

Geometry Syllabus

Course Number: 20341, 20342

School: Wilson High School

Instructor: Jon Beima

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Subject: Geometry

Days of week offered: M,T,W, (*Th),F

Hours offered: per 5, 6

Prerequisites: Algebra (412-2031)

Course Description:

In this course students study 2- and 3-dimensional shapes and their relationships in plane and space. It is a visual as well as analytical subject, integrating spatial and numerical concepts. Students classify and describe shapes in terms of congruence, similarity, and transformations. The course introduces students to different forms of mathematical logic, including inductive and deductive reasoning. Students solve measurement and algebraic problems using properties, proportions, and trigonometric relationships. Algebra 1-2 is reviewed with geometric applications. Students use the software available with the TI-84 calculator and/or Geometer's Sketchpad to deepen their understanding of key ideas. Homework is required in this class.

Learning Objectives:

- Students can analyze properties and determine attributes of two- and three-dimensional objects;
- Students can explore relationships (including congruence and similarity) among classes of two- and three-dimensional geometric objects, make and test conjectures about them, and solve problems involving them;
- Students can establish the validity of geometric conjectures using deduction, prove theorems, and critique arguments made by others;
- Students can use trigonometric relationships to determine lengths and angle measures.
- Students can use Cartesian coordinates and other coordinate systems, such as navigational, polar, or spherical systems, to analyze geometric situations;
- Students can investigate conjectures and solve problems involving two- and three-dimensional objects represented with Cartesian coordinates.
- Students can represent translations, reflections, rotations, and dilations of objects in the plane by using sketches, coordinates, vectors, function notation, and matrices;
- Students can use various representations to help understand the effects of simple transformations and their compositions.
- Students can draw and construct representations of two- and three-dimensional geometric objects using a variety of tools;
- Students can visualize three-dimensional objects and spaces from different perspectives and analyze their cross sections;
- Students can use geometric models to gain insights into, and answer questions in, other areas of mathematics;
- Students can use geometric ideas to solve problems in, and gain insights into, other disciplines and other areas of interest such as art and architecture.

References, textbooks, and resources:

Discovering Geometry by Michael Serra, Key Curriculum Press, 2003

Geometer's Sketchpad software

TI-84 Graphing Calculator (with Cabri Jr)

General Course Outline

First Term

Ch 0	Geometric Art
Ch 1	Introducing Geometry
Ch 2	Reasoning in Geometry
Ch 3	Using Tools of Geometry

Second Term

Ch 4	Discovering and Proving Triangle Properties
Ch 5	Discovering and Proving Polygon Properties
Ch 6	Discovering and Proving Circle Properties

Third Term

Ch 8	Areas of Rectangles and Parallelograms
Ch 9	The Pythagorean Theorem
Ch 10	Volume

Fourth Term

Ch 11	Similarity
Ch 12	Trigonometry
Ch 13	Geometry as a Mathematical System
Ch 7	Transformations and Tessellations

Grading Policy

Notebook: Each student will keep a separate math notebook (3-ring binder, at least $1\frac{1}{2}$ inch), which should include four sections: in-class work, homework, glossary, and conjectures/postulates/ theorems. Notebooks are collected and graded at the end of each chapter on test day. Notebooks will be graded for being on time, being neat and organized, and having each of the four sections completed. Each student is responsible for self-correcting homework. There is time in class to ask questions each day. If we do not go over a problem in class, I will make the answers available. I will also be available for individual help outside of class time after school and during tutor time on block days. If you are having trouble understanding a problem or section, see me immediately. Don't wait until it is too late to get help. The notebook grades will be totaled over the term and account for 17% of the grade for the term.

In-class assignments: Some in-class activity work will be collected. The activity may relate directly to the homework for that section, it may introduce a topic, or be an enrichment exercise. Sometimes these will be graded for completion, and other times they will be collected and graded by me to assess understanding. There may be other in-class assignments or computer activities, which will be graded the same way. After they are recorded, they will be returned to the student to include in the in-class section of the notebook. Similar to the notebook grades, these grades will be totaled over the term and account for 16% of the grade for the term.

Quizzes: There will be one or two quizzes for each chapter. These may be announced or unannounced. Quiz grades will be totaled over the term and account for 17% of the grade for the term.

Tests: There will be a test at the end of each chapter. Each chapter has a review (which is part of the homework) to help students prepare for the test. There will be three or four chapter tests each term. Together, they account for 40% of the grade for the term.

Projects: There will be one or more projects required during each term. These may be chosen from the projects listed at the end of each chapter, or I may assign a different one. You will be told what the project is early in the chapter so that you can begin planning the project as you progress through the chapter and gain the background to be able to successfully complete the project. The project due date will usually be set for sometime into the succeeding chapter. Students who have computers with word processing and spreadsheet capabilities will find them beneficial. Computers are available at school in the computer labs for student use also. The project grades will account for 10% of the grade for the term.

Grading Scale:	100% - 90%	A
	89% - 80%	B
	79% - 65%	C
	64% - 55%	D
	54% - 0%	F

Attendance: Unless you have a valid excuse, you are expected to be in class on time each school day. You should be in the classroom when the tardy bell rings, ready to work on the warm-up problem(s). If tardiness becomes a problem, you will be required to make up time after school. If you have an unexcused absence, you will also need to make up time after school. In addition, if attendance is a problem, your parent or guardian will be notified so that we can work on the problem together.

Behavioral expectations: You have now been in school long enough to know what appropriate classroom behavior is. I expect you to show me and your fellow students respect in and around the classroom. When I am presenting or talking to the class, I expect all other conversations to stop. There will usually be time for you to interact as you do your math. If it becomes necessary for me to discipline you, I will usually make a verbal request to cease the behavior. If you do not comply, I may assign you detention. If the behavior still persists, I will either refer you to the vice-principal or have you removed from the room, with further follow-up later. Your parents may be notified if your behavior is significantly disruptive or if you are disruptive frequently. Of course you are expected to follow the general school and district behavior guidelines in the student handbook. Students in this class are expected to be:

- **Prompt...**tardiness is disruptive and wastes class time
- **Prepared...**textbook, supplies including pencil, paper and calculator are needed daily
- **Polite...**pay attention to instruction, respect the rights and feelings of others, and maintain an orderly learning environment for everyone
- **Productive...**use class time for class work, be on-task, participate in class

Additional costs for materials/out of pocket expenses expected for students: It is expected that each student will have a graphing programmable calculator. TI-84 calculators are available in class. Each student should have a compass and protractor (preferably in a zipper pouch in the notebook).

Safety issues and requirements: Emergency evacuation procedures are posted by the doorway.

Effective date of syllabus: 9/5/2007

School year: 2007-2008

Student Accommodation(s) and support available: Accommodations will be made in accordance with student I.E.P.'s or 504 plans, as necessary. Instruction will be differentiated, as possible, to accommodate a variety of learning styles.