



Algebra 1

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description	
M	Mathematics			
M.N	Number and Operations			
M.N.I	Understand numbers, ways of representing numbers, relationships among numbers, and number systems.			
M.N.I.A	Develop a deeper understanding of very large and very small numbers and of various representations of them.	Exponentials	Growth and Decay	
		Polynomials	Scientific Notation	
M.N.I.A.1	Read, write, and represent very large and very small numbers in a variety of forms including exponential and radical.	Polynomials	Scientific Notation	
		Exponentials	Growth and Decay	
		Quadratics and Radicals	Radicals	
M.N.I.B	Compare and contrast the properties of numbers and number systems, including the rational and real numbers, and understand complex numbers as solutions to quadratic equations that do not have real solutions.	Real Numbers	Number Set	
			Order of Numbers	
			Closure and Properties of Equality	
		Variables and Expressions	Commutative, Associative, and Distributive Properties	
		Equations	More Properties of Equality	
M.N.I.B.1	Identify the kinds of equations that can and cannot be solved in each subset of the complex number system.	Equations	Multiplication and Division in Equations	
			Equations with Variables on Each Side	
			Mixture Problems	
			Solving Problems	
			Formulas as Equations	
			Equations and Problem Solving	
			Solving Multi-Step Equations	
			Distance Formula	
			Addition and Subtraction in Equations	
			Parentheses in Equations	
			Rate Problems	
			Quadratics and Radicals	Solving by Graphing
				Solving by Square Root
		Solving by Factoring		
	Solving by Completing the Square			



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State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
			Solving by Quadratic Formula Solving Radical Equations
		Polynomials	Solving Equations Using Factoring
M.N.I.C	Understand vectors and matrices as systems that have some of the properties of the real number system.		
M.N.I.C.1	Use vectors to represent situations that involve both magnitude and direction, such as force, displacement, velocity, and acceleration.		
M.N.I.C.2	Identify and use properties related to operations with matrices to justify the steps in solving problems that arise from applications.	Solving Systems	Addition and Subtraction of Matrices Scalar Multiplication
M.N.I.D	Use number-theory arguments to justify relationships involving whole numbers.		
M.N.I.D.1	Use the commutative, associative, distributive, equality, and identity properties to justify the steps in solving equations and inequalities.	Variables and Expressions	Commutative, Associative, and Distributive Properties The Distributive Property
		Functions and Linear Equations	Direct Variation
		Equations	Multiplication and Division in Equations Equations with Variables on Each Side Mixture Problems Solving Problems Formulas as Equations Addition and Subtraction Equations Multi-Step Equations More properties of Equality Rate Problems Work Problems Formulas Absolute Value Equations and Problem Solving Solving Multi-Step Equations Distance Formula

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State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
			Addition and Subtraction in Equations
			Parentheses in Equations
			Rate Problems
		Quadratics and Radicals	Solving by Completing the Square
			Solving Radical Equations
			Solving by Using Square Roots
		Rational Expressions	Solving Rational Equations
		Real Numbers	Writing and Justifying Steps Using Properties
			Division of Rational Numbers
		Inequalities	Simple Inequalities Multi-Step and Compound Inequalities
			Absolute Value Inequalities
			Solving Inequalities Using Multiplication and Division
			Graphing Inequalities in Two Variables
Polynomials	Multi-Step Inequalities		
	Solving Equations Using Factoring		
M.N.I.D.2	Use symbolic representation, reasoning, and proof to verify statements about numbers.	Variables and Expressions	Deductive Reasoning
			Inductive Reasoning
			Logical Reasoning
M.N.II	Understand meanings of operations and how they relate to one another.		Writing and Justifying Steps Using Properties
M.N.II.A M.N.II.A.1	Judge the effects of such operations as multiplication, division, and computing powers and roots on the magnitudes of quantities. Recognize and justify the relationship between the magnitude of a number and the application of specific arithmetic operations.	Variables and Expressions	Exponents and Roots
M.N.II.B	Develop an understanding of properties of, and representations for, the addition and multiplication of vectors and matrices.		
M.N.II.B.1	Organize data and perform operations of addition, subtraction, and scalar multiplication to solve problems using	Solving Systems	Scalar Multiplication of Matrices
			The Matrix

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	matrices.		Addition of Matrices
M.N.II.C	Develop an understanding of permutations and combinations as counting techniques.	Rational Expressions	Probability Permutations
M.N.II.C.1	Determine the relationship between counting when order matters and when order does not matter.		
M.N.III	Compute fluently and make reasonable estimates.		
M.N.III.A	Develop fluency in operations with real numbers, vectors, and matrices, using mental computation or paper-and-pencil calculations for simple cases and technology for more complicated cases.	Real Numbers	Estimation Problem Solving
M.N.III.A.1	Given a problem situation, determine whether to use a rough estimate, an approximation, or an exact answer. Select a suitable method of computing from techniques such as the use of mental mathematics, paper and pencil computations, calculators, and computers.	Real Numbers	Estimation Estimation with Real Numbers
M.N.III.B	Judge the reasonableness of numerical computations and their results.	Equations	Solving Equations
M.N.III.B.1	Explain why a solution is mathematically reasonable using supporting data.	Real Numbers Equations	Writing and Justifying Steps Using Properties Solving Equations
M.A	Algebra		
M.A.I	Understand patterns, relations, and functions.		
M.A.I.A	Generalize patterns using explicitly defined and recursively defined functions.	Functions and Linear Equations Exponentials	Patterns Arithmetic Sequences Linear Patterns Geometric Sequences Exponential Functions
M.A.I.A.1	Interpret and make inferences from explicit and recursive functional relationships.	Functions and Linear Equations	Functions Linear Patterns
M.A.I.A.2	Describe independent and dependent quantities in functional relationships.	Functions and Linear Equations	Relations Functions
M.A.I.A.3	Use patterns to generate the laws of exponents and apply them in problem-solving situations.	Variables and Expressions	Problem Solving using Exponents and Roots Exponents Multiplying Monomials

