

Department: Mathematics

Course Name: Algebra I

Course Description:

This course is a one-year study of algebra designed to provide students the requisite skills necessary for all future mathematics courses. It proceeds rapidly through the prerequisite topics and continues at a pace that demands daily preparation from the student. Note-taking, mathematical communication and precision are emphasized. Major topics include the tabular, graphical, and symbolic representations of linear, quadratic, exponential, rational and radical functions; inequalities; solving linear, quadratic, rational and radical equations; systems of equations and inequalities; and factoring. During the second semester, each student is required to complete a major project which requires a class presentation. This course this places an emphasis on critical thinking, communication, collaboration, creativity and risk-taking.

Content:

Expressions and Equations

Inequalities

Functions

Linear Functions

Linear and Non-Linear Systems

Exponents and Polynomials

Factoring

Quadratic Functions and Equations

Exponential Functions

Rational Expressions and Equations

Radical Expressions and Equations

Skills:

Represent quantitative situations algebraically

Evaluate and simplify expressions

Solve any type of linear equation with and without a calculator

Solve absolute-value equations with and without a calculator

Solve proportion problems with and without a calculator

Solve linear inequalities

Graph solutions to linear inequalities

Solve absolute-value inequalities

Graph solutions to absolute-value inequalities

Describe relations and functions with multiple representations

Identify independent and dependent variables in functional situations

Determine domain and range of continuous and discrete relations

Use set notation and inequality notation for domain and range

Determine the slope from various situations

Graph and write equations for linear functions

Solve systems of linear equations by graphing, substitution, and elimination

Solve systems of linear inequalities

Develop and use the rules of rational exponents

Add, subtract and multiply polynomials

Expand polynomials into factors

Graph quadratic functions with and without a calculator
Solve quadratic equations by graphing, factoring, and quadratic formula with and without a calculator
Write quadratic functions to model situations
Determine the types of solutions to quadratic equations with the discriminant
Solve non-linear systems of equations in two variables by graphing
Identify linear, quadratic and exponential relationships from data sets and graphs
Write exponential functions to model situations
Solve exponential equations from tables and graphs
Simplify rational expressions
Solve rational equations with and without a calculator
Simplify monomial radical expressions
Solve radical equations with and without a calculator
Make predictions from a curve of best fit
Solve problems using mathematical models

Text and Materials:

Desmos Graphing Calculator App
Flipgrid App
Quizlet App
Google Apps For Education
DeltaMath website
Quizizz website
Deck.Toys website
Formative website

Methods of Instruction:

Teacher directed instruction
Individual, partner activities
Cooperative Learning
Project Based Learning
Worksheets

Methods of Evaluation:

Tests
Projects
Quizzes
Daily work
Oral response
Class participation