



Alignment Document
State of South Dakota and Aventa Learning Algebra I

Algebra I

Goals	Indicators	Standards	Unit Name	Course Topic Description
9-12.A Algebra	9-12.A.1 Use procedures to transform algebraic expressions.	9-12.A.1.1 Students are able to write equivalent forms of algebraic expressions using properties of the set of real numbers.		
		9-12.A.1.1.a Evaluate algebraic expressions.	Real Numbers	Decimals
			Real Numbers	Evaluating Division Expressions
		9-12.A.1.1.b Use laws of exponents.	Variables and Expressions	Problem Solving using Exponents and Roots
		Variables and Expressions	Fractional Exponents	
	9-12.A.1.1.c Use conventional order of operations, including grouping and exponents.	Real Numbers	Evaluating Expressions	
		Real Numbers	Decimals	
		Real Numbers	Evaluating Division Expressions	
		Real Numbers	Division of Rational Numbers	
		Variables and Expressions	Order of Operations	
9-12.A.2 Use a variety of algebraic concepts and methods to solve equations and inequalities.	9-12.A.2.1 Students are able to use algebraic properties to transform multi-step, single-variable, first-degree equations.		Equations	Solving Multi-Step Equations
			Equations	Equations with Variables on Each Side



			Equations	Addition and Subtraction in Equations
			Equations	Mixture Problems
			Equations	Rate Problems
			Real Numbers	Properties of Closure and Equality
			Real Numbers	Using the Properties
			Real Numbers	Writing and Justifying Steps Using Properties
		9-12.A.2.2 Students are able to use algebraic properties to transform multi-step, single-variable, first-degree inequalities and represent solutions using a number line.	Real Numbers	Properties of Closure and Equality
			Real Numbers	Writing and Justifying Steps Using Properties
			Real Numbers	Using the Properties
			Equations	Addition and Subtraction in Equations
			Inequalities	Solving Inequalities by Addition and Subtraction
			Inequalities	Compound Inequalities
			Inequalities	Solving Inequalities Using Multiplication and Division
			Inequalities	Absolute Value Inequalities
			Inequalities	Multi-Step Inequalities



	<p>9-12.A.3 Interpret and develop mathematical models.</p>	<p>9-12.A.3.1 Students are able to create linear models to represent problem situations.</p>		
		<p>9-12.A.3.1.a Calculate and interpret slope.</p>	<p>Functions and Linear Equations</p>	<p>More about Slope</p>
	<p>9-12.A.4 Describe and use properties and behaviors of relations, functions and inverses.</p>	<p>9-12.A.4.1 Students are able to use graphs, tables, and equations to represent linear functions.</p>	<p>Functions and Linear Equations</p> <p>Functions and Linear Equations</p> <p>Functions and Linear Equations</p> <p>Functions and Linear Equations</p> <p>Functions and Linear Equations</p> <p>Functions and Linear Equations</p> <p>Functions and Linear Equations</p> <p>Solving Systems</p> <p>Equations</p> <p>Equations</p> <p>Equations</p>	<p>Writing Linear Equations</p> <p>Graphing an Equation Using Intercepts</p> <p>Linear Patterns</p> <p>Functions</p> <p>Slope-Intercept Form</p> <p>Graphing an Equation Using Slope and Y-Intercept</p> <p>Graphing an Equation Using Points</p> <p>Review of Graphing Linear Equations</p> <p>Parentheses in Equations</p> <p>Solving Problems</p> <p>Mixture Problems</p>

			Equations	Multiplication and Division in Equations
			Equations	Rate Problems
			Equations	Equations with Variables on Each Side
9-12.G Geometry	9-12.G.1 Use deductive and inductive reasoning to recognize and apply properties of geometric figures.	9-12.G.1.1 Students are able to apply the properties of triangles and quadrilaterals to find unknown parts.		
		9-12.G.1.2 Students are able to identify and apply relationships among triangles.		
		9-12.G.1.2.a Definitions and postulates		
		9-12.G.1.2.b Similarity theorems		
		9-12.G.1.2.c Congruence theorems		
	9-12.G.2 Use properties of geometric figures to solve problems from a variety of perspectives.	9-12.G.2.1 Students are able to recognize the relationship between a three-dimensional figure and its two-dimensional representation.		
		9-12.G.2.1.a Interpret floor plans		
		9-12.G.2.1.b Follow instructions for assembly of a product, e.g., "some assembly required."		
		9-12.G.2.2 Students are able to reflect across vertical or horizontal lines, and translate two-dimensional figures.		
		9-12.G.2.2.a Identify lines of symmetry.		
		9-12.G.2.2.b Use the coordinate plane.		
		9-12.G.2.3 Students are able to use proportions to solve problems.	Equations	Ratios and Proportions
9-12.M Measurement	9-12.M.1 Apply measurement concepts in practical applications.	9-12.M.1.1 Students are able to choose appropriate unit label, scale, and precision.		
		9-12.M.1.1.a Determine appropriate	Solving Systems	Histograms