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State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
			Dividing Monomials
			Fractional Exponents
M.A.1.B	Understand relations and functions and select, convert flexibly among, and use various representations for them.	Functions and Linear Equations	Relations Functions
M.A.1.B.1	Gather and record data, or use data sets, to determine functional (systematic) relationships between quantities.	Functions and Linear Equations	Scatterplots Line of Fit
		Solving Systems	Analyzing Statistical Data
M.A.1.B.3	Represent relationships among quantities using concrete models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities including representations involving computer algebra systems, spreadsheets, and graphing calculators.	Functions and Linear Equations	Functions
		Inequalities	Compound Inequalities Absolute Value Inequalities Inequalities in Two Variables Multi-Step Inequalities Graphing Inequalities in Two Variables
		Exponentials	Exponential Equations
		Variables and Expressions	Tables and Graphs
		Equations	Rate Problems Equations and Problem Solving Parentheses in Equations Mixture Problems
M.A.1.B.3	Interpret situations in terms of given graphs and create situations that fit given graphs.	Functions and Linear Equations	The Coordinate System Graphing an Equation Using Points Graphing an Equation Using Intercepts Graphing an Equation Using Slope and YIntercept
		Solving Systems	Review of Graphing Linear Equations
M.A.1.C	Analyze functions of one variable by investigating rates of change, intercepts, zeros, asymptotes, and local and global behavior.		
M.A.1.C.1	Relate the solution(s) of quadratic equations to the root(s) of the quadratic functions.	Quadratics and Radicals	Graphing Quadratics Solving Quadratic Equations with Graphs

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State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
			Graphing Quadratic Functions
		Polynomials	Solving Equations by Factoring Trinomials
M.A.1.C.2	Determine domain and range restrictions for linear and quadratic functions, given the constraints of the problem.	Quadratics and Radicals	Graphing Quadratics
		Functions and Linear Equations	Graphing Quadratic Functions
			Relations
M.A.1.C.3	Analyze graphs of quadratic functions and write conclusions for problem situations.	Quadratics and Radicals	Graphing Quadratics
		Functions and Linear Equations	Graphing Quadratic Functions
			Graphing an Equation Using Intercepts
M.A.1.D	Understand and perform transformations such as arithmetically combining, composing, and inverting commonly used functions, using technology to perform such operations on more complicated symbolic expressions.	Functions and Linear Equations	Relations
			Functions
M.A.1.E	Understand and compare the properties of classes of functions, including exponential, polynomial, rational, logarithmic, and periodic functions.	Quadratics and Radicals	Quadratic Functions
		Exponentials	Exponential Functions
M.A.1.E.1	Identify and sketch the general forms of linear ($y = x$) and quadratic ($y = x^2$) parent functions.		
M.A.1.E.2	Determine reasonable domain and range values for a variety of situations.	Functions and Linear Equations	Relations
			Graphs of Inverses
M.A.1.E.3	Relate direct variation to linear functions and solve problems involving proportional change.	Functions and Linear Equations	Direct Variation
M.A.1.E.4	With and without using a graphing calculator, investigate, describe, and predict the effects of changing the slope and the y-intercept in applied situations.		
M.A.1.E.5	With and without using a graphing calculator, investigate, describe, and predict the effects of vertical and horizontal translations, reflections, and dilations on linear and quadratic functions.		
M.A.1.E.6	With and without using a graphing calculator, investigate, describe, and predict the effects of vertical and horizontal translations, reflections, and dilations on exponential, polynomial, rational, logarithmic, and periodic functions.		
M.A.1.F	Interpret representations of functions of two	Functions and Linear	Relations

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State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
	variables.	Equations	Functions Graphing Linear Functions Linear Patterns Slope-Intercept Form Point-Slope Form Parallel and Perpendicular Lines
		Quadratics and Radicals	Quadratic Functions
		Exponentials	Exponential Functions
		Rational Expressions	Indirect Variation
M.A.I.F.1	Recognize that real-world phenomena can be modeled by specific functions (e.g., population growth can be modeled by exponential functions, periodicity can be modeled by trigonometric functions)	Functions and Linear Equations	Functions Direct Variation
		Exponentials	Exponential Graphs Growth and Decay Graphing Exponential Equations
		Rational Expressions	Rational Expressions Topic: Indirect Variation
		Quadratics	Graphing Quadratic Functions
M.A.II	Represent and analyze mathematical situations and structures using algebraic symbols.		
M.A.II.A	Understand the meaning of equivalent forms of expressions, equations, inequalities, and relations.	Variables and Expressions	Evaluating Expressions
		Real Numbers	Evaluating Division Expressions Estimating and Problem Solving
		Equations	Solving Equations
		Inequalities	Solving Inequalities Relations
		Functions and Linear Equations	Functions
M.A.II.A.1	Find specific function values and evaluate expressions.	Real Numbers	Decimals Evaluating Division Expressions Estimation Problem Solving
		Functions and Linear Equations	Relations and Functions Replacement Sets and Variables

