

Florida Mathematics Standards		<i>Write Math Answers to Open-Ended Questions in Algebra</i> New Readers Press
BIG IDEAS		
BIG IDEA 1: <i>Develop an understanding of and fluency with multiplication and division of fractions and decimals.</i>		
MA.6.A.1.1	Explain and justify procedures for multiplying and dividing fractions and decimals.	
MA.6.A.1.2	Multiply and divide fractions and decimals efficiently.	SE: pp. 32–35
MA.6.A.1.3	Solve real-world problems involving multiplication and division of fractions and decimals.	SE: pp. 64–67, 68–71
BIG IDEA 2: <i>Connect ratio and rates to multiplication and division.</i>		
MA.6.A.2.1	Use reasoning about multiplication and division to solve ratio and rate problems.	SE: pp. 44–47, 52–55, 56–59, 68–71
MA.6.A.2.2	Interpret and compare ratios and rates.	SE: pp. 40–43, 48–51
BIG IDEA 3: <i>Write, interpret, and use mathematical expressions and equations.</i>		
MA.6.A.3.1	Write and evaluate mathematical expressions that correspond to given situations.	SE: pp. 4–7, 8–11, 16–19, 20–23, 24–27, 28–31, 32–35, 36–39, 64–67
MA.6.A.3.2	Write, solve, and graph one- and two-step linear equations and inequalities.	
MA.6.A.3.3	Work backwards with two-step function rules to undo expressions.	
MA.6.A.3.4	Solve problems given a formula.	
MA.6.A.3.5	Apply the commutative, associative, and distributive properties to show that two expressions are equivalent.	SE: pp. 12–15, 16–19
MA.6.A.3.6	Construct and analyze tables, graphs and equations to describe simple relationships, including a discussion of slope as the rate of change without the use of the slope formula.	SE: pp. 72–75, 76–79

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SUPPORTING IDEAS		
GEOMETRY AND MEASUREMENT		
MA.6.G.4.1	Understand the concept of π , know common estimates of π (3:14; 22/7) and use these values to estimate and calculate the circumference and the area of circles.	
MA.6.G.4.2	Find the perimeters and areas of composite two-dimensional figures, including non-rectangular figures (such as semicircles) using various strategies.	
MA.6.G.4.3	Determine a missing dimension of a plane figure or prism, given its area or volume and some of the dimensions, or determine the area or volume given the dimensions.	
NUMBER AND OPERATIONS		
MA.6.A.5.1	Use equivalent forms of fractions, decimals, and percents to solve problems.	SE: pp. 40–43, 60–63, 68–71
MA.6.A.5.2	Compare and order fractions, decimals, and percents, including finding their approximate location on a number line.	SE: pp. 40–43
MA.6.A.5.3	Estimate the results of computations with fractions, decimals, and percents and judge the reasonableness of the results.	SE: pp. 64–67
DATA ANALYSIS		
MA.6.S.6.1	Determine the measures of central tendency (mean, median, mode) and variability (range) for a given set of data.	

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MA.6.S.6.2 Select and analyze the measures of central tendency or variability to represent, describe, analyze, and/or summarize a data set for the purposes of answering questions appropriately.	

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BIG IDEAS		
BIG IDEA 1: <i>Develop an understanding of and apply proportionality, including similarity.</i>		
MA.7.A.1.1	Distinguish between situations that are proportional or not proportional and use proportions to solve problems.	SE: pp. 44–47, 48–51, 56–59
MA.7.A.1.2	Solve percent problems, including problems involving discounts, simple interest, taxes, tips and percents of increase or decrease.	SE: pp. 60–63, 64–67
MA.7.A.1.3	Solve problems involving similar figures.	SE: pp. 52–55, 56–59
MA.7.A.1.4	Graph proportional relationships and identify the unit rate as the slope of the related linear function.	SE: pp. 68–71
MA.7.A.1.5	Distinguish direct variation from other relationships, including inverse variation.	
MA.7.A.1.6	Apply proportionality to measurement in multiple contexts, including scale drawings and constant speed.	SE: pp. 44–47
BIG IDEA 2: <i>Develop an understanding of and use formulas to determine surface areas and volumes of three-dimensional shapes.</i>		
MA.7.G.2.1	Justify and apply formulas for surface area and volume of pyramids, prisms, cylinders, and cones.	
MA.7.G.2.2	Use formulas to find surface areas and volume of three-dimensional composite shapes.	
BIG IDEA 3: <i>Develop an understanding of operations on all rational numbers and solving linear equations.</i>		
MA.7.A.3.1	Use and justify the rules for adding, subtracting, multiplying, dividing, and finding the absolute value of integers.	SE: pp. 8–11, 20–23, 24–27

