

# GEOMETRY HONORS SYLLABUS

## **COURSE DESCRIPTION:**

In Geometry, students will build on the knowledge and skills for mathematics in Kindergarten-Grade 8 and Algebra I to strengthen their mathematical reasoning skills in geometric contexts. Within the course, students will begin to focus on more precise terminology, symbolic representations, and the development of proofs. Students will explore concepts covering coordinate and transformational geometry; logical argument and constructions; proof and congruence; similarity, proof, and trigonometry; two- and three-dimensional figures; circles; and probability. Students will connect previous knowledge from Algebra I to Geometry through the coordinate and transformational geometry strand. In the logical arguments and constructions strand, students are expected to create formal constructions using a straight edge and compass. Though this course is primarily Euclidean geometry, students should complete the course with an understanding that non-Euclidean geometries exist. In proof and congruence, students will use deductive reasoning to justify, prove and apply theorems about geometric figures. Throughout the standards, the term "prove" means a formal proof to be shown in a paragraph, a flow chart, or two column formats. Proportionality is the unifying component of the similarity, proof, and trigonometry strand. Students will use their proportional reasoning skills to prove and apply theorems and solve problems in this strand. The two- and three-dimensional figure strand focuses on the application of formulas in multi-step situations since students have developed background knowledge in two- and three-dimensional figures. Using patterns to identify geometric properties, students will apply theorems about circles to determine relationships between special segments and angles in circles. <https://tea.texas.gov/about-tea/laws-and-rules/sboe-rules-tac/sboe-tac-currently-in-effect/ch111c.pdf>

## **COURSE OBJECTIVES:**

Texas Geometry TEKS objectives focus on developing logical reasoning through the study of geometric concepts, including points, lines, and angles; congruence and similarity; and transformations like translations, rotations, and dilations. Students are expected to use geometric constructions, algebraic notation, and proofs to solve problems involving plane and solid figures, analyze shapes on the coordinate plane, and apply trigonometric ratios.

## **COURSE OUTLINE:**

Semester 1	Semester 2
<ul style="list-style-type: none"><li>▪ Geometric Figures and Basic Reasoning</li><li>▪ Distance, Midpoint, and Angle Measurements</li><li>▪ Angles, Parallel and Perpendicular Lines</li><li>▪ Transformations</li><li>▪ Triangle Congruence</li><li>▪ Properties of Triangles</li><li>▪ Similar Triangles</li><li>▪ Special Right Triangles</li></ul>	<ul style="list-style-type: none"><li>▪ Special Right Triangles</li><li>▪ Trigonometry</li><li>▪ Quadrilaterals</li><li>▪ Interior and Exterior Angles of Polygons, Area of Polygons</li><li>▪ Surface Area and Volume</li><li>▪ Circles – Equations and Segments</li><li>▪ Circles – Angles and Arcs, Area of Sector</li><li>▪ Probability</li></ul>