.C.2: Graph and analyze functions and use their properties to make connections between the different representations.</p> <p>CC.2.2.HS.C.3: Write functions or sequences that model relationships between two quantities.</p> <p>CC.2.4.HS.B.2: Summarize, represent, and interpret data on two categorical and quantitative variables.</p>	<p>A1.2.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically</p> <p>A1.2.1.1.2 Determine whether a relation is a function, given a set of points or a graph.</p> <p>A1.2.1.1.3 Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table)</p>	<p>What makes a relation a function</p> <p>Domain (x) and range (y) of a relation</p> <p>A function is a relation where each input has exactly one output</p>	<p>Data displaying relationship between two variables can be represented in a table, graph, ordered pairs, or equation</p>	<p>Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.</p> <p>Determine whether a relation is a function, given a set of points or a graph.</p> <p>Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table).</p>
<p>CC.2.1.HS.F.3: Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays.</p> <p>CC.2.1.HS.F.4: Use units as a way to understand problems and to guide the solution of multi-step problems.</p> <p>CC.2.2.8.B.2: Understand the connections between proportional relationships, lines, and linear equations.</p> <p>CC.2.2.8.C.1: Define, evaluate, and compare functions.</p> <p>CC.2.2.8.C.2: Use concepts of functions to model relationships between quantities.</p> <p>CC.2.2.HS.C.2: Graph and analyze functions and use their properties to make connections between the different representations.</p> <p>CC.2.2.HS.C.3: Write functions or sequences that model relationships between two quantities.</p> <p>CC.2.2.HS.C.4: Interpret the effects transformations have on functions and find the inverses of functions.</p> <p>CC.2.2.HS.C.6: Interpret functions in terms of the situations they model.</p> <p>CC.2.4.HS.B.2: Summarize, represent, and interpret data on two categorical and quantitative variables.</p>	<p>A1.2.1.2.1 Create, interpret, and/or use the equation, graph, or table of a linear function.</p> <p>A1.2.1.2.2 Translate from one representation of a linear function to another (i.e., graph, table, and equation).</p>	<p>Parts of a coordinate plane</p> <p>Relation</p> <p>Function</p> <p>Constant rate of change</p>	<p>Relations can have multiple representations</p>	<p>Create, interpret, and/or use the equation, graph, or table of a linear function.</p> <p>Translate from one representation of a linear function to another (i.e., graph, table, and equation).</p>



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<p>CC.2.2.8.C.2: Use concepts of functions to model relationships between quantities.</p> <p>CC.2.2.HS.C.1: Use the concept and notation of functions to interpret and apply them in terms of their context.</p> <p>CC.2.2.HS.C.2: Graph and analyze functions and use their properties to make connections between the different representations.</p> <p>CC.2.2.HS.C.3: Write functions or sequences that model relationships between two quantities.</p> <p>CC.2.2.HS.C.5: Construct and compare linear, quadratic, and exponential models to solve problems.</p> <p>CC.2.2.HS.C.6: Interpret functions in terms of the situations they model.</p> <p>CC.2.4.HS.B.1: Summarize, represent, and interpret data on a single count or measurement variable.</p>	<p>A1.2.2.1.1: Identify, describe, and/or use constant rates of change.</p> <p>A1.2.2.1.2: Apply the concept of linear rate of change (slope) to solve problems.</p> <p>A1.2.2.1.3: Write or identify a linear equation when given the graph of the line, two points on the line, or the slope and a point on the line.</p> <p>Note: Linear equation may be in point-slope, standard, and/or slope-intercept form.</p> <p>A1.2.2.1.4 Determine the slope and/or y-intercept represented by a linear equation or graph.</p>	<p>Slope is a rate of change</p> <p>The multiple representations of a linear equation</p> <p>The relationship between parallel and perpendicular lines and their slopes</p> <p>Recognize x- and y- intercepts</p> <p>There are different types of slope, which represents a constant rate of change.</p>	<p>Linear Equations can be represented in multiple forms.</p>	<p>Identify, describe, and/or use constant rates of change.</p> <p>Write or identify a linear equation when given the graph of the line, two points on the line, or the slope and a point on the line.</p> <p>Determine the slope and/or y-intercept represented by a linear equation or graph.</p> <p>Write, solve and/ or apply a linear equation (including problem situations).</p> <p>Interpret solutions to problems in the context of the problem situation (linear equations only).</p> <p>Apply the concept of linear rate of change (slope) to solve problems.</p>