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State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
		Quadratics and Radicals	Quadratic Functions
		Exponentials	Exponential Functions
M.A.II.A.2	Simplify polynomial expressions and perform polynomial arithmetic.	Variables and Expressions	Dividing Monomials Multiplying Monomials
		Polynomials	Multiplying Polynomials by a Monomial Add and Subtract of Polynomials
		Rational Expressions	Long Division
M.A.II.A.3	Represent functions in algebraic, tabular, graphical, and verbal forms using paper and pencil, graphing calculators, computer algebra, and spreadsheet technologies.	Functions and Linear Equations	Functions and Relations
		Quadratics and Radicals	Quadratic Functions
		Exponentials	Exponential Functions
		Rational Expressions	Indirect Variation
M.A.II.B	Write equivalent forms of equations, inequalities, and systems of equations and solve them with fluency-mentally or with paper and pencil in simple cases and using technology in all cases.	Systems of Equations	Solving by Graphing Solving by Elimination Solving by Substitution Solving by Graphing Two Variable Inequalities Problem Solving (Linear Programming)
		Equations	Equations Multi-Step Problems Proportion and Percent Formulas and Absolute Value Problem Solving
		Inequalities	Simple Inequalities Multi-Step and Compound Inequalities Absolute Value Inequalities
M.A.II.B.1	Transform and solve equations and inequalities, factoring as necessary in problem situations.	Equations	Addition and Subtraction in Equations Equations with Variables on Each Side Multiplication and Division in Equations Formulas as Equations Solving Problems

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			Mixture Problems
			Solving Multi-Step Equations
		Inequalities	Solving Inequalities Using Multiplication and Division
			Graphing Inequalities in Two Variables
			Compound Inequalities
			Solving Inequalities by Addition and Subtraction
			Inequalities in Two Variables
			Multi-Step Inequalities
		Polynomials	Factoring Other Trinomials
			Solving Equations Using Factoring
			Factoring Perfect Square Trinomials
			Factoring Simple Trinomials
			Factoring with the GCF
			Difference of Two Squares
		Exponentials	Exponential Equations
		Quadratics and Radicals	Solving by Using Square Roots
			Solving by Factoring
			Solving by Square Root
			Solving by Completing the Square
			Quadratic Formula
	Solving Radical Equations		
	Rational Expressions	Solving Rational Equations	
M.A.III.B.2	Graph and write equations of lines given characteristics such as two points, a point and a slope, or a slope and y-intercept.	Functions and Linear Equations	Graphing an Equation Using Intercepts
			Point-Slope Form
			Graphing an Equation Using Slope and YIntercept
			Forms of Non-Vertical Linear Equations
			More about Slope
			Graphing an Equation Using Points
			Slope-Intercept Form

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		Solving Systems	Review of Writing Linear Equations Review of Graphing Linear Equations
M.A.III.B.3	Analyze data and represent situations involving inverse variation using concrete models, tables, graphs, or algebraic methods as well as computer algebra systems, spreadsheets, and graphing calculators.	Rational Expressions	Problem Solving Inverse Variation
M.A.III.B.4	Analyze data and represent situations involving exponential growth and decay using concrete models, tables, graphs, or algebraic methods as well as computer algebra systems, spreadsheets, and graphing calculators.	Exponentials	Graphing Exponential Equations Exponential Graphs Growth and Decay
M.A.III.C	Draw reasonable conclusions about a situation being modeled.		
M.A.III.C.1	Verify and explain the conclusion based on the data and the processes used.	Functions and Linear Equations	Line of Fit
M.A.III.C.2	Demonstrate that no solution or multiple solutions may exist.	Solving Systems Quadratic Equations and Radicals	Solving Systems by Graphing Solving Quadratic Equations with Graphs Quadratic Formula
M.A.IV	Analyze change in various contexts		
M.A.IV.A	Approximate and interpret rates of change from graphical and numerical data.	Functions and Linear Equations	Graphing Using Slope and Intercept Slope Direct Variation Linear Patterns
M.A.IV.A.1	Interpret rates of change as they apply to phenomena such as inflation, spread of disease, population growth, tax brackets, and pollution.	Exponentials	Growth and Decay
M.A.IV.A.2	Analyze graphical data gathered by technical equipment including combinations of graphs, periodic phenomena, and rates of change.		
M.A.IV.A.3	Determine changes in slope relative to the changes in the independent variable.		
M.G	Geometry		
M.G.I	Analyze characteristics and properties of two- and three dimensional geometric shapes and develop mathematical arguments about geometric relationships.		
M.G.I.A	Analyze properties and determine attributes		

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	of two- and three dimensional objects.		
M.G.I.A.1	Use numeric and geometric patterns to make generalizations about		
M.G.I.A.1.a	Geometric properties, including properties of polygons;		
M.G.I.A.1.b	Ratios in similar figures and solids; and		
M.G.I.A.2	Analyze ratios of similar figures and analyze the properties of circles, polygons, and their angle relationships.		
M.G.I.A.3	Examine and classify the cross sections of three-dimensional objects.		
M.G.I.B	Explore relationships (including congruence and similarity) among classes of two- and three-dimensional geometric objects, make and test conjectures about them, and solve problems involving them.		
M.G.I.B.1	Identify, describe, and defend congruence and similarity between shapes.		
M.G.I.B.2	Solve problems involving similar figures using proportion.		
M.G.I.B.3	Justify conjectures about geometric figures using similarity and transformations.		
M.G.I.B.4	Determine the resulting change in the area and volume of a figure when one or more dimensions are changed.		
M.G.I.B.5	Make generalizations about geometric properties of solids.		
M.G.I.C	Establish the validity of geometric conjectures using deduction, prove theorems, and critique arguments made by others.		
M.G.I.C.1	Verify conjectures about angles, lines, polygons, circles, and three dimensional figures, choosing from a variety of approaches such as coordinate, transformational, or axiomatic.		
M.G.I.C.2	Construct and judge validity of a logical argument consisting of a set of premises and a conclusion.	Variables and Expressions	Logic Inductive Reasoning Deductive Reasoning
M.G.I.C.3	Use logical reasoning to draw conclusions about geometric figures from given assumptions.		
M.G.I.D	Use trigonometric relationships to determine lengths and angle measures.		



