

# Geometry

## College Prep A

### Course Outline

**Number:** 312  
**Level:** College Prep A  
**Revised:** August 2008  
**Textbook:** GEOMETRY , Holt, Rinehart and Wilson, 2007  
**Credits:** 5 Credits

#### Prerequisites:

Students enrolling in this course must have successfully completed CP Algebra 1A with at least a “C -“ average. Students from CP Algebra 1B who wish to take this course should have an “A” average in CP Algebra 1B and a teacher recommendation.

#### Course Description:

This course is the second year of college preparatory level mathematics at the A level. Geometry describes the shapes we see in the world which enables us to describe our environment. It is also the student’s first serious study of the concepts of inductive and deductive reasoning, sharpening logical thinking skills. Every career uses the logical reasoning learned in geometry. Some topics covered are basic terms of geometry, angle relationships, parallel and perpendicular lines, triangles, polygons, congruency, similarity, right triangles, trigonometry, circles, area and volume, and transformations. Through a study of these areas and their applications, students should come to better understand and appreciate the role of mathematics in their lives.

Students are expected to be active participants in the learning process. The teacher will involve them in the introduction and development of material through question and class discussions. The chalkboard, overhead projector, models, collaborative group work, power point lesson presentations, and the computer program, “The Geometer’s Sketchpad,” will be used to help students visualize geometric concepts. Understanding of concepts is stressed rather than rote memorization of skills. When appropriate, students will be expected to apply the concepts they learn to new situations and problem solving. Students will be encouraged to think and communicate mathematically.

There are two major projects for this course. The first is a guided Independent Study of Transformations using the textbook, sketchpad and patty paper investigations. The second is an Internet Study of Non -Euclidean Geometry. There will also be smaller projects assigned throughout the year to enable students to apply geometric concepts using talents they may have from other disciplines.

Homework will usually be given daily and is an important part of the course, providing students with the opportunity to apply skills learned in class, strengthen their understanding of the concepts and identify areas they don’t understand. It is **imperative** that students do their homework regularly and conscientiously. Homework will be reviewed in class and it is the student’s responsibility during that time to ask questions about problems he/she doesn’t understand, to identify specific mistakes, and to take notes on any further explanations concerning these problems. Some of the homework will be based on the

sample problems done in class and students are expected to study these examples and use them as a guide when doing their homework. Other problems will require the student to extend the concepts learned in class to new situations. Students may also be given reading assignments either to preview new material or to learn new procedures independently.

Students will be able to access online help provided by Holt, Rinehart and Winston at [go.hrw.com/gopages/ma/geo\\_07.html](http://go.hrw.com/gopages/ma/geo_07.html).

## **District Policy: ACADEMIC INTEGRITY**

Pupils are expected to be honest in all of their academic work. This means that the students in this course will not engage in any of the following acts:

- Cheating on examinations or other school assignments, including but not limited to, the non-authorized use of books or notes, the use of crib sheets, copying from other students' papers, exchanging information with other students orally, in writing, or by signals, obtaining copies of the examination illegally and other similar activities. Cheating through the use of technology to exchange information on any school assignment, examination, etc. is prohibited. Technology is defined as, but not limited to, computers, telephones, text messaging, palm pilots, calculators, cameras or any other hand held device.
- Plagiarism is not permitted in term papers, themes, essays, reports, images, take-home examinations, and other academic work. Plagiarism is defined as stealing or use without acknowledgment of the ideas, words, formulas, textual materials, on-line services, computer programs, etc. of another person, or in any way presenting the work of another person as one's own.
- Falsifications, including forging signatures, altering answers after they have been graded, inserting answers after the fact, erasing of grader's markings, and other acts that allow for falsely taking credit.

A pupil found guilty of academic dishonesty may be subjected to a full range of penalties including, but not limited to reprimand and loss of credit for all of the work that is plagiarized. Disciplinary action may also be a consequence of such behavior. Additional consequences may apply as defined in specific department policies and guidelines.

