

The Department's Educational Philosophy

The study of mathematics will enhance the ability of all students to problem solve and to reason. Through a strong standardized departmental program that emphasizes problem solving, communicating, reasoning and proof, making connections, and using representations, students will develop self-confidence and a positive attitude towards mathematics.

Our curriculum matches that of the Massachusetts Mathematics Curriculum Framework, and we are philosophically aligned with the National Council of Teachers of Mathematics Standards.

Guiding Principles

- Mathematical ideas should be explored in ways that stimulate curiosity, create enjoyment of mathematics, and develop depth of understanding.
- Effective mathematics programs focus on problem solving and require teachers who have a deep knowledge of the discipline.
- Technology is an essential tool in a mathematics education, and all students should gain facility in using it where advantageous.
- All students should have a high-quality mathematics program.
- Assessment of student learning in mathematics should take many forms to inform instruction and learning.
- All students should understand the basic structure of mathematics.
- All students should recognize that the techniques of mathematics are reflections of its theory and structure.
- All students should gain facility in applying mathematical skills and concepts.
- All students should understand the role of inductive and deductive reasoning in mathematic and real life situations.

ELEMENTARY ALGEBRA I Part 1 (SP): COURSE #316

Course Frequency: Full-year course, five times per week

Credits Offered: Five

Prerequisites: None

Background to the Curriculum

This course, which used the Glencoe Algebra I text, 1996 edition, has been updated to the 2003 edition. The Glencoe text replaced the Holt Algebra I, which had been used for the previous ten years. The Glencoe text is followed quite closely, since it matches both the 2000 edition of the National Council of Teachers of Mathematics curriculum standards and the 2000 edition of the Massachusetts State Framework recommendations for a first-year algebra course. This course, along with Elementary Algebra I, Part 2, would expose students to the first-year Algebra I curriculum. These two courses are well aligned with national and state guidelines. Teachers bring in other materials where appropriate and make minor changes as to the specific sections taught each year, after consultation with the RDL.

Core Topics/Questions/Concepts/Skills

Simplifying algebraic expressions

Applying mathematical laws

Use of fundamental operations

Solving equations

Solving everyday word problems

Use of ratio, proportion, and percent

Solving equations in two or more variables

Graphing and writing line equations

Understanding basic concepts of Probability and Statistics

Course-End Learning Objectives

Students will be able to:

- 1] Simplify numerical expressions.
- 2] Solve linear equations and inequalities.
- 3] Solve word problems involving perimeter, coins, percentage, mixture, investment, etc.
- 4] Graph points and lines in the plane.
- 5] Graph line using slope and y-intercept.
- 6] Find the domain and range of functions.
- 7] Use function notation and evaluating functions.
- 8] Solve direct and inverse, variation problems.
- 9] Fit a line to data.
- 10] Apply introductory techniques in Probability and Statistics.
- 11] Use basic trigonometric ratios in right triangles.

Assessment

Students are generally assessed by in-class tests and quizzes, which are administered regularly throughout a marking period. Generally, two quizzes are equivalent to a test. The students' attitude, effort, and quality of homework preparations will also impact their term grade to a small degree. Teachers informally assess students every day by asking pivotal questions, as well as questions involving mechanics or concepts, and the students' term grades may be positively affected to a small degree based on their responses.

A standardized midyear examination and final examination are administered to all students in this course in order to assess their long-term retention of the course material.

Technology Learning Objectives Addressed in This Course

(This section is for faculty and administrative reference; students and parents may disregard.)

Course activity: skills &/or topics taught

- 1] Graphing calculators are used to introduce graphing of Linear Functions.
- 2] Graphing calculators are used to introduce the concept of Data Analysis and Best Fit Lines.

Materials and Resources

The text: Glenco Algebra I, 2003.

Teachers use other texts and resources for supplementary ideas, such as “Algebra with Pizzazz.” There are review materials that closely match most tests and quizzes, as well as a close resemblance to the departmental examinations. All teachers of the course use these materials. Teachers may also reinforce ideas by using manipulatives, such as algebra tiles, in class.