



## Algebra I

| 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   | Equations    | Equations with Variables on Each Side |
| 0                     | Determine an efficient strategy, verify, interpret, and evaluate the results with respect to the original problem   | Real Numbers | Problem Solving                       |
|                       |   | Equations    | Equations with Variables on Each Side |
|                       |   |              | Solving Problems                      |
| 0                     | Apply problem solving strategies until a solution is found or it is clear that no solution exists   | Equations    | Equations and Problem Solving         |
|                       |   |              | Equations with Variables on Each Side |
|                       |   | Real Numbers | Problem Solving                       |
| 0                     | Interpret and solve a variety of mathematical problems by paraphrasing  | Equations    | Equations and Problem Solving         |
|                       |   | Real Numbers | Problem Solving                       |
| 0                     | Identify necessary and extraneous information   |              |                                       |
| 0                     | Check the reasonableness of a solution  | Equations    | Equations with Variables on Each Side |
| 0                     | Apply technology as a tool in problem solving situations  |              |                                       |
| 0                     | Apply combinations of proven strategies and previous knowledge to solve non-routine problems  | Real Numbers | Problem Solving                       |
|                       |   | Equations    | Equations and Problem Solving         |
|                       |   |              | Solving 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  | Real Numbers | Problem Solving                       |
|                       |   | Equations    | Solving Problems                      |
|                       |   |              | Equations and Problem Solving         |
| 0                     | Evaluate written and oral presentations in mathematics.   |              |                                       |
| 0                     | Model and explain mathematical relationships using oral, written, graphic, and algebraic methods  |              |                                       |



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| 0                     | Communicate and evaluate mathematical thinking based on the use of definitions, properties, rules, and symbols in problem solving   |                           |                               |
| 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   | Variables and Expressions | Logical Reasoning             |
|                       |   |                           | Inductive Reasoning           |
|                       |   |                           | Deductive 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  | Equations                 | Equations and Problem Solving |
|                       |   |                           | Solving Problems              |
|                       |   | Real Numbers              | Problem Solving               |
| 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.   |                           |                               |

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| State Standard Number     | State Standard Area/Description   | Unit Name               | Course Topic Description                                   |              |                       |
|---------------------------|---|-------------------------|--|--------------|-----------------------|
| 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. | Real Numbers            | Estimation with Real Numbers                               |              |                       |
|                           |   |                         | Estimation   |              |                       |
|                           |   | Exponentials            | Exponential Equations                                      |              |                       |
|                           |   |                         | Graphing Exponential Equations                             |              |                       |
|                           |   |                         | Exponential Graphs   |              |                       |
|                           |   |                         | Growth and Decay   |              |                       |
|                           |   | Quadratics and Radicals | Simplifying Radicals with Variables                        |              |                       |
|                           |   |                         | Multiplying Radical Expressions                            |              |                       |
|                           |   |                         | Simplifying Radicals                                       |              |                       |
|                           |   |                         | Adding and Subtracting Radical                             |              |                       |
|                           |   |                         | Simplifying Radicals Containing Fractions                  |              |                       |
|                           |   | 1.12.7                  | Computation  |              |                       |
|                           |   | 1.12.7.1                | Solve mathematical problems involving exponents and roots. | Exponentials | Exponential Equations |
| Variables and Expressions | Problem Solving using Exponents and Roots   |                         |  |              |                       |
|                           | Exponents   |                         |  |              |                       |
|                           | Expressions with Powers   |                         |  |              |                       |
|                           | Roots   |                         |  |              |                       |
|                           | Fractional Exponents  |                         |  |              |                       |
| 1.12.7.2                  | Perform addition, subtraction, and scalar multiplication on matrices.                             | Solving Systems         | Scalar Multiplication of Matrices                          |              |                       |
|                           |   |                         | Addition of Matrices                                       |              |                       |
|                           |   |                         | The Matrix   |              |                       |
| 1.12.8                    | Solving Problems and Number Theory  |                         |  |              |                       |
| 1.12.8.1                  | Identify and apply real number properties to solve problems.                                      | Real Numbers            | Subtracting Fractions with Real Numbers                    |              |                       |
|                           |   |                         | Order of Numbers   |              |                       |
|                           |   |                         | Number Sets  |              |                       |