A teacher who believes that a pupil has been academically dishonest in his/her class should resolve the matter in the following manner:

- Reprimand the student orally and/or in writing. The teacher is also authorized to withhold credit in the work due to academic dishonesty.
- If warranted, the teacher shall file a written complaint against the student with the Administration, requesting a more stringent form of discipline. The complaint must describe in detail the academic dishonesty that is alleged to have taken place, and must request that the matter be reviewed by the Administration.
- The Administration will determine if further discipline of the pupil is appropriate, and will determine the nature of the discipline on a case-by-case basis.
- If the pupil is not in agreement with the disciplinary action of the Administration, he/she may appeal the action first to the Principal and secondly to the Superintendent. If the pupil is dissatisfied with the Superintendent's disposition of the case, he/she may grieve the action in accordance with Policy No. 5710, Pupil Grievance.

## **District Policy: Discrimination**

High Point Regional High School's curriculum and instruction are aligned to the State's Core Curriculum Content Standards and address the elimination of discrimination by narrowing the achievement gap, by providing equity in educational programs and by providing opportunities for students to interact positively with others regardless of race, creed, color, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, religion, disability or socio-economical status.

## **Course Objectives:**

Students will be able to:

1. Apply basic facts about points, lines, planes, segments and angles; measure segment lengths, measure and classify angles.
2. Use inductive and deductive reasoning; identify, analyze and write conditional and biconditional statements and the logical statements that follow.
3. Justify geometric properties using various types of proofs.
4. Identify the relationships between the angles formed by two lines and a transversal; use properties of parallel and perpendicular lines both in plane and coordinate geometry.
5. Classify triangles by angles and sides; identify the properties of angles and segments in relation to special triangles.
6. Identify corresponding parts of congruent triangles and understand the conditions and shortcuts necessary for determining whether two triangles are congruent.
7. Identify the properties of angle bisectors and perpendicular bisectors; identify and use the properties of the special points of concurrency in a triangle.
8. Identify and use the various inequalities properties of triangles.
9. Identify special quadrilaterals and use their respective properties to calculate measurements.
10. Identify and show polygons are similar; use ratio and solve proportions in relations to similar triangles.
11. Find and use trigonometric ratios in right triangles and real life applications; "solve" a right triangle
12. Find the perimeters and areas of different figures, especially in problem solving applications .
13. Identify and name solid figures; find their surface area and volumes especially in problem solving applications; identify the effects of changing dimensions of three dimensional figures proportionally.
14. Identify the parts of a circle, understand and apply the properties and relationships of angles and segments connected to a circle.
15. Identify and perform transformations on figures in plane and coordinate geometry; identify line and rotational symmetry in figures; identify and construct tessellations in the plane.
16. Apply the concepts learned to real life problem solving.

## **NEW JERSEY CORE CURRICULUM CONTENT STANDARDS (CCCS) ADDRESSED:**

### **Standard 4.1 Numbers and Numerical Operations**

All students will develop number sense and will perform standard numerical operations and estimations on all types of numbers in a variety of ways.

### **Standard 4.2 Geometry and Measurement**

All students will develop spatial sense and ability to use geometric properties, relationships, and measurements to model, describe and analyze phenomena.

### **Standard 4.3 Patterns and Algebra**

All students will represent and analyze relationships among variable quantities and solve problems involving patterns, functions and algebraic concepts and processes.

### **Standard 4.4 Data Analysis**

All students will develop an understanding of the concepts and techniques of data analysis, probability, and discrete mathematics and will use them to model situations, solve problems, and analyze and draw appropriate inferences from data.

### **Standard 4.5 Mathematical Processes**

All students will use the mathematical processes of problem solving, communication, connections, reasoning, representations and technology to solve problems and communicate mathematical ideas.

## **Student Evaluation:**

A major test will be given at mid-chapter and at the completion of each chapter of the textbook; quizzes will be given at least once a week. An exam covering the semester's work will be given at the end of each semester. Small projects, lab work, group activities and class participation will also be used to evaluate the student's understanding of concepts.

Two major projects to be graded as tests will be assigned during the year.

Homework will be checked daily. It will usually not be graded, but will be considered satisfactory if the work shown indicates the student has made a conscientious effort to complete the assignment. If a student did not understand the work and was not able to complete an assignment, he/she may be asked to redo the assignment for credit.

Grades will be calculated according to the school grading policy. The following guidelines will apply:

A. Marking Period Grade

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| 1. Tests and Quizzes (includes projects, notebook, lab work, etc) | 90% |
| 2. Homework, class participation                                  | 10% |

B. Final Grade

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|------------------------|-----|
| 1. Each Marking Period | 20% |
| 2. Midterm Exam        | 10% |
| 3. Final Exam          | 10% |