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M.G.I.D.1	Explore concepts and applications of trigonometry by solving applied problems using right-triangle trigonometry.		
M.G.I.D.2	Solve applied problems using the law of sines and law of cosines.		
M.G.II	Specify locations and describe spatial relationships using coordinate geometry and other representational systems.		
M.G.II.A	Use Cartesian coordinates and other coordinate systems, such as navigational, polar, or spherical systems, to analyze geometric situations.		
M.G.II.A.1	Draw a pair of perpendicular vectors to find a distance graphically.		
M.G.II.A.2	Solve applied problems using scale modeling.	Equations	Ratio and Proportion
M.G.II.A.3	Develop and use formulas including distance and midpoint.		
M.G.II.B	Investigate conjectures and solve problems involving two- and three dimensional objects represented with Cartesian coordinates.		
M.G.II.B.1	Given two ordered pairs, find the distance between them, locate the midpoint of the segment, and determine the slope of the line that contains them.	Functions and Linear Equations	More about Slope
M.G.II.B.2	Describe geometric relationships using slopes and equations of lines, including parallel lines, perpendicular lines, and special segments of triangles and other polygons.	Functions and Linear Equations	Point-Slope Form
			Forms of Non-Vertical Linear Equations
			More about Slope
			Parallel Lines
			Slope-Intercept Form
M.G.II.B.3	Given geometric figures, utilize a coordinate system to identify and justify conjectures.		
M.G.III	Apply transformations and use symmetry to analyze mathematical situations.		
M.G.III.A	Understand and represent translations, reflections, rotations and dilations of objects in the plane by using sketches, coordinates, vectors, function notation, and matrices.		
M.G.III.A.1	Solve applied problems using a system of vectors or using matrix addition.	Solving Systems	Addition of Matrices
M.G.III.A.2	Plot coordinates for translations and describe the vertical and horizontal transformational vector(s).		

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M.G.III.B	Use various representations to help understand the effects of simple transformations and their compositions.		
M.G.III.B.1	Translate, reflect, rotate, and dilate figures on the plane.		
M.G.III.B.2	Analyze the symmetry of objects using the language of transformations.		
M.G.IV	Use visualization, spatial reasoning, and geometric modeling to solve problems.		
M.G.IV.A	Draw and construct representations of two- and three-dimensional geometric objects using a variety of tools.		
M.G.IV.A.1	Represent a three-dimensional object in two dimensions using graph or dot paper.		
M.G.IV.A.2	Construct a three-dimensional object using a two-dimensional diagram such as a blueprint or pattern.		
M.G.IV.A.3	Use constructions with straight-edge and compass; paper folding; and dynamic, interactive geometry software to explore attributes of geometric figures and make conjectures about geometric relationships.		
M.G.IV.B	Visualize three-dimensional objects and spaces from different perspectives and analyze their cross sections.		
M.G.IV.B.1	Use top, front, side, and corner views of three-dimensional objects to create accurate and complete representations and solve problems.		
M.G.IV.C	Use vertex-edge graphs to model and solve problems.		
M.G.IV.C.1	Using digraphs or vertex-edge graphs, find optimal solutions to problems involving paths, networks, or relationships among a finite number of objects.		
M.G.IV.D	Use geometric models to gain insights into and answer questions about related areas of mathematics and other disciplines.		
M.G.IV.D.1	Select an appropriate representation (concrete, pictorial, graphical, verbal, or symbolic) to solve a problem.		
M.G.IV.D.2	Represent geometric relationships and solve problems using dynamic, interactive geometry software.		
M.G.IV.E	Use geometric ideas to solve problems in, and gain insights into, other disciplines and		

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	other areas of interest such as art and architecture.		
M.M	Measurement		
M.M.I	Understand measurable attributes of objects and the units, systems, and processes of measurement.		
M.M.I.A	Make decisions about units, scales, and viewing windows that are appropriate for problem situations involving measurement.		
M.M.I.A.1	Make judgments about the appropriateness of units of measure and scales within a system and between systems.		
M.M.II	Apply appropriate techniques, tools, and formulas to determine measurements.		
M.M.II.A	Analyze precision, accuracy, and approximate error in measurement situations.		
M.M.II.B	Understand and use formulas for the area, surface area, and volume of geometric figures, including cones, spheres, and cylinder.	Expressions and Variables	Problem Solving (areas and volume)
M.M.II.B.1	Use formulas for surface area and volume of three-dimensional objects to solve practical problems.	Real Numbers	Estimation with Real Numbers
		Equations	Formulas (area and volume)
			Equations (surface area)
		Polynomials	Add and Subtract (perimeter) Multiply (area and volume)
M.M.II.C	Apply informal concepts of successive approximation, upper and lower bounds, and limit in measurement situations.		
M.M.II.C.1	Use linear measurements to estimate lengths of curves.		
M.M.II.C.2	Use polygons to estimate areas of curved regions.		
M.M.II.C.3	Use boxes or spheres to estimate the volume of curved solids.		
M.M.II.D	Use unit analysis to check measurement computations.		
M.M.II.D.1	Use unit analysis to check measurement computations.		
M.D	Data Analysis and Probability		
M.D.I	Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.		

