

Algebra I – Crosswalk (Summary of Revisions): 2016 *Mathematics Standards of Learning and Curriculum Framework*

Additions (2016 SOL)	Deletions from Algebra I (2009 SOL)
<ul style="list-style-type: none"> • A.1a EKS – Translate between verbal quantitative situations algebraically with equations • A.3b – Simplify cube roots of all integers (previously limited to whole numbers) • A.3c EKS – Simplify numerical expressions containing square or cube roots and add, subtract, and multiply two monomial radical expressions limited to a numerical radicand • A.5 EKS – Determine and verify algebraic solutions using a graphing utility • A.5c EKS – Determine if a coordinate pair is a solution of an inequality or system of inequalities • A.6b EKS – Write the equation of a line parallel or perpendicular to a given line through a given point • A.7 EKS – Investigate and analyze characteristics and multiple representations of linear and quadratic functions using a graphing utility • A.7a EKS – Determine whether a relation represented by a mapping is a function 	<ul style="list-style-type: none"> • A.2 EKS – Identify prime polynomials • A.7 EKS – Detect patterns in data and represent arithmetic and geometric patterns algebraically [Included in AFDA.1 and AII.5] • A.9 – Interpret variation in real-world contexts and calculate and interpret standard deviation, and z-scores [Included in AFDA.7 and AII.11]; calculate and interpret mean absolute deviation • A.10 – Compare and contrast multiple univariate data sets, using box-and-whisker plots [Moved to 8.12] • A.11 EKS – Design experiments and collect data to address specific, real-world questions [Included in AFDA.8]
Parameter Changes/Clarifications (2016 SOL)	Moves within Algebra I (2009 SOL to 2016 SOL)
<ul style="list-style-type: none"> • A.1 EKS – Evaluating algebraic expressions (clarified that expressions may contain absolute value, square roots, and cube roots without rationalizing denominators) • A.2b EKS – Model operations of polynomials with concrete objects clarified to include both pictorial and symbolic representations; products of polynomials limited to five or fewer terms • A.2c EKS – Factoring binomials or trinomials limited to one variable (two variables included in Algebra II) and limit the leading coefficient to be an integer with no more than four factors after factoring out a greatest common factor • A.4a,b EKS – Apply properties of real numbers and properties of equality • A.4b – Solving quadratic equations (clarified that both rational and irrational solutions to quadratics will be included) • A.5a EKS – Solving multistep linear inequalities in one variable (clarified that solving would be algebraic and representing a solution would be graphical); apply properties of real numbers and properties of inequality • A.5d – Solving systems of inequalities (clarified that solutions to systems of inequalities should be represented graphically) • A.9 – Determine the equation of best fit (clarified to be performed with the use of a graphing utility) 	<ul style="list-style-type: none"> • A.2 – Use of graphing calculators [Moved to A.2c EKS] • A.2 EKS – Use x-intercepts to determine and confirm factors [Moved to A.7c,d EKS] • A.4 – Use of graphing calculators [Moved to A.4 EKS] • A.4a – [Moved to A.4c] • A.4b – Justify steps used in simplifying expressions and solving equations [Moved to A.4a,b EKS] • A.4c – [Moved to A.4b] • A.4d – [Moved to A.4a] • A.4e – [Moved to A.4d] • A.4f – [Moved to A.4e] • A.4 EKS – Identify roots or zeros of a quadratic function by solving a related quadratic equation [Moved to A.7c] • A.5b – Justify steps used in solving inequalities [Moved to A.5a EKS] • A.6 – Graph linear inequalities [Moved to A.5b] • A.6 – Graph linear equations [Moved to A.6c] • A.11 – [Moved to A.9]

EKS = Essential Knowledge and Skills, referring to the column on the right side of the Curriculum Framework

US = Understanding the Standard, referring to the column on the left side of the Curriculum Framework