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MA.7.A.3.2	Add, subtract, multiply, and divide integers, fractions, and terminating decimals, and perform exponential operations with rational bases and whole number exponents including solving problems in everyday contexts.	SE: pp. 4–7, 40–43
MA.7.A.3.3	Formulate and use different strategies to solve one-step and two-step linear equations, including equations with rational coefficients.	SE: pp. 12–15, 16–19, 28–31, 32–35, 36–39, 72–75, 76–79
MA.7.A.3.4	Use the properties of equality to represent an equation in a different way and to show that two equations are equivalent in a given context.	
SUPPORTING IDEAS		
GEOMETRY AND MEASUREMENT		
MA.7.G.5.1	Determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and apply these relationships to solve problems.	
MA.7.G.5.2	Predict the results of transformations and draw transformed figures, with and without the coordinate plane.	
MA.7.G.5.3	Identify and plot ordered pairs in all four quadrants of the coordinate plane.	SE: pp. 76–79
MA.7.G.5.4	Convert among different units of measurement to solve problems.	SE: pp. 48–51
NUMBER AND OPERATIONS		
MA.7.A.6.1	Express rational numbers as terminating or repeating decimals.	

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MA.7.A.6.2 Solve non-routine problems by working backwards.	
DATA ANALYSIS	
MA.7.S.7.1 Evaluate the reasonableness of a sample to determine the appropriateness of generalizations made about the population.	
MA.7.S.7.2 Construct and analyze histograms, stem-and-leaf plots, and circle graphs.	
PROBABILITY	
MA.7.P.8.1 Determine the outcome of an experiment and predict which events are likely or unlikely, and if the experiment is fair or unfair.	
MA.7.P.8.2 Determine, compare, and make predictions based on experimental or theoretical probability of independent or dependent events.	

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BIG IDEAS	
BIG IDEA 1: <i>Analyze and represent linear functions and solve linear equations and systems of linear equations.</i>	
MA.8.A.1.1 Create and interpret tables, graphs, and models to represent, analyze, and solve problems related to linear equations, including analysis of domain, range and the difference between discrete and continuous data.	SE: pp. 4–7, 52–55
MA.8.A.1.2 Interpret the slope and x - and y -intercepts when graphing a linear equation for a real-world problem.	SE: pp. 60–63, 64–67
MA.8.A.1.3 Use tables, graphs, and models to represent, analyze, and solve real-world problems related to systems of linear equations.	SE: pp. 64–67, 76–79
MA.8.A.1.4 Identify the solution to a system of linear equations using graphs.	SE: pp. 76–79
MA.8.A.1.5 Translate among verbal, tabular, graphical and algebraic representations of linear functions.	SE: pp. 4–7, 8–11, 20–23, 32–35, 52–55, 76–79
MA.8.A.1.6 Compare the graphs of linear and non-linear functions for real-world situations.	SE: pp. 72–75
BIG IDEA 2: <i>Analyze two- and three-dimensional figures by using distance and angle.</i>	
MA.8.G.2.1 Use similar triangles to solve problems that include height and distances.	
MA.8.G.2.2 Classify and determine the measure of angles, including angles created when parallel lines are cut by transversals.	
MA.8.G.2.3 Demonstrate that the sum of the angles in a triangle is 180-degrees and apply this fact to find unknown measure of angles, and the sum of angles in polygons.	