		scales for histograms, scatterplots, and other graphs.	Variables and Expressions	Tables and Graphs
		9-12.M.1.2 Students are able to use suitable units when describing rate of change.	Equations	Mixture Problems
		9-12.M.1.3 Students are able to use formulas to find perimeter, circumference, and area to solve problems involving common geometric figures.		
		9-12.M.1.3.a Use algebraic expressions with geometric formulas.	Real Numbers	Estimation with Real Numbers
9-12.N Number Sense	9-12.N.1 Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.	9-12.N.1.1 Students are able to identify multiple representations of a real number.		
		9-12.N.1.1.a Given a real number identify the subset(s) of real numbers to which it belongs.	Real Numbers	Number Sets
			Real Numbers	Evaluating Division Expressions
			Real Numbers	Adding Fractions with Real Numbers
			Real Numbers	Subtracting Fractions with Real Numbers
			Real Numbers	Fractions
			Real Numbers	Multiplication of Rational Numbers
9-12.N.1.1.b Represent rational and irrational numbers in different forms.	Real Numbers	Order of Numbers		
	Real Numbers	Decimals		
	Real Numbers	Number Sets		
	Real Numbers	Adding Fractions with Real Numbers		



			Real Numbers	Rational Numbers
			Real Numbers	Fractions
			Real Numbers	Subtracting Fractions with Real Numbers
			Real Numbers	Order of Numbers
			Rational Expressions	Probability Expressed as a Percent
		9-12.N.1.2 Students are able to apply the concept of place value, magnitude, and relative magnitude of real numbers.		
		9-12.N.1.2.a Scientific notation	Polynomials	From Scientific Notation to Standard Notation
			Polynomials	Computing with Scientific Notation
			Polynomials	Scientific Notation
		9-12.N.1.2.b Infinitely many solutions	Equations	Equations with Variables on Each Side
		9-12.N.1.2.c Completeness of the real numbers (density, i.e., between any two real numbers is another real number)	Real Numbers	Adding Fractions with Real Numbers
			Real Numbers	Subtracting Fractions with Real Numbers
			Real Numbers	Fractions
			Real Numbers	Multiplication of Rational Numbers
			Real Numbers	Order of Numbers



			Real Numbers	Evaluating Division Expressions
			Real Numbers	Number Sets
	9-12.N.2 Apply number operations with real numbers and other number systems.	9-12.N.2.1 Students are able to add, subtract, multiply, and divide real numbers including integral exponents.	Variables and Expressions	Problem Solving using Exponents and Roots
			Variables and Expressions	Expressions with Powers
			Variables and Expressions	Fractional Exponents
			Variables and Expressions	Exponents
			Exponentials	Exponential Equations
			Real Numbers	Division of Rational Numbers
			Real Numbers	Evaluating Division Expressions
			Real Numbers	Rational Numbers
			Real Numbers	Subtracting Fractions with Real Numbers
			Real Numbers	Adding Fractions with Real Numbers
			Real Numbers	Decimals
			Real Numbers	Multiplication of Rational Numbers
			Real Numbers	Fractions
	9-12.N.3 Develop conjectures,	9-12.N.3.1 Students are able to use		

	predictions, or estimations to solve problems and verify or justify the results.	estimation strategies in problem situations to predict results and to check the reasonableness of results.		
		9-12.N.3.1.a Use rounding as an estimation strategy.	Real Numbers	Estimation with Real Numbers
			Real Numbers	Estimation
		9-12.N.3.1.b Use non-routine estimation strategies.	Real Numbers	Estimation with Real Numbers
			Real Numbers	Estimation
		9-12.N.3.2 Students are able to select alternative computational strategies and explain the chosen strategy.		
		9-12.N.3.2.a Use properties of numbers that allow operational shortcuts for computational procedures.	Real Numbers	Using the Properties
			Real Numbers	Writing and Justifying Steps Using Properties
			Real Numbers	Properties of Closure and Equality
			Variables and Expressions	The Distributive Property
			Variables and Expressions	The Associative Property
			Variables and Expressions	The Commutative Property
9-12.S Statistics and Probability	9-12.S.1 Use statistical models to gather, analyze, and display data to draw conclusions.	9-12.S.1.1 Students are able to draw conclusions from a set of data.		
		9-12.S.1.1.a Determine and use appropriate statistical values.		
		9-12.S.1.1.b Determine which questions can or cannot be answered from a given data set.	Solving Systems	Histograms
			Solving Systems	Analyzing Statistical Data

			Functions and Linear Equations	Line of Fit
		9-12.S.1.2 Students are able to compare multiple one-variable data sets, using range, interquartile range, mean, mode, and median.	Solving Systems	Statistics
			Solving Systems	Analyzing Statistical Data
			Variables and Expressions	Stem and Leaf Plots
			Variables and Expressions	Mean, Median and Mode
		9-12.S.1.3 Represent a set of data in a variety of graphical forms and draw conclusions.		
		9-12.S.1.3.a Make a scatterplot to draw a regression line and make predictions.		
		9-12.S.1.3.b Make a box-and-whisker plot to model a set of one-variable data.	Solving Systems	Box Plots
		9-12.S.1.3.c Make a histogram from a frequency distribution.	Solving Systems	Histograms
	9-12.S.2 Apply the concepts of probability to predict events/outcomes and solve problems.	9-12.S.2.1 Students are able to distinguish between experimental and theoretical probability.	Rational Expressions	More about the Multiplication Principle
			Rational Expressions	Using Data to Make Predictions
			Rational Expressions	Counting: An introduction to the Multiplication Principle
			Rational Expressions	The Basics of Probability
		9-12.S.2.2 Students are able to predict outcomes of simple events using given theoretical probabilities.		
		9-12.S.2.2.a Determine the sample space of an experiment.		