ModuMath Algebra

Algebra 1 - Getting Acquainted With Algebra

1) Translate words into the language of algebra.
2) Evaluate algebraic expressions.
3) Evaluate formulas and other expressions.

Algebra 2 - Order of Operations

1) Use the standard order of operations to simplify and evaluate numerical or algebraic expressions.
2) Simplify and evaluate numerical and algebraic expressions that contain parentheses.

Algebra 3 - Adding and Subtracting Algebraic Expressions

1) Identify the terms in algebraic expressions.
2) Identify like terms in algebraic expressions.
3) Identify the special types of polynomials called monomials, binomials and trinomials.
4) Add and subtract any type of polynomials.

Algebra 4 - Multiplying Polynomials

1) Multiply any two polynomials.
2) Apply the FOIL method as a shortcut in multiplying two binomials.
3) Use formulas to obtain special products of the form $(a + b)^2$, $(a - b)^2$ and $(a + b)(a - b)$.

Algebra 5 - Laws of Algebra

1) Recognize five basic laws of algebra.
2) Apply these laws to certain algebraic operations.

Algebra 6 - Solving Equations I

1) Recognize the identities for addition and multiplication.
2) Recognize the inverses for addition and multiplication.
3) Use the identities and inverses in solving equations.

Algebra 7 - Solving Equations II

1) Solve multiple step first degree equations.
2) Use some shortcuts to solve equations.
3) Understand and work with literal equations.

Algebra 8 - Using Equations to Solve Problems

1) Use equations, tables and diagrams to solve practical problems.

Algebra 9 - Solving Practical Problems

1) Find formulas to describe relationships between quantities in practical problems.
2) Use formulas to organize the information in problems and to identify the variables.
3) Use formulas and organized information to develop equations.
4) Use formulas and organized information to check solutions.

Algebra 10 - Inequalities

1) Identify inequality symbols and use them to write algebraic statements.
2) Identify the solution sets of inequalities on a number line.
3) Combine two inequalities in one compound inequality.
4) Solve inequalities.
5) Solve word problems using inequalities.

Algebra 11 - Linear Equations and Graphs I

1) Identify linear equations.
2) Identify linear equations that produce vertical or horizontal lines.
3) Use graphs, equations and ordered pairs to examine the relationships between variables.
4) Plot points and draw lines on the coordinate plane.

Algebra 12 - Linear Equations and Graphs II

1) Use the term "slope" to describe lines and rates of change.
2) Find the slope of lines on graphs.
3) Find the slope of a line when given two of its points.
4) Define the slope of horizontal and vertical lines.

Algebra 13 - Linear Equations and Graphs III

1) Find the slope of a line from its equation.
2) Write any linear equation in slope intercept form.
3) Use an equation in slope-intercept form to find the slope and y-intercept of its line.
4) Graph a line from its equation using the slope and y-intercept.

Algebra 14 - Linear Equations and Graphs IV

1) Write an equation for a line with a given slope and y-intercept.
2) Write an equation for a line with a given slope through a given point.
3) Write an equation for a line through two given points.

Algebra 15 - Systems of Linear Equations I

1) Solve a system of two linear equations by graphing.
2) Solve a system of two linear equations by substitution.
3) Determine how many solutions a system of linear equations has.
4) Explain how the number of solutions to a system can be determined from a graph.
5) Solve word problems using systems of two linear equations.

Algebra 16 - Systems of Linear Equations II

1) Solve systems of equations using the elimination method.
2) Solve more word problems using systems of equations.

Algebra 17 - Systems of Linear Equations III

1) Use the elimination method to solve systems in which the terms have no additive inverses.
2) Use the elimination method to solve systems that have terms with coefficients that are fractions.
3) Use the elimination method to solve systems in which one or both of the coordinates in the solution are fractions.

Algebra 18 - Systems of Linear Equations IV

1) Determine whether a given problem can be solved with one variable and/or two variables.
2) Define the two unknowns in a word problem using a single variable and using two variables.
3) Write equations to solve word problems both when the unknowns have been identified using one variable and when the unknowns have been identified using two variables.
4) Solve a given word problem with either one equation or with a system of equations.

Algebra 19 - Exponents

1) Identify expressions in simplified standard form.
2) Use the rules for exponents to simplify expressions.
3) Use the rules of exponents to divide a polynomial by a monomial.

Algebra 20 - Factoring I

1) Find the greatest common factor of a polynomial.
2) Factor the greatest common factor from a polynomial.

Algebra 21 - Factoring II

1) Factor a polynomial with four terms by grouping.
2) Factor a perfect square trinomial.
3) Factor a binomial that is the difference of two perfect squares.

Algebra 22 - Factoring III

1) Factor a quadratic trinomial.
2) Factor a trinomial in quadratic form.

Algebra 23 - Roots & Radicals I

1) Use appropriate radical notation for expressions involving square roots.
2) Find the square roots of perfect squares.
3) Reduce and simplify square roots of integers that are not perfect squares.
4) Find or simplify the square root of monomials.
5) Write radicals with rational exponents and vice-versa.

Algebra 24 - Roots & Radicals II

1) Multiply and divide two radicals.
2) Add or subtract two radicals.
3) Rationalize the denominator.

Algebra 25 - Quadratic Equations I

1) Identify quadratic equations in standard form.
2) Solve quadratic equations by taking the square root of each side of the equation.
3) Solve quadratic equations by factoring.
4) Solve word problems that include quadratic equations.

Algebra 26 - Quadratic Equations II

1) Solve quadratic equations using the quadratic formula.
2) Solve word problems that include quadratic equations.

Algebra 27 - Rational Expressions I

1) Identify rational expressions and determine if there are any excluded values.
2) Evaluate rational expressions for given values of the variables.
3) Fully reduce a rational expression.
4) Multiply two rational expressions and give the product in its fully reduced form.
5) Divide two rational expressions and give the quotient in its fully reduced form.

Algebra 28 - Rational Expressions II

1) Add or subtract two rational expressions that have the same denominator.
2) Add or subtract two rational expressions that have different denominators.
3) Simplify complex fractions.

Algebra 29 - Rational Expressions III

1) Solve equations that include rational expressions.
2) Check the solutions to the equations.
3) Solve word problems that involve equations which include rational expressions.

Algebra 30 - Rational Expressions IV

1) Solve word problems that involve writing equations that include rational expressions.
2) Solve "work" and "rate-time-distance" problems that involve writing equations that include rational expressions.

Algebra 31 - The Pythagorean Theorem and Other Formulas

1) Identify the hypotenuse of right triangles.
2) Use the Pythagorean Theorem to find the missing side of a right triangle when the lengths of two sides are known.
3) Use the Pythagorean Theorem to determine if a given triangle s a right triangle.
4) Use right triangles to solve some simple applications.
5) Use the Distance Formula to find the distance between two points on a plane.
6) Use the Midpoint Formula to find the point that is midway between two points on a line.

Algebra 32 - Proportion and Variation

1) Write ratios as fractions or decimals.
2) Write and solve proportions.
3) Use proportions to solve practical problems.
4) Write formulas for direct and inverse variation.
5) Use the formulas to solve variation problems.