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MA.8.G.2.4	Validate and apply Pythagorean Theorem to find distances in real-world situations or between points in the Cartesian plane.	
BIG IDEA 3: <i>Analyze and summarize data sets.</i>		
MA.8.S.3.1	Select, organize, and construct appropriate data displays, including box and whisker plots, scatter plots, and lines of best fit to convey information and make conjectures about possible relationships.	SE: pp. 56–59
MA.8.S.3.2	Determine and describe how changes in data values impact measures of central tendency.	
SUPPORTING IDEAS		
ALGEBRA		
MA.8.A.4.1	Solve literal equations for a specified variable.	SE: pp. 4–7, 8–11, 12–15, 16–19, 20–23, 44–47, 48–51, 72–75
MA.8.A.4.2	Solve and graph one- and two-step inequalities in one variable.	SE: pp. 24–27, 28–31, 32–35, 68–71
GEOMETRY AND MEASUREMENT		
MA.8.G.5.1	Use dimensional (unit) analysis to perform conversions.	SE: pp. 36–39, 40–43
NUMBER AND OPERATIONS		
MA.8.A.6.1	Use exponents and scientific notation to write large and small numbers and vice versa and to solve problems.	

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MA.8.A.6.2 Make reasonable approximations of square roots and mathematical expressions that include square roots, and use them to estimate solutions to problems and to compare mathematical expressions involving real numbers and radical expressions.	
MA.8.A.6.3 Simplify real number expressions using the laws of exponents.	
MA.8.A.6.4 Perform operations on real numbers (including integer exponents, radicals, percents, scientific notation, absolute value, rational numbers, and irrational numbers) using multi-step and real-world problems.	SE: pp. 8–11, 12–15, 16–19, 32–35, 36–39, 44–47, 48–51, 52–55, 72–75

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ALGEBRA BODY OF KNOWLEDGE		
Standard 1: Real and Complex Number Systems <i>Students expand and deepen their understanding of real and complex numbers by comparing expressions and performing arithmetic computations, especially those involving square roots and exponents. They use the properties of real numbers to simplify algebraic expressions and equations, and they convert between different measurement units using dimensional analysis.</i>		
MA.912.A.1.1	Know equivalent forms of real numbers (including integer exponents and radicals, percents, scientific notation, absolute value, rational numbers, irrational numbers).	
MA.912.A.1.2	Compare real number expressions.	
MA.912.A.1.3	Simplify real number expressions using the laws of components.	
MA.912.A.1.4	Perform operations on real numbers (including integer exponents, radicals, percents, scientific notation, absolute value, rational numbers, and irrational numbers) using multi-step and real-world problems.	SE: pp. 4–7, 8–11, 12–15, 16–19, 68–71
MA.912.A.1.5	Use dimensional (unit) analysis to perform conversions, including rates.	
MA.912.A.1.6	Identify the real and imaginary parts of complex numbers and perform basic operations.	
MA.912.A.1.7	Represent complex numbers geometrically.	
Standard 2: Relations and Functions <i>Students draw and interpret graphs of relations. They understand the notation and concept of a function, find domains and ranges, and link equations to functions.</i>		
MA.912.A.2.1	Create a graph to represent a real-world situation.	

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MA.912.A.2.2	Interpret a graph representing a real-world situation.	SE: pp. 28–31
MA.912.A.2.3	Describe the concept of a function, use function notation, determine whether a given relation is a function, and link equations to functions.	SE: pp. 40–43
MA.912.A.2.4	Determine the domain and range of a relation.	SE: pp. 40–43
MA.912.A.2.5	Graph absolute value equations and inequalities in two variables.	
MA.912.A.2.6	Identify and graph common functions (including but not limited to linear, rational, quadratic, cubic, radical, absolute value).	SE: pp. 40–43
MA.912.A.2.7	Perform operations (addition, subtraction, division, and multiplication) of functions algebraically, numerically, and graphically.	
MA.912.A.2.8	Determine the composition of functions.	
MA.912.A.2.9	Recognize, interpret, and graph functions defined piece-wise, with and without technology.	
MA.912.A.2.10	Describe and graph transformations of functions.	
MA.912.A.2.11	Solve problems involving functions and their inverses.	
MA.912.A.2.12	Solve problems using direct, inverse, and joint variations.	SE: pp. 72–75
MA.912.A.2.13	Solve real-world problems involving relations and functions.	