Comparison of Mathematics Standards of Learning – 2009 to 2016

2009 SOL	2016 SOL
Expressions and Operations	
<p>A.1 The student will represent verbal quantitative situations algebraically and evaluate these expressions for given replacement values of the variables.</p>	<p>A.1 The student will a) represent verbal quantitative situations algebraically; and b) evaluate algebraic expressions for given replacement values of the variables.</p>
<p>A.2 The student will perform operations on polynomials, including a) applying the laws of exponents to perform operations on expressions; b) adding, subtracting, multiplying, and dividing polynomials; and c) factoring completely first- and second-degree binomials and trinomials in one or two variables. Graphing calculators will be used as a tool for factoring and for confirming algebraic factorizations. [Moved to EKS]</p>	<p>A.2 The student will perform operations on polynomials, including a) applying the laws of exponents to perform operations on expressions; b) adding, subtracting, multiplying, and dividing polynomials; and c) factoring completely first- and second-degree binomials and trinomials in one variable.</p>
<p>A.3 The student will express the square roots and cube roots of whole numbers and the square root of a monomial algebraic expression in simplest radical form.</p>	<p>A.3 The student will simplify a) square roots of whole numbers and monomial algebraic expressions; b) cube roots of integers; and c) numerical expressions containing square or cube roots.</p>
Equations and Inequalities	
<p>A.4 The student will solve multistep linear and quadratic equations in two variables, including a) solving literal equations (formulas) for a given variable; b) justifying steps used in simplifying expressions and solving equations, using field properties and axioms of equality that are valid for the set of real numbers and its subsets; c) solving quadratic equations algebraically and graphically; d) solving multistep linear equations algebraically and graphically; e) solving systems of two linear equations in two variables algebraically and graphically; and f) solving real-world problems involving equations and systems of equations. Graphing calculators will be used both as a primary tool in solving problems and to verify algebraic solutions. [Moved to EKS]</p>	<p>A.4 The student will solve a) multistep linear equations in one variable algebraically; b) quadratic equations in one variable algebraically; c) literal equations for a specified variable; d) systems of two linear equations in two variables algebraically and graphically; and e) practical problems involving equations and systems of equations.</p>
<p>A.5 The student will solve multistep linear inequalities in two variables, including a) solving multistep linear inequalities algebraically and graphically; b) justifying steps used in solving inequalities, using axioms of inequality and properties of order that are valid for the set of real numbers and its subsets; [Moved to EKS] c) solving real-world problems involving inequalities; and d) solving systems of inequalities.</p>	<p>A.5 The student will a) solve multistep linear inequalities in one variable algebraically and represent the solution graphically; b) represent the solution of linear inequalities in two variables graphically; c) solve practical problems involving inequalities; and d) represent the solution to a system of inequalities graphically.</p>

2009 SOL	2016 SOL
<p>A.6 The student will graph linear equations and linear inequalities in two variables, including</p> <ul style="list-style-type: none"> a) determining the slope of a line when given an equation of the line, the graph of the line, or two points on the line. Slope will be described as rate of change and will be positive, negative, zero, or undefined; and b) writing the equation of a line when given the graph of the line, two points on the line, or the slope and a point on the line. 	<p>A.6 The student will</p> <ul style="list-style-type: none"> a) determine the slope of a line when given an equation of the line, the graph of the line, or two points on the line; b) write the equation of a line when given the graph of the line, two points on the line, or the slope and a point on the line; and c) graph linear equations in two variables.
Functions	
<p>A.7 The student will investigate and analyze function (linear and quadratic) families and their characteristics both algebraically and graphically, including</p> <ul style="list-style-type: none"> a) determining whether a relation is a function; b) domain and range; c) zeros of a function; d) x- and y-intercepts; e) finding the values of a function for elements in its domain; and f) making connections between and among multiple representations of functions including concrete, verbal, numeric, graphic, and algebraic. 	<p>A.7 The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including</p> <ul style="list-style-type: none"> a) determining whether a relation is a function; b) domain and range; c) zeros; d) intercepts; e) values of a function for elements in its domain; and f) connections between and among multiple representations of functions using verbal descriptions, tables, equations, and graphs.
Statistics	
<p>A.8 The student, given a situation in a real-world context, will analyze a relation to determine whether a direct or inverse variation exists, and represent a direct variation algebraically and graphically and an inverse variation algebraically.</p>	<p>A.8 The student, given a data set or practical situation, will analyze a relation to determine whether a direct or inverse variation exists, and represent a direct variation algebraically and graphically and an inverse variation algebraically.</p>
<p>A.9 The student, given a set of data, will interpret variation in real-world contexts and calculate and interpret mean absolute deviation, standard deviation, and z-scores. [Included in AFDA.7 and AII.11]</p>	
<p>A.10 The student will compare and contrast multiple univariate data sets, using box- and-whisker plots. [Moved to 8.12]</p>	
<p>A.11 The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve real-world problems, using mathematical models. Mathematical models will include linear and quadratic functions.</p>	<p>A.9 The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve practical problems, using mathematical models of linear and quadratic functions.</p>