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| State Standard Number | State Standard Area/Description  | Unit Name                 | Course Topic Description                               |
|-----------------------|--|---------------------------|--|
|                       |  |                           | Evaluating Division Expressions                        |
|                       |  |                           | Properties of Closure and Equality                     |
|                       |  |                           | Adding Fractions with Real Numbers                     |
|                       |  |                           | Using the Properties                                   |
|                       |  |                           | Multiplication of Rational Numbers                     |
|                       |  |                           | Fractions  |
|                       |  |                           | Writing and Justifying Steps Using Properties          |
|                       |  | Variables and Expressions | The Commutative Property                               |
|                       |  |                           | The Distributive Property                              |
|                       |  |                           | The Associative Property                               |
| 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   |                           |  |
| 2.12.1.1              | Use algebraic expressions to identify and describe the nth term of a sequence.   | Exponentials              | Geometric Sequences                                    |
| 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.  | Equations                 | Mixture Problems                                       |
|                       |  |                           | Multiplication and Division in Equations               |
|                       |  |                           | Distance Formula                                       |
|                       |  |                           | Addition and Subtraction in Equations                  |
|                       |  |                           | Formulas as Equations                                  |
|                       |  |                           | Solving Multi-Step Equations                           |
|                       |  |                           | Solving Problems                                       |
|                       |  |                           | Equations with Variables on Each Side                  |
|                       |  | Exponentials              | Exponential Equations                                  |
|                       |  | Quadratics and Radicals   | Solving by Using Square Roots                          |
|                       |  | Inequalities              | Solving Inequalities Using Multiplication and Division |



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| State Standard Number | State Standard Area/Description   | Unit Name                 | Course Topic Description                         |
|-----------------------|---|---------------------------|--|
|                       |   |                           | Compound Inequalities                            |
|                       |   |                           | Multi-Step Inequalities                          |
|                       |   |                           | Graphing Inequalities in Two Variables           |
|                       |   |                           | Solving Inequalities by Addition and Subtraction |
|                       |   |                           | Inequalities in Two Variables                    |
|                       |   | Polynomials               | Solving Equations Using Factoring                |
| 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               | Factoring Other Trinomials                       |
|                       |   |                           | Multiplying Using FOIL                           |
|                       |   |                           | Multiplying Polynomials                          |
|                       |   |                           | Factoring Simple Trinomials                      |
|                       |   |                           | Addition and Subtraction of Polynomials          |
|                       |   |                           | Factoring Perfect Square Trinomials              |
|                       |   |                           | Factoring with the GCF                           |
|                       |   |                           | Multiplying Polynomials by a Monomial            |
|                       |   |                           | Difference of Two Squares                        |
|                       |   |                           | Special Products                                 |
|                       |   | Variables and Expressions | Multiplying Monomials                            |
| 2.12.3.2              | Simplify algebraic expressions, including exponents and radicals.   | Exponentials              | Exponential Equations                            |
|                       |   | Quadratics and Radicals   | Adding and Subtracting Radical                   |
|                       |   |                           | Simplifying Radicals Containing Fractions        |
|                       |   |                           | Simplifying Radicals with Variables              |
|                       |   |                           | Multiplying Radical Expressions                  |
|                       |   |                           | Simplifying Radicals                             |
|                       |   | Variables and Expressions | Multiplying and Dividing Integers                |
|                       |   |                           | Problem Solving using Exponents and Roots        |

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| State Standard Number | State Standard Area/Description  | Unit Name                      | Course Topic Description                               |
|-----------------------|--|--------------------------------|--|
|                       |  |                                | Exponents  |
|                       |  |                                | Expressions with Powers                                |
|                       |  |                                | Fractional Exponents                                   |
|                       |  |                                | Order of Operations                                    |
|                       |  | Real Numbers                   | Decimals   |
| 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. | Solving Systems                | Review of Graphing Linear Equations                    |
|                       |  | Functions and Linear Equations | Graphing an Equation Using Intercepts                  |
|                       |  |                                | Graphing an Equation Using Points                      |
|                       |  |                                | Relations  |
|                       |  | Quadratics and Radicals        | Graphing Quadratics                                    |
|                       |  |                                | Graphing Quadratic Functions                           |
| 2.12.4.2              | Solve absolute value equations and inequalities both algebraically and graphically.  | Inequalities                   | Solving Inequalities Using Multiplication and Division |
|                       |  |                                | Solving Inequalities by Addition and Subtraction       |
|                       |  |                                | Graphing Inequalities in Two Variables                 |
|                       |  |                                | Compound Inequalities                                  |
|                       |  |                                | Inequalities in Two Variables                          |
|                       |  |                                | Multi-Step Inequalities                                |
|                       |  |                                | Absolute Value Inequalities                            |
|                       |  | Functions and Linear Equations | Graphing an Equation Using Points                      |
|                       |  |                                | Graphing an Equation Using Slope and Y-Intercept       |
|                       |  |                                | Graphing an Equation Using Intercepts                  |
|                       |  | Equations                      | Equations with Variables on Each Side                  |
|                       |  |                                | Addition and Subtraction in Equations                  |
|                       |  |                                | Mixture Problems                                       |
|                       |  |                                | Solving Multi-Step Equations                           |
|                       |  |                                | Absolute Value Equations                               |