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M.D.I.A	Understand the differences among various kinds of studies and which types of inferences can legitimately be drawn from each.		
M.D.I.A.1	Distinguish among surveys, observational studies, and controlled experiments and evaluate the quality of each.		
M.D.I.A.2	Evaluate the legitimacy of conclusions about the population based on the sample(s) studied.		
M.D.I.B	Know the characteristics of well-designed studies, including the role of randomization in surveys and experiments.		
M.D.I.B.1	Identify two or more experimental treatments (or conditions) to be compared and the sources of variation to be controlled.		
M.D.I.B.2	Compare the responses of a group that gets treatment with those of a control group that does not.		
M.D.I.B.3	Given a problem situation, describe the basic principles of experimental design (control, randomization, and replication).		
M.D.I.B.4	Given a problem situation, evaluate whether conclusions drawn are based on randomization and control.		
M.D.I.C	Understand the meaning of measurement data and categorical data, of univariate and bivariate data, and of the term variable.		
M.D.I.C.1	Given a problem situation, identify variables as categorical or measurement.		
M.D.I.C.2	Given a problem situation, distinguish between independent/explanatory and dependent/response variables.		
M.D.I.D	Understand histograms, parallel box plots, and scatterplots and use them to display data.	Solving Systems	Statistics
		Functions and Linear Equations	Scatterplots and Correlation Line of Fit
M.D.I.D.1	Represent, display, and interpret data using scatterplots, bar graphs, stem-and-leaf plots, and box-and-whiskers diagrams including representations on graphing calculators and computers.	Solving Systems	Box Plots
		Variables and Expressions	Tables and Graphs Stem and Leaf Plots
M.D.I.D.2	Display univariate data in problem situations with parallel box plots, histograms, or stem-and-leaf plots.	Variables and Expressions	Stem and Leaf Plots
		Solving Systems	Histograms Box Plots

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M.D.I.E	Compute basic statistics and understand the distinction between a statistic and a parameter.		
M.D.I.E.1	Given a problem situation, identify each variable as a statistic or a parameter.	Functions and Linear Equations	Scatterplots and Correlation Line of Fit
M.D.I.E.2	Calculate measures of center and spread for univariate statistics.	Solving Systems Variables and Expressions	Histograms Mean, Median and Mode Stem and Leaf Plots
M.D.I.E.3	Determine positive, negative, or no correlation between bivariate statistics.	Functions and Linear Equations	Scatter Plots and Correlation
M.D.II	Select and use appropriate statistical methods to analyze data.		
M.D.II.A	For univariate measurement data, be able to display the distribution, describe its shape, and select and calculate summary statistics.	Solving Systems	Box Plots Histograms Stem and Leaf Plots
M.D.II.A.1	Given a problem situation, select the appropriate display and describe the distribution's overall shape and characteristics	Solving Systems	Box Plots Histograms Stem and Leaf Plots
M.D.II.A.2	Based on the shape of the distribution, determine how the measures of center and spread are related to each other.	Solving Systems	Histograms Box Plots
M.D.II.B	For bivariate measurement data, be able to display a scatterplot, describe its shape, and determine regression coefficients, regression equations, and correlation coefficients using technological tools.		
M.D.II.B.1	Interpret the value of the correlation coefficient as it pertains to the relationship between the two variables.	Functions and Linear Equations	Scatter Plots and Correlation
M.D.II.B.2	Write a linear equation that fits a data set, check the model for "goodness of fit," and make predictions using the model.	Functions and Linear Equations	Linear Patterns Scatter Plots and Correlation
M.D.II.C	Display and discuss bivariate data where at least one variable is categorical.		
M.D.II.C.1	Given a problem situation with one variable as categorical and the other as measurement, compare the categorical variables using the appropriate display for the measurement variables and draw conclusions from those comparisons.		
M.D.II.D	Recognize how linear transformations of univariate data affect shape, center, and spread.		

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M.D.II.D.1	Describe the effect of transformations of data on measures of central tendency and variability.		
M.D.II.D.2	Describe the effect of transformations of data on the shape of the data's distribution.		
M.D.II.E	Identify trends in bivariate data and find functions that model the data or transform the data so that they can be modeled.		
M.D.II.E.1	Draw a line-of-best-fit or a curve-ofbest-fit for a scatterplot.	Functions and Linear Equations	Line of Fit
M.D.II.E.2	Determine the function that models the data best.	Functions and Linear Equations	Line of Fit
M.D.III	Develop and evaluate inferences and predictions that are based on data.		
M.D.III.A	Use simulations to explore the variability of sample statistics from a known population and to construct sampling distributions		
M.D.III.A	Use simulations to explore the variability of sample statistics from a known population and to construct sampling distributions.		
M.D.III.A.1	Conduct simulations to collect random sample statistics and examine the variability of them from a known population.		
M.D.III.A.2	Conduct simulations to construct sampling distributions.		
M.D.III.B	Understand how sample statistics reflect the values of population parameters and use sampling distributions as the basis for informal inference		
M.D.III.B.1	Use the properties of the normal curve to describe how sample data estimates the population mean and standard deviation.		
M.D.III.C	Evaluate published reports that are based on data by examining the design of the study, the appropriateness of the data analysis, and the validity of conclusions.		
M.D.III.C.1	Given a published report based on data, determine the design of the study, the appropriateness of the data analysis, and the validity of the conclusions.		
M.D.III.C.2	Given a published report based on data, interpret the results.		
M.D.III.D	Understand how basic statistical techniques are used to monitor process characteristics in the workplace.		