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Standard 3: Linear Equations and Inequalities <i>Students solve linear equations and inequalities.</i>		
MA.912.A.3.1	Solve linear equations in one variable that include simplifying algebraic expressions.	SE: pp. 12–15
MA.912.A.3.2	Identify and apply the distributive, associative, and commutative properties of real numbers and the properties of equality.	
MA.912.A.3.3	Solve literal equations for a specified variable.	SE: pp. 4–7, 8–11, 12–15, 16–19
MA.912.A.3.4	Solve and graph simple and compound inequalities in one variable and be able to justify each step in a solution.	SE: pp. 24–27
MA.912.A.3.5	Symbolically represent and solve multi-step and real-world applications that involve linear equations and inequalities.	SE: pp. 20–23
MA.912.A.3.6	Solve and graph the solutions of absolute value equations and inequalities with one variable.	
MA.912.A.3.7	Rewrite equations of a line into slope-intercept form and standard form.	SE: pp. 32–35
MA.912.A.3.8	Graph a line given any of the following information: a table of values, the x - and y -intercepts, two points, the slope and a point, the equation of the line in slope-intercept form, standard form, or point-slope form.	SE: pp. 32–35, 36–39
MA.912.A.3.9	Determine the slope, x -intercept, and y -intercept of a line given its graph, its equation, or two points on the line.	SE: pp. 28–31

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MA.912.A.3.10 Write an equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, find an equation on a new line parallel to a given line, or perpendicular to a given line, through a given point on the new line.	SE: pp. 36–39
MA.912.A.3.11 Write an equation of a line that models a data set and use the equation or the graph to make predictions. Describe the slope of the line in terms of the data, recognizing that the slope is the rate of change.	SE: pp. 44–47
MA.912.A.3.12 Graph a linear equation or inequality in two variables with and without graphing technology. Write an equation or inequality represented by a given graph.	SE: pp. 48–51, 56–59
MA.912.A.3.13 Use a graph to approximate the solution of a system of linear equations or inequalities in two variables with and without technology.	
MA.912.A.3.14 Solve systems of linear equations and inequalities in two and three variables using graphical, substitution, and elimination methods.	SE: pp. 52–55, 56–59
MA.912.A.3.15 Solve real-world problems involving systems of linear equations and inequalities in two and three variables.	

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Standard 4: Polynomials <i>Students perform operations on polynomials. They find factors of polynomials, learning special techniques for factoring quadratics. They understand the relationships among the solutions of polynomial equations, the zeros of a polynomial function, the x-intercepts of a graph, and the factors of a polynomial.</i>		
MA.912.A.4.1	Simplify monomials and monomial expressions using the laws of integral exponents.	
MA.912.A.4.2	Add, subtract, and multiply polynomials.	
MA.912.A.4.3	Factor polynomial expressions.	SE: pp. 60–63
MA.912.A.4.4	Divide polynomials by monomials and polynomials with various techniques, including synthetic division.	
MA.912.A.4.5	Graph polynomial functions with and without technology and describe end behavior.	
MA.912.A.4.6	Use theorems of polynomial behavior (including but not limited to the Fundamental Theorem of Algebra, Remainder Theorem, the Rational Root Theorem, Descartes' Rule of Signs, and the Conjugate Root Theorem) to find the zeros of a polynomial function.	
MA.912.A.4.7	Write a polynomial equation for a given set of real and/or complex roots.	
MA.912.A.4.8	Describe the relationships among the solutions of an equation, the zeros of a function, the x -intercepts of a graph, and the factors of a polynomial expression, with and without technology.	
MA.912.A.4.9	Use graphing technology to find approximate solutions for polynomial equations.	

