



Alignment Document

State of Nevada And Aventa Learning Algebra II

Algebra II 2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
A	Students will develop their ability to solve problems by engaging in developmentally appropriate opportunities where there is a need to use various approaches to investigate and understand mathematical concepts in order to:		
0	Generalize solutions and apply previous knowledge to new problem solving situations		Covered throughout the course
0	Determine an efficient strategy, verify, interpret, and evaluate the results with respect to the original problem		Covered throughout the course
0	Apply problem solving strategies until a solution is found or it is clear that no solution exists		Covered throughout the course
0	Interpret and solve a variety of mathematical problems by paraphrasing		
0	Identify necessary and extraneous information		
0	Check the reasonableness of a solution		Covered throughout the course
0	Apply technology as a tool in problem solving situations	Systems of Linear Equations	Gauss - Jordon Elimination
0	Apply combinations of proven strategies and previous knowledge to solve non-routine problems		
B	Students will develop their ability to communicate mathematically by solving problems where there is a need to obtain information from the real world through reading, listening, and observing in order to:		



0	Use a variety of techniques to solve mathematical problems		Covered throughout the course
0	Evaluate written and oral presentations in mathematics.		
0	Model and explain mathematical relationships using oral, written, graphic, and algebraic methods		
0	Communicate and evaluate mathematical thinking based on the use of definitions, properties, rules, and symbols in problem solving		Covered throughout the course
0	Use everyday language, both orally and in writing, communicate strategies and solutions to problems using appropriate mathematical language		Covered throughout the course
C	Students will develop their ability to reason mathematically by solving problems where there is a need to investigate mathematical ideas and construct their own learning in all content areas in order to:		
0	Recognize and apply deductive and inductive reasoning		
0	Review and refine the assumptions and steps used to derive conclusions in mathematical arguments		
0	Make and test conjectures about algebraic and geometric properties based on mathematical principles		
0	Justify the validity of an argument		
0	Construct a valid argument		
D	Students will develop the ability to make mathematical connections by solving problems where there is a need to view mathematics as an integrated whole in order to:		
0	Use mathematical ideas from one area of mathematics to explain an idea from another area of mathematics		
0	Explain the relationship between concepts and procedures		
0	Use the connections among mathematical topics to develop multiple approaches to problems		Covered throughout the course



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0	Apply mathematical thinking and modeling to solve problems that arise in other disciplines, such as rhythm in music and motion in science		
0	Identify, explain, and apply mathematics in everyday life		Covered throughout the course
1.0	Students will accurately calculate and use estimation techniques, number relationships, operation rules, and algorithms; they will determine the reasonableness of answers and the accuracy of solutions to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.		
0	Place Value		
0	Nevada has no content for this theme.		
0	Fractions		
0	Nevada has no content for this theme.		
0	Comparing and Ordering		
0	Nevada has no content for this theme.		
0	Counting		
0	Nevada has no content for this theme.		
0	Facts		
0	Nevada has no content for this theme.		
1.12.6	Estimating and Estimation Strategies		
1.12.6.1	Determine an approximate value of radical and exponential expressions using a variety of methods.		
1.12.7	Computation		
1.12.7.1	Solve mathematical problems involving exponents and roots.		
1.12.7.2	Perform addition, subtraction, and scalar multiplication on matrices.		
1.12.8	Solving Problems and Number Theory		
1.12.8.1	Identify and apply real number properties to solve problems.		Covered throughout the course
2.0	Students will use various algebraic methods to analyze, illustrate, extend, and create numerous representations (words, numbers, tables, and graphs) of patterns, functions, and algebraic relations as modeled in practical situations to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.		
2.12.1	Patterns		



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2.12.1.1	Use algebraic expressions to identify and describe the n th term of a sequence.	Sequences and Series	Geometric Series
		Sequences and Series	Arithmetic Series
2.12.2	Variables and Unknowns		
2.12.2.1	Isolate any variable in given equations, inequalities, proportions, and formulas to use in mathematical and practical situations.	Absolute Value	Absolute Value and Inequalities Shortcuts Summary
		Absolute Value	Absolute Value and Inequalities
2.12.3	Number Sentences, Expressions, and Polynomials		
2.12.3.1	Add, subtract, multiply, and factor 1st and 2nd degree polynomials connecting the arithmetic and algebraic processes.	Polynomials	Working with Cubes
		Polynomials	Combining polynomials
		Polynomials	Factoring Polynomials
		Polynomials	The Factor Theorem
2.12.3.2	Simplify algebraic expressions, including exponents and radicals.		
2.12.4	Relations and Functions		
2.12.4.1	Determine the domain and range of functions, including linear, quadratic, and absolute value, algebraically and graphically.	Quadratics	From the zeros to the equation of quadratic functions
		Quadratics	Quadratic functions and their graphs
		Quadratics	Zeros of the quadratic function
		Quadratics	Quadratic functions in the real world
		Quadratics	Factored form of quadratics
		Quadratics	Introduction
		Absolute Value	Absolute Value equations in other places
		Absolute Value	Shortcuts
		Composition of Functions	Domain Restrictions
		Composition of Functions	Horizontal Line Test
2.12.4.2	Solve absolute value equations and inequalities both algebraically and graphically.	Absolute Value	Absolute Value and Inequalities Shortcuts
		Absolute Value	More Complicated Absolute Value Equations

