Geometry RCHS

RCAS Policies/Procedures

Students will be required to follow all RCAS policies and procedures. To view the RCAS High School Student Handbook, click handbook.

Course Description

The focus of geometry includes topics such as properties of plane and solid figures, deductive methods of reasoning and use of logic; geometry as an axiomatic system including the study of postulates, theorems, and proofs; concepts of congruence, similarity, parallelism, perpendicularity, and proportion; rules of angle measurement in triangles.

Course Learning Outcomes

Topic 1 (Introduction/No test)
- Use properties of segments and angles to find their measures.
- Use a straightedge and compass (or similar technology) to construct basic figures.

Topic 2
- Determine the measures of the angles formed when parallel lines are intersected by a transversal.
    o Use inductive reasoning to make conjectures about mathematical relationships. (T1L4)
    o Write conditionals and biconditionals to find their truth values. (T1L5, No table)
    o Use deductive reasoning to draw conclusions. (T1L6)
    o Use deductive reasoning to prove theorems. (T1L7)
- Use angle relationships to prove that lines are parallel.
- Solve problems using the measures of interior and exterior angles of triangles. (Prove using parallel lines and a transversal)
- Use slope to solve problems about parallel and perpendicular lines.

Topic 3 (Possible PBL Topic: Logo Working Document)
- Use Pythagorean Theorem to find side lengths
- Draw and describe the reflection of a figure across a line of reflection.
- Describe the properties of a figure before and after translation.
- Draw and describe the rotation of a figure about a point of rotation for a given angle of rotation.
- Identify different rigid motions used to transform two-dimensional shapes.

Topic 4
- Use a composition of rigid motions to show that two objects are congruent.
- Construct and apply theorems about isosceles and equilateral triangles to solve problems.
- Use SAS and SSS to determine whether triangles are congruent.
- Determine congruent triangles by comparing two angles and one side. (ASA and AAS)
- Identify congruent right triangles. (HL)
- Use triangle congruence to solve problems with overlapping triangles.

Topic 5
- Use perpendicular and angle bisectors to solve problems.
- Use triangle bisectors to solve problems.
- Find the points of concurrency for the medians of a triangle and the altitudes of a triangle.
- Use theorems to compare the sides and angles of a triangle.
- Compare a pair of sides of two triangles when the remaining pairs of sides are congruent.

Topic 6
- Find the sums of the measures of the exterior angles and interior angles of polygons. (Before winter break)
- Use triangle congruence to understand kites and trapezoids.
- Use the properties of parallel lines, diagonals, and triangles to investigate parallelograms.
- Use properties of sides, angles, and diagonals to identify a parallelogram.

- Use the properties of rhombuses, rectangles, and squares to solve problems.
- Identify rhombuses, rectangles, and squares by the characteristics of their diagonals.

Topic 9

- Use the midpoint and distance formula to solve problems (T1L3)
- Use the coordinate plane to analyze geometric figures.
- Prove geometric theorems using algebra and the coordinate plane.
- Use the equations and graphs of circles to solve problems.

Topic 7

- Dilate figures and identify characteristics of dilations.
- Determine whether figures are similar.
- Use dilation and rigid motion to establish triangle similarity theorems.
- Use similarity and the geometric mean to solve problems involving right triangles.
- Find the lengths of segments using proportional relationships in triangles resulting from parallel lines.

Topic 8

- Prove the Pythagorean Theorem using similarity and establish the relationships in special right triangles.
- Use trigonometric ratios to find lengths and angle measures of right triangles.
- Use the Law of Sines to solve problems.*
- Use the Law of Cosines to solve problems.*
- Use trigonometry to solve problems.

Topic 10

- Find arc length and sector area of a circle and use them to solve problems.
- Use properties of tangent lines to solve problems.*
- Relate the length of a chord to its central angle and the arc it intercepts.*
- Use the relationships between angles and arcs in circles to find their measures.*

Topic 11

- Identify three-dimensional figures and their relationships with polygons to solve problems.
- Use the properties of prisms and cylinders to calculate their volumes.
- Use the volumes of right and oblique pyramids and cones to solve problems.
- Calculate the volume of a sphere and solve problems involving the volumes of spheres.

Topic 12

- Use relationships among events to find probabilities.
- Find the probability of an event given that another event has occurred.
- Use permutations and combinations to find the number of outcomes in a probability experiment.*
- Define probability distributions to represent experiments and solve problems.*
- Calculate, interpret, and apply expected value.
- Use probability to make decisions.*

*Plus standards: eliminate as needed

Classroom Expectations

It is the expectation that all students will be present and participating in the classroom discussion as well as complete assignments in class every day. On days when the students are not present, they will be responsible to find out what work was missed and complete it if possible. All efforts will be made to have the course content online, either through Canvas or Savvas (accessed through clever.com). Missing work will need to be on their own time outside of the regular class time.

Grading

Grades will be compromised of three categories, Assignments (25%), Quizzes (25%), and Tests (50%). All graded material will be done on paper and handed in to receive a grade. Quizzes and Tests must be completed in my classroom, unless prior arrangements have been made. Students may use 2nd period (Advisory), before school, or after school to finish any quizzes or tests not completed in class.

The grading scale we will be using is the one approved by the school board: A 100% - 90%, B 89% - 80%, C 79% - 70%, D 69% - 60%, F below 60%.

Textbook

enVision Geometry, © 2018, Pearson Education Inc.

Reading

There may be content related articles found and implemented. These will be available for student/parent viewing through Canvas or upon parent/student request for a paper copy.

Optional Reading

There will be optional (ungraded) work found online in Canvas (or Savvas) that is there to help struggling students.

Instructional Resources

In addition to the textbook mentioned above, the students will have access to online content from the publisher as well that can be found in the Canvas course or on Savvas through clever.com.