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MA.912.A.4.10	Use polynomial equations to solve real-world problems.	
MA.912.A.4.11	Solve a polynomial inequality by examining the graph with and without the use of technology.	
MA.912.A.4.12	Apply the Binomial Theorem.	
Standard 5: Rational Expressions and Equations <i>Students simplify rational expressions and solve rational equations using what they have learned about factoring polynomials.</i>		
MA.912.A.5.1	Simplify algebraic ratios.	
MA.912.A.5.2	Add, subtract, multiply, and divide rational expressions.	
MA.912.A.5.3	Simplify complex fractions.	
MA.912.A.5.4	Solve algebraic proportions.	
MA.912.A.5.5	Solve rational equations.	
MA.912.A.5.6	Identify removable and non-removable discontinuities and vertical, horizontal, and oblique asymptotes of a graph of a rational function, find the zeros, and graph the function.	
MA.912.A.5.7	Solve real-world problems involving rational equations (mixture, distance, work, interest, and ratio).	SE: pp. 76–79
Standard 6: Radical Expressions and Equations <i>Students simplify and perform operations on radical expressions and equations. They also rationalize square root expressions and understand and use the concepts of negative and rational exponents. They add, subtract, multiply, divide, and simplify radical expressions and expressions with rational exponents. Students will solve radical equations and equations with terms that have rational exponents.</i>		
MA.912.A.6.1	Simplify radical expressions.	
MA.912.A.6.2	Add, subtract, multiply, and divide radical expressions (square roots and higher).	SE: pp. 68–71

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MA.912.A.6.3	Simplify expressions using properties of rational exponents.	
MA.912.A.6.4	Convert between rational exponent and radical forms of expressions.	
MA.912.A.6.5	Solve equations that contain radical expressions.	
Standard 7: Quadratic Equations <i>Students draw graphs of quadratic functions. They solve quadratic equations and solve these equations by factoring, completing the square, and by using the quadratic formula. They also use graphing calculators to find approximate solutions of quadratic equations.</i>		
MA.912.A.7.1	Graph quadratic equations with and without technology.	
MA.912.A.7.2	Solve quadratic equations over the real numbers by factoring, and by using the quadratic formula.	SE: pp. 60–63
MA.912.A.7.3	Solve quadratic equations over the real numbers by completing the square.	
MA.912.A.7.4	Use the discriminant to determine the nature of the roots of a quadratic equation.	
MA.912.A.7.5	Solve quadratic equations over the complex number system.	
MA.912.A.7.6	Identify the axis of symmetry, vertex, domain, range, and intercept(s) for a given parabola.	SE: pp. 64–67
MA.912.A.7.7	Solve non-linear systems of equations with and without using technology.	
MA.912.A.7.8	Use quadratic equations to solve real-world problems.	SE: pp. 64–67
MA.912.A.7.9	Solve optimization problems.	
MA.912.A.7.10	Use graphing technology to find approximate solutions of quadratic equations.	

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<p>Standard 8: Logarithmic and Exponential Functions <i>Students understand the concepts of logarithmic and exponential functions. They graph exponential functions and solve problems of growth and decay. They understand the inverse relationship between exponents and logarithms and use it to prove laws of logarithms and to solve equations. They convert logarithms between bases and simplify logarithmic expressions.</i></p>	
MA.912.A.8.1	Define exponential and logarithmic functions and determine their relationship.
MA.912.A.8.2	Define and use the properties of logarithms to simplify logarithmic expressions and to find their approximate values.
MA.912.A.8.3	Graph exponential and logarithmic functions.
MA.912.A.8.4	Prove laws of logarithms.
MA.912.A.8.5	Solve logarithmic and exponential equations.
MA.912.A.8.6	Use the change of base formula.
MA.912.A.8.7	Solve applications of exponential growth and decay.
<p>Standard 9: Conic Sections <i>Students write equations and draw graphs of conic sections (circle, ellipse, parabola, and hyperbola), thus relating an algebraic representation to a geometric one.</i></p>	
MA.912.A.9.1	Write the equations of conic sections in standard form and general form, in order to identify the conic section and to find its geometric properties (foci, asymptotes, eccentricity, etc.).
MA.912.A.9.2	Graph conic sections with and without using graphing technology.
MA.912.A.9.3	Solve real-world problems involving conic sections.

