Reseda High School Law and Public Service
Geometry A/B

Instructor: Mr. Ethington

Course Description:
In Geometry A/B, while integrating *law themes,* we will learn about properties of many basic shapes and forms in two and three dimensions, as well as how to apply these properties. We will also develop logical thought processes with emphasis on reasoning and logical arguments leading to geometric proofs.

Topics of Instruction:

Unit 1: Foundations of geometry and geometric proof
CA Content Standards: 1.0, 2.0, 3.0, 4.0, 7.0, 13.0, 17.0
Undefined terms
Pieces of lines and associated properties, postulates, and theorems
Radius of a search area
Angles and associated properties, postulates, and theorems
Proofs of congruent segments and angles
Parallel lines cut by a transversal and associated properties, postulates, proofs, and theorems
Solving a crime at Reseda High, "Where did the shot come from?"

Unit 2: Triangles and other polygons
CA Content Standards: 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 12.0, 13.0
Categorizing triangles and their associated parts
Basic triangle properties, postulates, proofs, and theorems
Congruence and similarity of triangles and corresponding parts
Relationships between angles of polygons, and number of sides of polygons
Congruence and similarity of polygons and corresponding parts

Unit 3: Right triangles, the Pythagorean Theorem, and trigonometry
CA Content Standards: 2.0, 3.0, 4.0, 5.0, 14.0, 15.0, 17.0, 18.0, 19.0, 20.0
The Pythagorean Theorem and finding sides of right triangles
Radius of a search area revisited
Proving the Pythagorean Theorem
Using special case right triangles
Using trigonometry to find sides of right triangles
Sniper problems
Approximating suspect height
Proving trigonometric properties and laws

Unit 4: Circles
CA Content Standards: 7.0, 8.0, 17.0, 21.0
Properties of lines and angles on circles
Arcs and sectors
Circumference and area of circles
Search area once again
James Bond problems
Arc length and sector area

Unit 5: Parallelograms
CA Content Standards: 2.0, 3.0, 4.0, 7.0, 8.0, 10
Categorizing parallelograms and their associated parts
Basic parallelogram properties, postulates, proofs, and theorems
Congruence and similarity of parallelograms and corresponding parts

Unit 6: Perimeter, area, and volume of polygons and polyhedrons
CA Content Standards: 7.0, 8.0, 9.0, 10, 11.0
Perimeter and area of common polygons
More James Bond problems
Lateral area and surface area of prisms and cylinders
Lateral area and surface area of cones and pyramids
Surface area of spheres and hemispheres
Volume of prisms, cylinders, cones, pyramids, spheres, and hemispheres
Even more James Bond problems

Unit 7: Constructions, Transformations, and Logic
CA Content Standards: 1.0, 3.0, 16.0, 22.0
Constructing basic geometric shapes
Deconstructing someone else's construction
Translations, Reflections, and Rotations
The parts of logical statements
Negations, inverse, converse, and Contrapositive of statements
Counterexamples
Refuting an alibi
Deductive vs. Inductive logic
Following a hunch vs. just the facts

Grading
Standard grade cutoffs are used, A: 90% and up, B: 80% to 89%, C: 70% to 79%, D:60% to 69%, F: 59% and below.

Attendance, Cooperation and Work Habits
You are required to follow the attendance policy of the school. Your attendance will have a direct connection to your semester grade. You will receive participation points that are determined on whether your are in class or not. If you are not in class you cannot participate. Attending class is very important, especially since the institution of block schedule. Absent students will miss opportunities to receive in class participation and

classwork points, as well as missing out on instructional time, and each day of instruction with block schedule is equivalent to two traditional days of class. In order to be successful, you must attend class on a regular basis. Exams and quizzes must be made up the day you return to school.

Cooperation and respect are expected at all times. Compliance with school and classroom rules is required. Deviation from behavior requirements will result in class suspension.

Assignment Types
Students will be graded by tests, quizzes, written explanations, projects, and participation as follows:

Tests and Projects -	45%	Quizzes-	15%
Explanations-	15%	Final Exam -	15%
Participation -	10%		

Homework and Classwork Policy
All classwork and homework will be assigned during class, and is due the next day of class. All classwork not finished in class is to be completed for homework. Completion of classwork and homework is subject to being checked at the door prior to admission to class. If a student has not finished their work in time, they will be required to continue working on their assignment until finished, or until they are admitted by the instructor. All student work must be that of the individual student. CHEATING of any type will not be tolerated. This applies to ANY and ALL assignments. Any incidence of cheating will result in parent conferencing, a zero on the assignment (for all students(s) involved) and a "U" in both work habits and cooperation on the 5, 10, 15 and 20 week report cards.

Reseda High School ESLRS
In my class, students do much of their work in cooperative learning groups. I believe this type of activity helps students to learn from each other, and helps students achieve the Reseda High School ESLRS:
*Effective Communicators
*Critical Thinkers
*Self-Directed Learners
*Responsible Citizens
*Healthy Individuals

CA State Content Standards:

1.0 Students demonstrate understanding by identifying and giving examples of undefined terms, axioms, theorems, and inductive and deductive reasoning.

2.0 Students write geometric proofs, including proofs by contradiction.

3.0 Students construct and judge the validity of a logical argument and give counterexamples to disprove a statement.

4.0 Students prove basic theorems involving congruence and similarity.

5.0 Students prove that triangles are congruent or similar, and they are able to use the concept of corresponding parts of congruent triangles.

6.0 Students know and are able to use the triangle inequality theorem.

7.0 Students prove and use theorems involving the properties of parallel lines cut by a transversal, the properties of quadrilaterals, and the properties of circles.

8.0 Students know, derive, and solve problems involving the perimeter, circumference, area, volume, lateral area, and surface area of common geometric figures.

9.0 Students compute the volumes and surface areas of prisms, pyramids, cylinders, cones, and spheres; and students commit to memory the formulas for prisms, pyramids, and cylinders.

10.0 Students compute areas of polygons, including rectangles, scalene triangles, equilateral triangles, rhombi, parallelograms, and trapezoids.

11.0 Students determine how changes in dimensions affect the perimeter, area, and volume of common geometric figures and solids.

12.0 Students find and use measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems.

13.0 Students prove relationships between angles in polygons by using properties of complementary, supplementary, vertical, and exterior angles.

14.0 Students prove the Pythagorean theorem.

15.0 Students use the Pythagorean theorem to determine distance and find missing lengths of sides of right triangles.

16.0 Students perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through a point off the line.

17.0 Students prove theorems by using coordinate geometry, including the midpoint of a line segment, the distance formula, and various forms of equations of lines and circles.

18.0 Students know the definitions of the basic trigonometric functions defined by the angles of a right triangle. They also know and are able to use elementary relationships between them. For example, tan(x) = sin(x)/cos(x), (sin(x))2 + (cos(x)) 2 = 1.

19.0 Students use trigonometric functions to solve for an unknown length of a side of a right triangle, given an angle and a length of a side.

20.0 Students know and are able to use angle and side relationships in problems with special right triangles, such as 30°, 60°, and 90° triangles and 45°, 45°, and 90° triangles.

21.0 Students prove and solve problems regarding relationships among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.

22.0 Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.