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|-----------------------|---|--------------------------------|--|
|                       |   |                                | Solving Problems                         |
|                       |   |                                | Formulas as Equations                    |
|                       |   |                                | Multiplication and Division in Equations |
|                       |   | Exponentials                   | Exponential Equations                    |
|                       |   | Quadratics and Radicals        | Graphing Quadratic Functions             |
|                       |   |                                | Solving by Using Square Roots            |
|                       |   | Solving Systems                | Review of Graphing Linear Equations      |
|                       |   |                                | Review of Graphing Inequalities          |
|                       |   | Polynomials                    | Solving Equations Using Factoring        |
| 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).   | Solving Systems                | Solving with Elimination                 |
|                       |   |                                | Problem Solving with Systems             |
|                       |   |                                | Systems of equations                     |
|                       |   |                                | Solving with Substitution                |
|                       |   |                                | Problem Solving                          |
|                       |   | Equations                      | Rate Problems                            |
| 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). | Functions and Linear Equations | Linear Patterns                          |
|                       |   |                                | Writing Linear Equations                 |
|                       |   |                                | Slope-Intercept Form                     |
|                       |   | Equations                      | Equations with Variables on Each Side    |
|                       |   |                                | Addition and Subtraction in Equations    |
|                       |   |                                | Parentheses in Equations                 |
|                       |   |                                | Equations and Problem Solving            |
|                       |   |                                | Solving Problems                         |
|                       |   |                                | Mixture Problems                         |
|                       |   |                                | Solving Multi-Step Equations             |
|                       |   |                                | Formulas as Equations                    |
|                       |   |                                | Multiplication and Division in Equations |
|                       |   | Quadratics and                 | The Quadratic Formula                    |

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|-----------------------|--|---------------------------|---|
|                       |  | Radicals                  | Solving by Using Square Roots             |
|                       |  |                           | Solving Quadratic Equations with Graphs   |
|                       |  | Polynomials               | Solving Equations by Factoring Trinomials |
|                       |  |                           | Factoring Other Trinomials                |
|                       |  | Real Numbers              | Problem Solving                           |
| 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.   | Real Numbers              | Estimation                                |
|                       |  |                           | Estimation with Real Numbers              |
| 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.   | Equations                 | Distance Formula                          |
| 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.  | Variables and Expressions | Tables and Graphs                         |
|                       |  | Solving Systems           | Analyzing Statistical Data                |
| 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.  | Equations                 | Problems with Proportions                 |
|                       |  |                           | Ratios and Proportions                    |
|                       |  | Real Numbers              | Estimation with Real Numbers              |
| 0                     | Time   |                           |   |
| 0                     | Nevada has no content for this theme.  |                           |   |
| 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,   | Solving Systems           | Histograms                                |

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|-----------------------|---|---------------------------|---|
|                       | graphs, and matrices (with and without technology).   |                           | Analyzing Statistical Data              |
|                       |   | Variables and Expressions | Tables and Graphs                       |
| 5.12.2                | Central Tendency and Data Distribution  |                           |   |
| 5.12.2.1              | Select and apply appropriate statistical measures in mathematical and practical situations.   | Solving Systems           | Histograms                              |
|                       |   |                           | Statistics                              |
|                       |   |                           | Analyzing Statistical Data              |
|                       |   | Variables and Expressions | Mean, Median and Mode                   |
|                       |   |                           | Stem and Leaf Plots                     |
| 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.  | Solving Systems           | Analyzing Statistical Data              |
|                       |   |                           | Histograms                              |
| 5.12.3.3              | Use the shape of a normal distribution to compare and analyze data from a sample.   | Solving Systems           | Analyzing Statistical Data              |
|                       |   |                           | Histograms                              |
| 5.12.4                | Permutations and Combinations   |                           |   |
| 5.12.4.1              | Apply permutations and combinations to mathematical and practical situations, including the Fundamental Counting Principle.                     | Rational Expressions      | Permutations                            |
|                       |   |                           | More about the Multiplication Principle |
| 5.12.5                | Experimental and Theoretical Probability  |                           |   |
| 5.12.5.1              | Determine the probability of an event with and without replacement using sample spaces.   | Rational Expressions      | Using Data to Make Predictions          |
| 5.12.5.2              | Design, conduct, analyze, and effectively communicate the results of multi-stage probability experiments.                                       |                           |   |
| 5.12.6                | Statistical Inferences  |                           |   |
| 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.  |                           |   |