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Standard 10: Mathematical Reasoning and Problem Solving <i>In a general sense, all of mathematics is problem solving. In all of their mathematics, students use problem-solving skills: they choose how to approach a problem, they explain their reasoning, and they check their results.</i>		
MA.912.A.10.1	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guess-and-check, solving a simpler problem, writing an equation, working backwards, and create a table.	SE: pp. 4–7, 8–11, 12–15, 24–27, 32–35, 36–39, 48–51, 52–55, 56–59, 60–63, 68–71, 72–75, 76–79
MA.912.A.10.2	Decide whether a solution is reasonable in the context of the original situation.	
MA.912.A.10.3	Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic expressions, equations, or inequalities, rational or radical expressions, or logarithmic or exponential functions).	
MA.912.A.10.4	Use counterexamples to show that statements are false.	

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ALGEBRA BODY OF KNOWLEDGE		
Standard 1: Real and Complex Number Systems <i>Students expand and deepen their understanding of real and complex numbers by comparing expressions and performing arithmetic computations, especially those involving square roots and exponents. They use the properties of real numbers to simplify algebraic expressions and equations, and they convert between different measurement units using dimensional analysis.</i>		
MA.912.A.1.1	Know equivalent forms of real numbers (including integer exponents and radicals, percents, scientific notation, absolute value, rational numbers, irrational numbers).	
MA.912.A.1.2	Compare real number expressions.	
MA.912.A.1.3	Simplify real number expressions using the laws of components.	
MA.912.A.1.4	Perform operations on real numbers (including integer exponents, radicals, percents, scientific notation, absolute value, rational numbers, and irrational numbers) using multi-step and real-world problems.	SE: pp. 4–7, 8–11, 12–15, 36–39
MA.912.A.1.5	Use dimensional (unit) analysis to perform conversions, including rates.	
MA.912.A.1.6	Identify the real and imaginary parts of complex numbers and perform basic operations.	
MA.912.A.1.7	Represent complex numbers geometrically.	
Standard 2: Relations and Functions <i>Students draw and interpret graphs of relations. They understand the notation and concept of a function, find domains and ranges, and link equations to functions.</i>		
MA.912.A.2.1	Create a graph to represent a real-world situation.	

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MA.912.A.2.2	Interpret a graph representing a real-world situation.	SE: pp. 24–27
MA.912.A.2.3	Describe the concept of a function, use function notation, determine whether a given relation is a function, and link equations to functions.	SE: pp. 44–47
MA.912.A.2.4	Determine the domain and range of a relation.	SE: pp. 44–47
MA.912.A.2.5	Graph absolute value equations and inequalities in two variables.	SE: pp. 26–29
MA.912.A.2.6	Identify and graph common functions (including but not limited to linear, rational, quadratic, cubic, radical, absolute value).	SE: pp. 44–47
MA.912.A.2.7	Perform operations (addition, subtraction, division, and multiplication) of functions algebraically, numerically, and graphically.	
MA.912.A.2.8	Determine the composition of functions.	
MA.912.A.2.9	Recognize, interpret, and graph functions defined piece-wise, with and without technology.	
MA.912.A.2.10	Describe and graph transformations of functions.	
MA.912.A.2.11	Solve problems involving functions and their inverses.	
MA.912.A.2.12	Solve problems using direct, inverse, and joint variations.	SE: pp. 72–75
MA.912.A.2.13	Solve real-world problems involving relations and functions.	

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Standard 3: Linear Equations and Inequalities <i>Students solve linear equations and inequalities.</i>		
MA.912.A.3.1	Solve linear equations in one variable that include simplifying algebraic expressions.	SE: pp. 8–11
MA.912.A.3.2	Identify and apply the distributive, associative, and commutative properties of real numbers and the properties of equality.	
MA.912.A.3.3	Solve literal equations for a specified variable.	SE: pp. 4–7, 8–11, 12–15
MA.912.A.3.4	Solve and graph simple and compound inequalities in one variable and be able to justify each step in a solution.	SE: pp. 20–23
MA.912.A.3.5	Symbolically represent and solve multi-step and real-world applications that involve linear equations and inequalities.	SE: pp. 16–19
MA.912.A.3.6	Solve and graph the solutions of absolute value equations and inequalities with one variable.	SE: pp. 16–19, 36–39
MA.912.A.3.7	Rewrite equations of a line into slope-intercept form and standard form.	SE: pp. 28–31
MA.912.A.3.8	Graph a line given any of the following information: a table of values, the x - and y -intercepts, two points, the slope and a point, the equation of the line in slope-intercept form, standard form, or point-slope form.	SE: pp. 28–31, 32–35
MA.912.A.3.9	Determine the slope, x -intercept, and y -intercept of a line given its graph, its equation, or two points on the line.	SE: pp. 24–27, 28–31

