Geometry CPA

Course Description
In this full-year course, students explore all high school Geometry concepts, including the characteristics and properties of shapes; geometric relationships, spatial reasoning, and modeling to solve problems. Throughout the course, students learn how math topics are related to daily life and work to solve real-world problems. In each unit of study, there is a purposeful movement from foundational knowledge to higher-order thinking skills. Students demonstrate an understanding of concepts and procedures, model with mathematics, reason abstractly and quantitatively to solve problems, communicate their reasoning, and evaluate conclusions. The pace of instruction, the in-depth study of specific topics, and the level of independence required to complete learning activities varies between the levels. Students who successfully complete this course, will have demonstrated proficiency in Geometry math standards and will be ready to continue to Algebra II.

In alignment with the skills detailed in the **Portrait of the Crusader**, students practice solving problems with innovation and imagination. They are taught to think critically about the synthesis of data and respond with defendable, original work. In all interactions, students are guided to act with integrity and respond to peers with respect and encouragement.

Assessment Practices
This course includes varied assessments, including traditional quizzes and tests which measure concepts and procedures; problem/solution/explanation opportunities where students reason to solve complex problems and communicate their reasoning; and real-world scenarios where students define the problem, develop a plan, and solve the problem, evaluating and adjusting as necessary.

Essential Questions
1. How do we develop and apply logic through geometric principles?
2. How do we interpret and analyze real life situations using geometry?
3. How do we discover and justify geometric theorems and proofs of various figures?

Curriculum Framework
First Quarter:
Summer Work to Reinforce Prerequisite Skills
- Solve Linear Equations involving variables on both sides, multi step and operations on polynomials
- Solve Systems of equations with two variables by substitution and elimination.
- Factor by GCF; factor binomials with a=1

Introduction to Geometry
- Define Points, lines, planes
- Define Angles and their measures
- Define Angle pairs and their relationships
- Apply Midpoint and distance formulas

Introduction to Reasoning and Proofs
- Apply perimeter, circumference and area
- Define conditional and biconditional statements
- Write two-column proofs
- Prove congruent angles

Second Quarter:
Parallel and Perpendicular Lines
- Prove that lines are parallel
- Explain the relation between angles when lines are parallel and angles are formed by transversals
- Prove theorems about parallel and perpendicular lines
- Apply parallel and perpendicular lines, slopes, equations of lines

Triangles and Congruence
- Define types of triangles
- Define congruent figures
- Prove congruent triangles by SSS, SAS, ASA, AAS
- Prove congruent triangles, corresponding parts of congruent triangles are congruent
- Define and prove Isosceles , Equilateral and Right Triangles

Third Quarter:
Special Properties of Triangles
- Define perpendicular and angle bisectors

Similarity
- Simplify ratios and solve proportions
- Define similar polygons
- Prove similarity

Fourth Quarter:
Right Triangles and Trigonometry
- Apply Pythagorean Theorem and its converse
- Solve special right triangles
- Solve trigonometric ratios
- Solve right triangles

Area
- Define perimeters and areas of similar figures
- Apply arc measures, circumferences, arc lengths of circles
- Find areas of circles and sectors

Enrichment - as time permits
- Define and solve tangent lines
- Define and solve chords and arcs
- Define and solve segment lengths
- Apply equation of circle

Resources
Geometry, Martin-Gay
MyMathLab (mymathlabforschool.com)
Scientific Calculator
Desmos application (ISO/Android or [web](web))

Grading
20 % MyMathLab,
25% Quizzes
25% Student Work
30 % Tests

Please refer to the student handbook for a complete explanation of absence and late work policies.