

## Course Outline

### Algebra I

The course outline includes all of the modules and all of the topics that are covered in each module. In addition, 2016 Virginia Standards of Learning are indicated in the appropriate column below.

Algebra I Scope and Sequence		
Module and Topic	Name	2016 Virginia Standards of Learning
<b>Developmental Module:</b> <i>The purpose of this module is to review skills that students need in order to be successful in other areas of the course.</i>		
<b>Module 1: Expressions</b>		
<b>Topic 1</b>	Translating Verbal and Algebraic Expressions	A.1 The student will a) represent verbal quantitative situations algebraically.
<b>Topic 2</b>	Modeling Real-World Situations	A.1 The student will a) represent verbal quantitative situations algebraically.
<b>Topic 3</b>	Evaluating Expressions	A.1 The student will b) evaluate algebraic expressions for given replacement values of the variables.
<b>Module 2: Properties of Exponents</b>		
<b>Topic 1</b>	Product of Powers, Power of a Power, and Power of a Product	A.2 The student will perform operations on polynomials, including a) applying the laws of exponents to perform operations on expressions.
<b>Topic 2</b>	Quotient of Powers and Power of a Quotient	A.2 The student will perform operations on polynomials, including a) applying the laws of exponents to perform operations on expressions.
<b>Topic 3</b>	Zero and Negative Exponents	A.2 The student will perform operations on polynomials, including a) applying the laws of exponents to perform operations on expressions.
<b>Module 3: Operations on Polynomials</b>		
<b>Topic 1</b>	Adding and Subtracting Polynomials	A.2 The student will perform operations on polynomials, including b) adding, subtracting, multiplying, and dividing polynomials.
<b>Topic 2</b>	Multiplying and Dividing Polynomials	A.2 The student will perform operations on polynomials, including b) adding, subtracting, multiplying, and dividing polynomials.
<b>Topic 3</b>	Factoring Polynomials	A.2 The student will perform operations on polynomials, including c) factoring completely first- and second-degree binomials and trinomials in one variable.

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Module 4: Radical Expressions		
<b>Topic 1</b>	Simplifying Square Roots and Cube Roots	A.3 The student will simplify a) square roots of whole numbers and monomial algebraic expressions; and b) cube roots of integers.
<b>Topic 2</b>	Operations on Radical Expressions	A.3 The student will simplify c) numerical expressions containing square or cube roots.
Module 5: Solving Linear Equations		
<b>Topic 1</b>	Solving Literal Equations	A.4 The student will solve c) literal equations for a specified variable.
<b>Topic 2</b>	Solving Linear Equations Algebraically	A.4 The student will solve a) multistep linear equations in one variable algebraically.
<b>Topic 3</b>	Solving Systems of Linear Equations	A.4 The student will solve d) systems of two linear equations in two variables algebraically and graphically.
<b>Topic 4</b>	Solving Practical Problems Involving Equations	A.4 The student will solve e) practical problems involving equations and systems of equations.
Module 6: Solving Quadratic Equations		
<b>Topic 1</b>	Solving Quadratic Equations by Factoring	A.4 The student will solve b) quadratic equations in one variable algebraically.
<b>Topic 2</b>	Solving Quadratic Equations by Using the Quadratic Formula	A.4 The student will solve b) quadratic equations in one variable algebraically.
<b>Topic 3</b>	Solving Practical Problems Involving Quadratic Equations	A.4 The student will solve b) quadratic equations in one variable algebraically; and e) practical problems involving equations and systems of equations.
Module 7: Solving Linear Inequalities		
<b>Topic 1</b>	Solving Linear Inequalities in One Variable	A.5 The student will a) solve multistep linear inequalities in one variable and represent the solution graphically.
<b>Topic 2</b>	Solving Linear Inequalities in Two Variables	A.5 The student will b) represent the solution of linear inequalities in two variables graphically.
<b>Topic 3</b>	Solving Systems of Inequalities	A.5 The student will d) represent the solution to a system of linear inequalities graphically.
<b>Topic 4</b>	Solving Real-World Problems Involving Inequalities	A.5 The student will c) solve practical problems involving inequalities.
Module 8: Graphing Linear Equations		
<b>Topic 1</b>	Graphing a Linear Equation Using Slope	A.6 The student will c) graph linear equations in two variables.

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<b>Topic 2</b>	Graphing a Linear Equation Using x- and y-intercepts	A.6 The student will c) graph linear equations in two variables.
<b>Topic 3</b>	Graphing a Linear Equation as a Transformation of the Parent Function	A.6 The student will c) graph linear equations in two variables.
<b>Module 9: Writing Linear Equations</b>		
<b>Topic 1</b>	Determining the Slope of a Line	A.6 The student will 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>Topic 2</b>	Writing the Equation of a Line	A.6 The student will 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.
<b>Topic 3</b>	Parallel and Perpendicular Lines	A.6 The student will 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; and 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.
<b>Module 10: Linear and Quadratic Function Families</b>		
<b>Topic 1</b>	Relations and Functions	A.7 The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including a) determining whether a relation is a function; b) domain and range; and f) connections between and among multiple representations of functions using verbal descriptions, tables, equations, and graphs.
<b>Topic 2</b>	Zeros and Intercepts	A.7 The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including 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.
<b>Topic 3</b>	Finding Function Values for Elements of the Domain	A.7 The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including 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.

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Module 11: Direct and Inverse Variation		
<b>Topic 1</b>	Determining Whether a Direct or Inverse Variation Exists	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.
<b>Topic 2</b>	Writing and Graphing a Direct Variation Equation	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.
<b>Topic 3</b>	Writing an Inverse Variation Equation	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.
Module 12: Statistics		
<b>Topic 1</b>	Line of Best Fit	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.
<b>Topic 2</b>	Curve of Best Fit	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.