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MA.912.A.3.10 Write an equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, find an equation on a new line parallel to a given line, or perpendicular to a given line, through a given point on the new line.	SE: pp. 32–35
MA.912.A.3.11 Write an equation of a line that models a data set and use the equation or the graph to make predictions. Describe the slope of the line in terms of the data, recognizing that the slope is the rate of change.	SE: pp. 48–51
MA.912.A.3.12 Graph a linear equation or inequality in two variables with and without graphing technology. Write an equation or inequality represented by a given graph.	SE: pp. 40–43, 56–59
MA.912.A.3.13 Use a graph to approximate the solution of a system of linear equations or inequalities in two variables with and without technology.	
MA.912.A.3.14 Solve systems of linear equations and inequalities in two and three variables using graphical, substitution, and elimination methods.	SE: pp. 52–55, 56–59
MA.912.A.3.15 Solve real-world problems involving systems of linear equations and inequalities in two and three variables.	

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<p>Standard 4: Polynomials <i>Students perform operations on polynomials. They find factors of polynomials, learning special techniques for factoring quadratics. They understand the relationships among the solutions of polynomial equations, the zeros of a polynomial function, the x-intercepts of a graph, and the factors of a polynomial.</i></p>	
MA.912.A.4.1	Simplify monomials and monomial expressions using the laws of integral exponents.
MA.912.A.4.2	Add, subtract, and multiply polynomials.
MA.912.A.4.3	Factor polynomial expressions.
MA.912.A.4.4	Divide polynomials by monomials and polynomials with various techniques, including synthetic division.
MA.912.A.4.5	Graph polynomial functions with and without technology and describe end behavior.
MA.912.A.4.6	Use theorems of polynomial behavior (including but not limited to the Fundamental Theorem of Algebra, Remainder Theorem, the Rational Root Theorem, Descartes' Rule of Signs, and the Conjugate Root Theorem) to find the zeros of a polynomial function.
MA.912.A.4.7	Write a polynomial equation for a given set of real and/or complex roots.
MA.912.A.4.8	Describe the relationships among the solutions of an equation, the zeros of a function, the x -intercepts of a graph, and the factors of a polynomial expression, with and without technology.
MA.912.A.4.9	Use graphing technology to find approximate solutions for polynomial equations.

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MA.912.A.4.10	Use polynomial equations to solve real-world problems.	
MA.912.A.4.11	Solve a polynomial inequality by examining the graph with and without the use of technology.	
MA.912.A.4.12	Apply the Binomial Theorem.	
Standard 5: Rational Expressions and Equations <i>Students simplify rational expressions and solve rational equations using what they have learned about factoring polynomials.</i>		
MA.912.A.5.1	Simplify algebraic ratios.	
MA.912.A.5.2	Add, subtract, multiply, and divide rational expressions.	
MA.912.A.5.3	Simplify complex fractions.	
MA.912.A.5.4	Solve algebraic proportions.	
MA.912.A.5.5	Solve rational equations.	
MA.912.A.5.6	Identify removable and non-removable discontinuities and vertical, horizontal, and oblique asymptotes of a graph of a rational function, find the zeros, and graph the function.	
MA.912.A.5.7	Solve real-world problems involving rational equations (mixture, distance, work, interest, and ratio).	SE: pp. 76–79
Standard 6: Radical Expressions and Equations <i>Students simplify and perform operations on radical expressions and equations. They also rationalize square root expressions and understand and use the concepts of negative and rational exponents. They add, subtract, multiply, divide, and simplify radical expressions and expressions with rational exponents. Students will solve radical equations and equations with terms that have rational exponents.</i>		
MA.912.A.6.1	Simplify radical expressions.	
MA.912.A.6.2	Add, subtract, multiply, and divide radical expressions (square roots and higher).	SE: pp. 12–15, 64–67, 68–71

