

Algebra I R - 3115

Grade 9

Full year - 1 credit

Prerequisite: Completion of Math 8

Overview

Students will study the NYS Algebra I Common Core syllabus. Algebra I is the first of three high school regents courses. The focus of the course is to build on the students' concrete reasoning experiences developed in earlier grades. The course includes the following units of study: the real number system and its properties; algebraic expressions, linear equations and inequalities; identifying and modeling functions, including qualitative, linear, inequality, quadratic, exponential, absolute value, square and cubed root, piecewise and step functions; systems of equations; translations of functions; identification of roots (zeros) and their significance; arithmetic and geometric sequences; polynomials; factoring; quadratic equations; and the analysis of statistics data. The use of calculators is an integral part of this course and graphing calculators (TI84+) are required. Additional instructional support will be recommended by the faculty as needed. This class prepares students to take the NYS Common Core Algebra Regents examination in June. This examination is a requirement for a high school diploma.

Integrated Algebra CT - 3125

Grade 9

Full year - 1 credit

Prerequisite: Completion of Math 8 – faculty approval

Overview

This co-taught mathematics course prepares students for the NYS Algebra I Common Core Regents. Students will work closely with both the mathematics and special education teachers. This examination is a requirement for a high school diploma. The focus of the course is to build on the students' concrete reasoning experiences developed in earlier grades. The course includes the following units of study: the real number system and its properties; algebraic expressions, linear equations and inequalities; identifying and modeling functions, including qualitative, linear, inequality, quadratic, exponential, absolute value, square and cubed root, piecewise and step functions; systems of equations; translations of functions; identification of roots (zeros) and their significance; arithmetic and geometric sequences; polynomials; factoring; quadratic equations; and the analysis of statistics data. The use of calculators is an integral part of this course and graphing calculators (TI84+) are required.

General Department Philosophy

The Garden City Mathematics Department presents courses that align with either the New York State Regents curriculum or the College Board's Advanced Placement curriculum. In either case, the course material prepared by the Department (Grades 6 – 12) is fully consistent with these standards. In particular, our Advanced Placement syllabi have been approved by the College Board. Our Regents courses address the five NYS content strands as well as the five process strands. Our instructional activities are created to promote written and verbal mathematical communication and critical thinking skills that employ accurate mathematical ideas. The Department develops student assessments that are also consistent with the New York State and/or College Board assessment in both style and content. The scoring rubrics employed by the Department are modeled after the particular associated scoring guides. Additional information about the NYS Mathematics

program can be found at <https://www.engageny.org/resource/high-school-algebra-i> and Advanced Placement program at <http://apcentral.collegeboard.com>.

Members of the Department encourage their students to explore, discover and question the many fundamental concepts developed within each courses. The primary objective is to engage our students in lessons that are meaningful, inspiring and enjoyable and promote a greater interest in mathematics – at the post secondary level and beyond. Technology applications, such as calculator usage, are incorporated as developmentally appropriate and as specified by the NYS and/or College Board curriculum. The Department wants each student to realize that they can make a contribution to their class and that others can benefit from their input. The Department wants all students to maximize their mathematical potential as we move through the challenging curriculum and prepare to master all course requirements.

Algebra I – Content and Skills

1. Real Numbers
 - a. Properties of real numbers
 - b. Math systems, i.e. rational and irrational systems
 - c. Solving linear equations
 - d. Literal equations
 - e. Solving inequalities including compound inequalities
 - f. Translating verbal phrases
 - g. Analyzing and solving word problems
 - h. Laws of exponents and scientific notation
 - i. Absolute value equations
2. Functions including linear, inequality, quadratic, exponential, absolute value, square and cubed root piecewise and step functions
 - a. Identifying functions (vs. relations)
 - b. Function notation
 - c. Domain and range
 - d. Slope
 - e. x - and y -intercepts
 - f. Slope-intercept form
 - g. Table of values
 - h. Graphing functions
 - i. Determining rates of change amongst functions
 - j. Modeling functions from word problems
 - k. Translations of functions
 - l. Vertex form of quadratic functions
3. Systems of linear equations and inequalities
 - a. Solving graphically and checking
 - b. Word problems
 - c. Solving algebraically and checking
 - d. Quadratic-linear systems – graphic and algebraic solutions

4. Sequences
 - a. Arithmetic vs. geometric sequences
 - b. Explicit vs. recursive formulas
 - c. Graphs of sequences
 - d. Word problems

5. Polynomials and Quadratic Equations
 - a. Operations with polynomials (addition, subtraction, multiplication and division)
 - b. Factoring including GCF, binomial, and difference of two squares
 - c. Solve quadratic equations by factoring
 - d. Completing the square
 - e. Quadratic Formula
 - f. Discriminant
 - g. Modeling quadratic equations from word problems
 - h. Solving algebraic proportions that result in quadratic equations

6. Statistics
 - a. Measures of central tendency
 - b. Histograms
 - c. Dot plots
 - d. Standard deviation
 - e. Interquartile range
 - f. Box and Whisker plots
 - g. Line of best fit – Linear regression
 - h. Residuals and residual plots
 - i. Two-way relative frequency tables
 - j. Conditional relative frequency
 - k. Correlation in data

Primary Resources

Course: Algebra I R/CT

Title of Resource: Amsco's Algebra I Common Core

Author: Richard J. Andres & Joyce Bernstein

Publisher: Amsco

On-Line Text: [Integrated Algebra](#)

On-Line Practice and Review: www.castlelearning.com