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State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
M.D.III.D.1	Apply confidence intervals and margins of error to workplace processes.		
M.D.III.D.2	Interpret the results of hypothesis testing for a single proportion or mean.		
M.D.IV	Understand and apply basic concepts of probability.		
M.D.IV.A	Understand the concepts of sample space and probability distribution and construct sample spaces and distributions in simple cases.	Rational Expressions	Probability
M.D.IV.A.1	Describe all possible outcomes of an event containing a finite number of outcomes.	Rational Expressions	Probability
M.D.IV.A.2	Determine a sample space for selected experiments and represent it in the form of a list, chart, picture, or tree diagram.		
M.D.IV.B	Use simulations to construct empirical probability distributions and interpret the results in the context of an applied problem.		
M.D.IV.B.1	Use simulations to construct empirical probability distributions.		
M.D.IV.B.2	Interpret the results in the context of an applied problem.	Rational Expressions	Probability
M.D.IV.C	Compute and interpret the expected value of random variables in simple cases.	Rational Expressions	Probability
M.D.IV.C.1	Given a problem situation, delineate the sample space and conduct simulations to calculate the expected value of the random variables.		
M.D.IV.C.2	Given a problem situation, interpret the expected value of the random variables.	Rational Expressions	Probability
M.D.IV.D	Understand the concepts of conditional probability and independent events.		
M.D.IV.D.1	Identify mutually exclusive, joint, and independent events.		
M.D.IV.D.2	Recognize and compute conditional probability.		
M.D.IV.E	Understand how to compute the probability of a compound event.		
M.D.IV.E.1			
A1	Algebra 1		
A1.I	Understanding Functions		
A1.I.A	Relationships		
A1.I.A.1	Describe independent and dependent	Functions and Linear	Replacement Sets and

Algebra 1

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
	quantities in functional relationships.	Equations	Variables
A1.1.A.2	Gather and record data or use data sets to determine functional (systematic) relationships between quantities.	Functions and Linear Equations	Functions Solving
A1.1.A.3	Describe functional relationships for given problem situations and write equations, inequalities, and recursive relations to answer questions arising from the situations.	Equations	Solving Multi-Step Equations
			Rate Problems
			Equations and Problem Solving
			Parentheses in Equations
			Mixture Problems
			Multiplication and Division in Equations
			Equations with Variables on Each Side
			Solving Problems
		Inequalities	Distance Formula
			Solving Inequalities Using Multiplication and Division
			Inequalities in Two Variables
			Multi-Step Inequalities
			Graphing Inequalities in Two Variables
			Compound Inequalities
Functions and Linear Equations	Solving Inequalities by Addition and Subtraction		
	Absolute Value Inequalities		
Exponentials	Functions		
A1.1.A.4	Represent relationships among quantities using concrete models, tables, graphs, diagrams, verbal descriptions, equations, and inequalities including representations involving computer algebra systems, spreadsheets, and graphing calculators.	Equations	Exponential Equations
			Multiplication and Division in Equations
			Equations with Variables on Each Side
			Solving Problems
			Distance Formula
			Solving Multi-Step Equations
			Rate Problems
			Equations and Problem Solving
			Parentheses in Equations
			Mixture Problems

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State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
		Functions and Linear Equations	The Coordinate System Graphing an Equation Using Points Graphing an Equation Using Intercepts Graphing an Equation Using Slope and YIntercept
		Inequalities	Solving Inequalities by Addition and Subtraction Absolute Value Inequalities Solving Inequalities Using Multiplication and Division Inequalities in Two Variables Multi-Step Inequalities Graphing Inequalities in Two Variables Compound Inequalities
		Exponentials	Exponential Equations
		Solving Systems	Review of Graphing Linear Equations
A1.1.A.5	Make judgments about units of measure and scales within a system and between systems.		
A1.1.A.6	Interpret and make inferences from explicit and recursive functional relationships.	Functions and Linear Equations	Patterns Arithmetic Sequences Linear Patterns Direct Variation
		Exponentials	Geometric Sequences Exponential Functions
		Quadratics and Radicals	Quadratic Functions
		Rational Expressions	Indirect Variation
A1.1.B	Linear and Quadratic Functions and Data Representations		
A1.1.B.1	Identify and sketch the general forms of linear ($y = x$) and quadratic ($y = x^2$) parent functions.	Quadratics and Radicals	Graphing Quadratic Functions Graphing Quadratics
		Functions and Linear Equations	Graphing Linear Equations
A1.1.B.2	For a variety of situations, identify and determine reasonable domain and range values for given situations.	Functions and Linear Equations	Graphs of Inverses Relations and Functions