<p>CC.2.2.HS.C.6: Interpret functions in terms of the situations they model.</p> <p>CC.2.4.8.B.1: Analyze and/or interpret bivariate data displayed in multiple representations.</p> <p>CC.2.4.HS.B.2: Summarize, represent, and interpret data on two categorical and quantitative variables.</p> <p>CC.2.4.HS.B.3: Analyze linear models to make interpretations based on the data.</p>	<p>A1.2.2.2.1 Draw, identify, find, and/or write an equation for a line of best fit for a scatter plot.</p>	<p>A line of best fit can represent a scatter plot</p> <p>Y-intercept</p> <p>Rate of change</p>	<p>A line of best fit is a linear equation that best represents a data set in a scatter plot.</p>	<p>Draw, identify, find, and/or write an equation for a line of best fit for a scatter plot.</p>
<p>CC.2.1.HS.F.5: Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</p> <p>CC.2.2.8.B.3: Analyze and solve linear equations and pairs of simultaneous linear equations.</p> <p>CC.2.2.HS.D.7: Create and graph equations or inequalities to describe numbers or relationships.</p> <p>CC.2.2.HS.D.9: Use reasoning to solve equations and justify the solution method.</p> <p>CC.2.2.HS.D.10: Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.</p>	<p>A1.1.2.2.1 Write and/or solve a system of linear equations (including problem situations) using graphing, substitution, and/or elimination. Note: Limit systems to two linear equations.</p> <p>A1.1.2.2.2 Interpret solutions to problems in the context of the problem situation.</p> <p>Note: Limit systems to two linear equations.</p>	<p>A solution to a system is an ordered pair that makes the system true</p> <p>A system may have one, no, or infinite solutions</p> <p>Equation based vocabulary</p> <p>There are different methods to solving systems of equations.</p> <p>Graphs for systems will look different depending on the solution type</p>	<p>Systems of equations can be used to numerically represent real world mathematical situations and calculate necessary related information</p>	<p>Write and/or solve a system of linear equations (including problem situations) using graphing, substitution and/or elimination.</p> <p>Interpret solutions to problems in the context of the problem situation</p>
<p>CC.2.1.HS.F.5: Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</p> <p>CC.2.2.HS.D.7: Create and graph equations or inequalities to describe numbers or relationships.</p> <p>CC.2.2.HS.D.10: Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.</p>	<p>A1.1.3.2.1 Write and/or solve a system of linear inequalities using graphing. Note: Limit systems to two linear inequalities.</p> <p>A1.1.3.2.2 Interpret solutions to problems in the context of the problem situation. Note: Limit systems to two linear inequalities.</p>	<p>The graph of a linear inequality or system represents solutions for the inequality or system</p> <p>Equation/inequality based vocabulary</p> <p>Graphs of linear inequalities differ based on the range of solutions</p>	<p>Systems of inequalities can be used to numerically represent real world mathematical situations and calculate necessary related information</p>	<p>Interpret solutions to problems in the context of the problem situation</p> <p>Write and/or solve a system of linear inequalities using graphing</p>
<p>CC.2.2.HS.D.1 Interpret the structure of expressions to represent a quantity in terms of its context.</p> <p>CC.2.2.HS.D.2 Write expressions in equivalent forms to solve problems.</p> <p>CC.2.2.HS.D.3 Extend the knowledge of arithmetic operations and apply to polynomials.</p> <p>CC.2.2.HS.D.5 Use polynomial identities to solve problems.</p> <p>CC.2.2.HS.D.6 Extend the knowledge of rational functions to rewrite in equivalent forms.</p>	<p>A1.1.1.5.1 Add, subtract, and/or multiply polynomial expressions (express answers in simplest form).</p> <p>Note: Nothing larger than a binomial multiplied by a trinomial.</p> <p>A1.1.1.5.2 Factor algebraic expressions, including difference of squares and trinomials.</p> <p>Note: Trinomials are limited to the form <math>ax^2 + bx + c</math> where a is equal to 1 after factoring out all monomial factors.</p> <p>A1.1.1.5.3 Simplify/reduce a rational algebraic expression.</p>	<p>Polynomials are classified based on degree and number of terms</p> <p>Factor</p> <p>Polynomial, monomial, binomial, trinomial</p> <p>Operations can be performed to polynomials and rational expressions</p> <p>You must always look for a gcd first when factoring</p> <p>Factoring can be used to simplify rational expressions</p>	<p>Polynomials and rational expressions can be simplified using operations</p> <p>Multiplying polynomials and factoring are opposites</p>	<p>Add, subtract, and/or multiply polynomial expressions (express answers in simplest form)</p> <p>Factor algebraic expressions, including difference of squares and trinomials</p> <p>Simplify/reduce a rational algebraic expression</p>



