Course Description

MATH: Algebra 1

COURSE DESCRIPTION: The purpose of this course is to allow the student to gain mastery in working with and evaluating mathematical expressions, equations, graphs, and other topics in a year long algebra course. Topics included are real numbers, simplifying real number expressions with and without variables, solving linear equations and inequalities, solving quadratic equations, graphing linear and quadratic equations, polynomials, factoring, linear patterns, linear systems of equality and inequality, simple matrices, sequences, and radicals. Assessments within the course include multiple-choice, short-answer, or extended response questions. Also included in this course are self-check quizzes, audio tutorials, and interactive games.

OBJECTIVES: Students will

- Read, write, evaluate, and understand the properties of mathematical expressions including real numbers, radicals, and polynomials
- Add, subtract, multiply, and divide radical expressions, polynomials, and polynomial expressions
- Read, write, solve, and graph linear and quadratic equations and inequalities.
- Students will solve absolute value equations and inequalities
- Work effectively with ratios and direct and inverse variation
- Solve systems of linear equations and inequalities
- Work with arithmetic sequences and linear patterns
- Understand basic statistics including measures of central tendencies and box plots
- Understand different types of graphs, including histograms, line graphs, circle graphs, and stem-and-leaf plots

PREREQUISITES: Pre-Algebra or similar course

COURSE LENGTH: Two Semesters or Block

REQUIRED TEXT: None

COURSE OUTLINE:

Semester I

Unit 1: Numbers and Expressions
Section 1: Evaluating Expressions
Section 2: Some Useful Properties
Section 3: Integers
Section 4: Exponents and Roots
Section 5: Logic and Graphs

Unit 2: Real Numbers
Section 1: Rational Numbers
Section 2: Addition and Subtraction of Rational Numbers
Section 3: Multiplication and Division of Rational Numbers
Section 4: Estimation and Problem Solving
Section 5: Closure and Properties of Equality

Unit 3: Equations
Section 1: Equations
Section 2: Multi-Step Problems
Section 3: Ratios, Proportions and Percent
Section 4: Problem Solving

Unit 4: Functions and Linear Equations
Section 1: The Coordinate Plane and Relations
Section 2: Graphing Linear Equations
Section 3: Patterns and Sequences
Section 4: Linear Equations
Section 5: Data

Unit 5: Inequalities
Section 1: Simple Inequalities
Section 2: Multi-Step Inequalities
Section 3: Absolute Value
Section 4: Graphing Inequalities in Two Variables

Semester II

Unit 6: Solving Systems of Linear Equations and Inequalities
Section 1: Graphing Systems of Equations
Section 2: Substitution
Section 3: Elimination and Matrices
Section 4: Graphing Inequalities
Section 5: Statistics and Box and Whiskers

Unit 7: Polynomials and Factoring
Section 1: Scientific Notation
Section 2: Polynomials and Addition and Subtraction
Section 3: Multiplying Polynomials
Section 4: Factors and GCF
Section 5: Factoring Trinomials
Section 6: Special Factors

Unit 8: Quadratic Functions and Radicals
Section 1: Quadratic Functions
Section 2: Solving Quadratic Equations
Section 3: Radicals and Radical Operations
Section 4: Radical Equations

Unit 9: Rational Expressions
Section 1: Inverse Variation
Section 2: Multiplying and Dividing Rational Expressions
Section 3: Adding and Subtracting Rational Expressions
Section 4: Solving Rational Equations