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State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description	
A1.1.B.3	Interpret situations in terms of given graphs or create situations that fit given graphs.	Functions and Linear Equations	Relations and Functions Direct Variation	
		Quadratics and Radicals	Quadratic Functions	
		Exponentials	Growth and Decay	
A1.1.B.4	Represent, display, and interpret data using scatterplots, bar graphs, stem-and-leaf plots, and box-and-whiskers diagrams, including representations on graphing calculators and computers.	Solving Systems	Histograms Analyzing Statistical Data Box Plots	
		Variables and Expressions	Tables and Graphs Stem and Leaf Plots	
A1.1.B.5	Write a linear equation that fits a data set, check the model for "goodness of fit," and make predictions using the model.	Functions and Linear Equations	Scatterplots and Correlation Line of Fit	
A1.1.C	Generalizations, Algebraic Symbols, and Matrices	Solving Systems	Matrix Addition of Matrices Scalar Multiplication	
A1.1.C.1	Read, write, and represent very large and very small numbers in a variety of forms including exponential.	Polynomials Exponentials	Scientific Notation Growth and Decay	
A1.1.C.2	Use unit analysis to check measurement computations.			
A1.1.C.3	Given situations, determine patterns and represent generalizations algebraically.	Functions and Linear Equations	Linear Patterns Line of Fit Number Patterns	
		Exponentials	Geometric Sequences	
A1.1.C.4	Use symbolic representation, reasoning, and proof to verify statements about numbers.	Variables and Expressions	Logical Reasoning Deductive Reasoning Inductive Reasoning Commutative, Associative, and Distributive Properties	
		Real Numbers	Writing and Justifying Steps Using Properties	
A1.1.C.5	Recognize and justify the relationship between the magnitude of a number and the application of specific operations.	Polynomials	Scientific Notation	
A1.1.C.6	Identify and use properties related to operations with matrices (addition, subtraction, and scalar multiplication) to solve applied problems.	Solving Systems	Addition of Matrices Scalar Multiplication of Matrices	
A1.1.D	Algebraic Expressions in Problem Solving			

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State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
	Situations		
A1.I.D.1	Find specific function values and evaluate expressions.	Real Numbers	Evaluating Division Expressions
			Decimals
			Estimation
			Problem Solving
		Functions and Linear Equations	Relations and Functions
			Replacement Sets and Variables
		Quadratics and Radicals	Quadratic Functions
Exponentials	Exponential Functions		
A1.I.D.2	Simplify polynomial expressions and perform polynomial arithmetic.	Variables and Expressions	Dividing Monomials
			Multiplying Monomials
		Polynomials	Special Products
			Addition and Subtraction of Polynomials
			Multiplying Polynomials by a Monomial
			Multiplying Using FOIL
		Rational Expressions	Long Division
A1.I.D.3	Transform and solve equations and inequalities, factoring as necessary in problem situations.	Equations	Mixture Problems
			Solving Multi-Step Equations
			Addition and Subtraction in Equations
			Equations with Variables on Each Side
			Multiplication and Division in Equations
			Formulas as Equations
		Inequalities	Compound Inequalities
			Solving Inequalities by Addition and Subtraction
			Inequalities in Two Variables
			Solving Inequalities Using Multiplication and Division
		Multi-Step Inequalities	
Polynomials	Solving Equations Using Factoring		

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State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
			Factoring Perfect Square Trinomials
			Factoring Simple Trinomials
			Factoring Other Trinomials
			Factoring with the GCF
			Difference of Two Squares
		Quadratics and Radicals	Solving by Using Square Roots
		Inequalities	Graphing Inequalities in Two Variables
		Exponentials	Exponential Equations
A1.I.D.4	Given a problem situation, determine whether to use a rough estimate, an approximation, or an exact answer. Select a suitable method of computing from techniques such as the use of mental mathematics, paper-and-pencil combinations, calculators, and computers.	Real Numbers	Estimation
		Equations	Equations with Variables on Each Side
A1.I.D.5	Use supporting data to explain why a solution is mathematically reasonable.	Real Numbers	Writing and Justifying Steps Using Properties
		Equations	Equations with Variables on Each Side
			More Properties of Equality
			Solving Equations
A1.I.D.6	Use the commutative, associative, and distributive properties to simplify algebraic expressions.	Variables and Expressions	The Commutative Property
			Order of Operations
			The Associative Property
			The Distributive Property
			Multiplying and Dividing Integers
		Real Numbers	Writing and Justifying Steps Using Properties
			Decimals
			Division of Rational Numbers
			Evaluating Division Expressions
A1.II	Linear Functions		
A1.II.A	Representations		
A1.II.A.1	Determine whether or not given situations can be represented by linear functions.	Functions and Linear Equations	Arithmetic Sequences
			Linear Patterns
A1.II.A.2	Based on the constraints of the problem,	Functions and Linear	Relations

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State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
	determine the domain and range values for linear functions.	Equations	Functions
A1.II.A.3	Translate among and use algebraic, tabular, graphical, or verbal descriptions of linear functions using computer algebra systems, spreadsheets, and graphing calculators.		
A1.II.B	Interpretations		
A1.II.B.1	Develop the concept of slope as rate of change and determine slope from graphs, tables, and algebraic representations.	Functions and Linear Equations	Slope More About Slope Linear Patterns Graphing with Slope- Intercept Form
A1.II.B.2	Interpret the meaning of slope and intercepts in situations using data, symbolic representations, or graphs.	Functions and Linear Equations	Slope-Intercept Form Forms of Non-Vertical Linear Equations More about Slope Linear Patterns
		Solving Systems	Review of Writing Linear Equations
A1.II.B.3	With and without using a graphing calculator, investigate, describe, and predict the effects of changes in m and b on the graph of $y = mx + b$.	Functions and Linear Equations	More about Slope
A1.II.B.4	Graph and write equations of lines given characteristics such as two points, a point and a slope, or a slope and y-intercept.	Functions and Linear Equations	More about Slope Forms of Non-Vertical Linear Equations Slope-Intercept Form Graphing an Equation Using Intercepts Point-Slope Form Graphing an Equation Using Slope and YIntercept Forms of Non-Vertical Linear Equations
		Solving Systems	Review of Writing Linear Equations Review of Graphing Linear Equations
A1.II.B.5	Determine the intercepts of linear functions from graphs, tables, and algebraic representations.	Functions and Linear Equations	Graphing an Equation Using Intercepts
A1.II.B.6	With and without using a graphing calculator,	Functions and Linear	More about Slope