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Standards	Eligible Content	Know	Understand	Do
CC.2.1.6.E.3 Develop and/or apply number theory concepts to find common factors and multiples. CC.2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real-world or mathematical problems.	A1.1.1.2.1 Find the Greatest Common Factor (GCF) and/or the Least Common Multiple (LCM) for sets of monomials.	You must always look for a gcd first when factoring	The difference between LCM and GCF	Find the greatest common factor and/or the least common multiple for sets of monomials.
CC.2.1.HS.F.1 Apply and extend the properties of exponents to solve problems with rational exponents.	A1.1.1.1.2 Simplify square roots (e.g., $\sqrt{24} = 2\sqrt{6}$ ).	Radical, radicand, index, simplify. how to find solutions to radical equations. operations can be applied to radicals	Radicals and exponents are inverses	Simplify square roots
CC.2.1.HS.F.1 Apply and extend the properties of exponents to solve problems with rational exponents. CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions.	A1.1.1.3.1 Simplify/evaluate expressions involving properties/laws of exponents, roots, and/or absolute values to solve problems. Note: Exponents should be integers from -10 to 10.	The properties of exponents Base, coefficient, exponents Simplified answers should not contain negative or zero exponents	Expressions can be simplified  Real world applications of exponentials	Simplify/evaluate expressions involving properties/laws of exponents, roots, and/or absolute values to solve problems
CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable. CC.2.4.HS.B.3 Analyze linear models to make interpretations based on the data.	A1.2.3.1.1 Calculate and/or interpret the range, quartiles, and interquartile range of data.	Measures of center, spread, and position	Depending on the data set, different central tendencies are more representative	Calculate and/or interpret the range, quartiles, and interquartile range of data.
CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable. CC.2.4.HS.B.3 Analyze linear models to make interpretations based on the data. CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.	A1.2.3.2.1 Estimate or calculate to make predictions based on a circle, line, bar graph, measure of central tendency, or other representation. A1.2.3.2.2 Analyze data, make predictions, and/or answer questions based on displayed data (box-and-whisker plots, stem-and-leaf plots, scatter plots, measures of central tendency, or other representations). A1.2.3.2.3 Make predictions using the equations or graphs of best-fit lines of scatter plots.	Data vocabulary - line of best fit, stem and leaf, scatter plot, box and whisker, measures of central tendency The different graphical representations of data A box and whisker plot separates the data into four equal portions	Different representations of graphs can be used to find missing information and make predictions related to that data.	Estimate or calculate to make predictions based on a circle, line, bar graph, measure of central tendency, or other representation. Analyze data, make predictions, and/or answer questions based on displayed data (box-and-whisker plots, stem-and-leaf plots, scatter plots, measures of central tendency, or other representations). Make predictions using the equations or graphs of best-fit lines of scatter plots.
CC.2.4.7.B.3 Investigate chance processes and develop, use, and evaluate probability models. CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments. CC.2.4.HS.B.7 Apply the rules of probability to compute probabilities of compound events in a uniform probability model.	A1.2.3.3.1 Find probabilities for compound events (e.g., find probability of red and blue, find probability of red or blue) and represent as a fraction, decimal, or percent.	How to find the probability of real-life situations How to find the number of possible outcomes	Probability can be used to make statistical predictions	Find probabilities for compound events (e.g., find probability of red and blue, find probability of red or blue) and represent as a fraction, decimal, or percent.