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MA.912.A.6.3	Simplify expressions using properties of rational exponents.	
MA.912.A.6.4	Convert between rational exponent and radical forms of expressions.	
MA.912.A.6.5	Solve equations that contain radical expressions.	
Standard 7: Quadratic Equations <i>Students draw graphs of quadratic functions. They solve quadratic equations and solve these equations by factoring, completing the square, and by using the quadratic formula. They also use graphing calculators to find approximate solutions of quadratic equations.</i>		
MA.912.A.7.1	Graph quadratic equations with and without technology.	
MA.912.A.7.2	Solve quadratic equations over the real numbers by factoring, and by using the quadratic formula.	
MA.912.A.7.3	Solve quadratic equations over the real numbers by completing the square.	SE: pp. 60–63
MA.912.A.7.4	Use the discriminant to determine the nature of the roots of a quadratic equation.	
MA.912.A.7.5	Solve quadratic equations over the complex number system.	
MA.912.A.7.6	Identify the axis of symmetry, vertex, domain, range, and intercept(s) for a given parabola.	SE: pp. 64–67
MA.912.A.7.7	Solve non-linear systems of equations with and without using technology.	
MA.912.A.7.8	Use quadratic equations to solve real-world problems.	SE: pp. 64–67
MA.912.A.7.9	Solve optimization problems.	
MA.912.A.7.10	Use graphing technology to find approximate solutions of quadratic equations.	

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Standard 8: Logarithmic and Exponential Functions <i>Students understand the concepts of logarithmic and exponential functions. They graph exponential functions and solve problems of growth and decay. They understand the inverse relationship between exponents and logarithms and use it to prove laws of logarithms and to solve equations. They convert logarithms between bases and simplify logarithmic expressions.</i>		
MA.912.A.8.1	Define exponential and logarithmic functions and determine their relationship.	
MA.912.A.8.2	Define and use the properties of logarithms to simplify logarithmic expressions and to find their approximate values.	
MA.912.A.8.3	Graph exponential and logarithmic functions.	
MA.912.A.8.4	Prove laws of logarithms.	
MA.912.A.8.5	Solve logarithmic and exponential equations.	
MA.912.A.8.6	Use the change of base formula.	
MA.912.A.8.7	Solve applications of exponential growth and decay.	
Standard 9: Conic Sections <i>Students write equations and draw graphs of conic sections (circle, ellipse, parabola, and hyperbola), thus relating an algebraic representation to a geometric one.</i>		
MA.912.A.9.1	Write the equations of conic sections in standard form and general form, in order to identify the conic section and to find its geometric properties (foci, asymptotes, eccentricity, etc.).	
MA.912.A.9.2	Graph conic sections with and without using graphing technology.	
MA.912.A.9.3	Solve real-world problems involving conic sections.	

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Standard 10: Mathematical Reasoning and Problem Solving <i>In a general sense, all of mathematics is problem solving. In all of their mathematics, students use problem-solving skills: they choose how to approach a problem, they explain their reasoning, and they check their results.</i>		
MA.912.A.10.1	Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guess-and-check, solving a simpler problem, writing an equation, working backwards, and create a table.	SE: pp. 4–7, 8–11, 12–15, 20–23, 28–31, 32–35, 40–43, 52–55, 56–59, 60–63, 68–71, 72–75, 76–79
MA.912.A.10.2	Decide whether a solution is reasonable in the context of the original situation.	
MA.912.A.10.3	Decide whether a given statement is always, sometimes, or never true (statements involving linear or quadratic expressions, equations, or inequalities, rational or radical expressions, or logarithmic or exponential functions).	SE: pp. 36–39
MA.912.A.10.4	Use counterexamples to show that statements are false.	

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