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State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
	interpret and predict the effects of changing slope and yintercept in applied situations.	Equations	Forms of Non-Vertical Linear Equations Graphing an Equation Using Slope and YIntercept
A1.II.B.7	Relate direct variation to linear functions and solve problems involving proportional change.	Functions and Linear Equations	Direct Variation
A1.II.C	Equations and Inequalities		
A1.II.C.1	Analyze situations involving linear functions and formulate linear equations or inequalities to solve problems.	Equations	Parentheses in Equations Equations with Variables on Each Side Multiplication and Division in Equations Rate Problems Solving Problems Mixture Problems
		Functions and Linear Equations	Writing Linear Equations Slope-Intercept Form Graphing an Equation Using Intercepts Graphing an Equation Using Slope and YIntercept Linear Patterns
		Inequalities	Solving Inequalities Using Multiplication and Division Inequalities in Two Variables Graphing Inequalities in Two Variables
A1.II.C.2	Investigate methods for solving linear equations and inequalities using concrete models, graphs, and the properties of equality; select a method and solve the equations and inequalities.	Real Numbers	Estimation and Problem Solving
		Solving Systems	Problem Solving
		Inequalities	Solving Compound Inequalities Absolute Value Inequalities Graphing Inequalities in Two Variables
		Functions and Linear Equations	Linear Patterns
A1.II.C.3	Use the commutative, associative, distributive, equality, and identity properties to justify the steps in solving equations and	Variables and Expressions	The Associative Property The Distributive Property The Commutative Property

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State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
	inequalities.	Real Numbers	Properties of Closure and Equality Using the Properties Writing and Justifying Steps Using Properties Evaluating Division Expressions
		Equations	Multiplication and Division in Equations Formulas as Equations Solving Problems Mixture Problems Solving Multi-Step Equations Addition and Subtraction in Equations Equations with Variables on Each Side
		Inequalities	Multi-Step Inequalities Compound Inequalities Solving Inequalities by Addition and Subtraction Solving Inequalities Using Multiplication and Division Graphing Inequalities in Two Variables
A1.II.C.4	Using concrete models for given contexts, interpret and determine the reasonableness of solutions to linear equations and inequalities.	Functions and Linear Equations	Graphing an Equation Using Intercepts Linear Patterns Writing Linear Equations Slope-Intercept Form
		Equations	Rate Problems Solving Problems Mixture Problems
		Inequalities	Graphing Inequalities in Two Variables
		Solving Systems	Problem Solving
A1.II.D	Systems of Linear Equations		
A1.II.D.1	Analyze situations and formulate systems of linear equations to solve problems.	Solving Systems	Solving with Substitution Solving with Elimination Graphing to Solve

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State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
			Problem Solving with Systems
A1.II.D.2	Solve systems of linear equations using concrete models, graphs, tables, and algebraic methods including computer algebra systems, spreadsheets, and graphing calculators.	Solving Systems	Solving with Substitution Solving with Elimination Graphing to Solve Elimination and Multiplication Problem Solving with Systems
A1.II.D.3	For given contexts, interpret and determine the reasonableness of solutions to systems of linear equations.	Solving Systems	Graphing to Solve Problem Solving with Systems Solving with Substitution Solving with Elimination
A1.III	Quadratic and Other Functions		
A1.III.A	Quadratic Functions		
A1.III.A.1	Given the constraints of the problem, determine the domain and range values for quadratic functions.	Quadratics and Radicals	Graphing Quadratic Functions
A1.III.A.3	With and without using a graphing calculator, investigate, describe, and predict the effects of changes in the constant c on the graph of $y = x^2 + c$.		
A1.III.A.4	For problem situations, analyze graphs of quadratic functions and draw conclusions.	Quadratics and Radicals	Graphing Quadratic Functions
A1.III.A.5	Solve quadratic equations using concrete models, tables, graphs, and algebraic methods that include factoring and using the quadratic formula as well as computer algebra systems, spreadsheets, and graphing calculators.	Quadratics and Radicals Polynomials	Solving Quadratic Equations with Graphs Solving by Using Square Roots The Quadratic Formula Solving Equations by Factoring Trinomials Factoring Other Trinomials
A1.III.A.6	Relate the solutions of quadratic equations to the roots of their functions.	Polynomials Quadratics and Radicals	Solving Equations by Factoring Trinomials Solving Quadratic Equations with Graphs
A1.III.B	Other Functions		
A1.III.B.1	Use patterns to generate the laws of exponents and apply the laws of exponents in problem-solving situations.	Variables and Expressions	Fractional Exponents Problem Solving using Exponents and Roots Exponents
A1.III.B.2	Analyze data and represent situations	Rational Expressions	Inverse Variation



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State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
	involving inverse variation using concrete models, tables, graphs, or algebraic methods as well as computer algebra systems, spreadsheets, and graphing calculators.		Problem Solving
A1.III.B.3	Analyze data and represent situations involving exponential growth and decay using concrete models, tables, graphs, or algebraic methods as well as computer algebra systems, spreadsheets, and graphing calculators.	Exponentials	Exponential Graphs Growth and Decay Graphing Exponential Equations