MATHEMATICS DEPARTMENT **GEOMETRY SP: COURSE #324**

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.

GEOMETRY SP: COURSE #324

Course Frequency: Full-year course, five times per week
Credits Offered: Five
Prerequisites: C- in Algebra I

Background to the Curriculum

This course uses the textbook Basic Geometry by Jurgensen, 1996 edition, which has been used since 1990. This text replaced the one called "Informal Geometry" by Cox, which had been used earlier. The text is reasonably well aligned to Massachusetts State Frameworks, although the concepts of proof are de-emphasized, and few of these are covered in the course at this level.

Core Topics/Question/Concepts/Skills

Reasoning
Parallel lines
Congruent and similar triangles
Quadrilaterals
Right triangles and trigonometry
Circles
Area of plane figures
Solid Geometry

Course-End Learning Objectives

Students will be able to:

1] Identify points, lines, and planes.
2] Apply theorems about segments, angles, and parallel lines.
3] Apply the Parallel Postulate.
4] Identify the hypothesis and conclusion of a statement and form the converse.
5] Use corresponding parts of congruent triangles.
6] Identify medians, altitudes, perpendicular bisectors.
7] Classify the types of quadrilaterals.
8] State and use properties of quadrilaterals.

9] Use corresponding parts of similar triangles.
10] Apply the Pythagorean Theorem.
11] Apply properties of special right triangles.
12] Understand the terminology of geometry within a circle.
13] Perform calculations for arcs, angle, segments within a circle.
14] Apply area formulae for triangles, quadrilaterals, polygons, and circles.
15] Apply formulae from solid geometry to find surface areas and volumes.
16] Use trigonometric ratios.

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 preparation will also positively or negatively 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. In addition, an outside project may be assigned (for example, a drawing project to illustrate similar figures) to further assess the students' understanding.

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 and/or topics taught

1] Geometer's Sketchpad computer software is used to perform analyses of concepts learned.

Materials and Resources

Text: Jurgensen, Basic Geometry. 1996

Teachers use other texts for supplementary ideas, such as Discovering Geometry by Michael Serra, as well as the Glencoe text used in Geometry CP. In addition, current mathematical periodicals, such as "Mathematics Teacher," are utilized by teachers of this course. Review materials that match both departmental examinations are used by all teachers of th2 course.