		Absolute Value	Absolute Value and Inequalities Shortcuts Summary
		Absolute Value	Absolute Value Equations
		Absolute Value	Absolute Value and Inequalities
		Absolute Value	Absolute Value equations in other places
		Absolute Value	Shortcuts
2.12.5	Linear Equations and Inequalities		
2.12.5.1	Solve systems of two linear equations algebraically and graphically and verify solutions (with and without technology).	Systems of Linear Equations	Systems of Linear equations with two variables
		Systems of Linear Equations	The Substitution Method
2.12.6	Algebraic Representations and Applications		
2.12.6.1	Solve mathematical and practical problems involving linear and quadratic equations with a variety of methods, including discrete methods (with and without technology).	Quadratics	Covered throughout the unit
3.0	Students will use appropriate tools and techniques of measurement to determine, estimate, record, and verify direct and indirect measurements to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.		
3.12.1	Comparison, Estimation, and Conversion		
3.12.1.1	Estimate and convert between customary and metric systems.		
3.12.2	Precision in Measurements		
3.12.2.1	Justify, communicate, and differentiate between precision, error, and tolerance in practical problems.		
3.12.3	Formulas		
3.12.3.1	Select and use appropriate measurement tools, techniques, and formulas to solve problems in mathematical and practical situations.		
3.12.4	Money		
3.12.4.1	Interpret and apply consumer data presented in charts, tables, and graphs to make informed financial decisions related to practical applications.	Absolute Value	Absolute Value equations in other places
3.12.5	Ratios and Proportions		



3.12.5.1	Determine the measure of unknown dimensions, angles, areas, and volumes using relationships and formulas to solve problems.		
0	Time		
0	Nevada has no content for this theme.		
4.0	Students will identify, represent, verify, and apply spatial relationships and geometric properties to solve problems, communicate, and make connections within and beyond the field of mathematics.		
4.12.1	Two - Dimensional Shapes		
4.12.1.1	Identify and use the parts of a circle to solve mathematical and practical problems.		
4.12.1.2	Identify and apply properties of interior and exterior angles of polygons to solve mathematical and practical problems.		
4.12.2	Congruence, Similarity, and Transformations		
4.12.2.1	Apply properties of similarity through right triangle trigonometry to find missing angles and sides.		
0	Coordinate Geometry and Lines of Symmetry		
0	Nevada has no content for this theme.		
0	Three - Dimensional Figures		
0	Nevada has no content for this theme.		
4.12.5	Algebraic Connections		
4.12.5.1	Determine the slope of lines using coordinate geometry and algebraic techniques.		
4.12.5.2	Identify parallel, perpendicular, and intersecting lines by slope.		
4.12.5.3	Graph linear equations and find possible solutions to those equations using coordinate geometry.	Systems of Linear Equations	Systems of two linear equations with two variables
4.12.5.4	Find possible solution sets of systems of equations whose slopes indicate parallel, perpendicular, or intersecting lines.	Systems of Linear Equations	Systems of two linear equations with two variables
4.12.6	Lines, Angles, and Their Properties		
4.12.6.1	Solve problems using complementary and supplementary angles, congruent angles, vertical angles, angles formed when parallel lines are cut by a transversal and angles in polygons.		
4.12.7	Triangles		
4.12.7.1	Apply the Pythagorean Theorem and its converse in mathematical and practical situations.		



4.12.8	Constructions		
4.12.8.1	Solve problems by drawing and/or constructing geometric figures to demonstrate geometric relationships.		
4.12.9	Logic		
4.12.9.1	Formulate, evaluate, and justify arguments using inductive and deductive reasoning in mathematical and practical situations.		
5.0	Students will collect, organize, display, interpret, and analyze data to determine statistical relationships and probability projections to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.		
5.12.1	Data Collection and Organization		
5.12.1.1	Organize statistical data through the use of tables, graphs, and matrices (with and without technology).		
5.12.2	Central Tendency and Data Distribution		
5.12.2.1	Select and apply appropriate statistical measures in mathematical and practical situations.		
5.12.3	Interpretation of Data		
5.12.3.1	Distinguish between a sample and a census.		
5.12.3.2	Identify sources of bias and their effect on data representations and statistical conclusions.		
5.12.3.3	Use the shape of a normal distribution to compare and analyze data from a sample.		
5.12.4	Permutations and Combinations		
5.12.4.1	Apply permutations and combinations to mathematical and practical situations, including the Fundamental Counting Principle.	Counting	Counting Subsets Formula
		Counting	Counting: An introduction to choosing subsets
		Counting	Combinations
		Counting	Permutations
5.12.5	Experimental and Theoretical Probability		
5.12.5.1	Determine the probability of an event with and without replacement using sample spaces.	Counting	Frequency Expectation Interpretation of probability
5.12.5.2	Design, conduct, analyze, and effectively communicate the results of multi-stage probability experiments.		
5.12.6	Statistical Inferences		



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5.12.6.1	Design, construct, analyze, and select an appropriate type of graphical representations to communicate the results of a statistical experiment.		
5.12.6.2	Formulate and justify inferences based on a valid data sample.		