PETERS TOWNSHIP HIGH SCHOOL
COURSE SYLLABUS: GEOMETRY HONORS

Course Overview and Essential Skills

This course is a study of the language, concepts and techniques of Geometry that will challenge students to critically analyze and logically solve problems. This course is the foundation for students' ability to recognize spatial relations and apply logical reasoning skills. Topics include parallel and perpendicular lines, triangle congruence and properties, polygons, similarity, trigonometry, circles and spatial reasoning. Many real world applications are presented within the course content. This course includes a heavy emphasis on Algebra skills such as setting up and solving equations, graphing, systems of equations and factoring. The pacing of this course is rigorous.

Course Textbook and Required Materials

- Geometry, Holt McDougal (2011)
- Online textbook: http://my.hrw.com
- Required daily materials: Textbook, Three-Ring Binder, Pencil, Graphing Calculator (TI-83 Plus, TI-84, or TI-84 Plus)

Course Outline of Material Covered:

Unit or Topic	Concepts/Skills/Resources	Timeframe
Chapter 1 Foundations for Geometry	• Identify and describe points, lines and planes • Measure and construct segments • Measure and construct angles • Identify and apply angle relationships • Use formulas in geometry • Find midpoint and distance in the coordinate plane • Perform transformations in the coordinate plane	~4 Weeks
Chapter 2 Geometric Reasoning	• Use inductive reasoning to make conjectures • Identify and write conditional statements • Identify and write biconditional statements and definitions • Use deductive reasoning to verify conjectures • Analyze direct and indirect arguments • Create and analyze truth tables • Construct algebraic proofs • Construct geometric proofs	~4 Weeks
Chapter 3 Parallel and Perpendicular Lines	• Identify and apply angle relationships formed by lines • Identify and apply angles formed by parallel lines and transversals • Prove lines parallel • Identify and apply properties of perpendicular lines • Differentiate between slopes of lines • Graph parallel and perpendicular lines	~3 Weeks

	• in the coordinate plane • Construct geometric proofs	
Chapter 4 Triangle Congruence	• Classify triangles • Identify and apply angle relationships in triangles • Identify and apply properties of congruent triangles • Use triangle congruence theorems: SSS, SAS, ASA, AAS, and HL • Identify and apply properties of isosceles and equilateral triangles • Construct geometric proofs	~3 Weeks
Chapter 5 Properties and Attributes of Triangles	• Identify and apply properties of perpendicular bisectors and angle bisectors • Identify and apply properties of bisectors of triangles • Identify and apply properties of medians and altitudes of triangles • Apply the triangle midsegment theorem • Identify inequalities in one triangle • Identify inequalities in two triangles • Apply the Pythagorean Theorem • Apply Special Right Triangles	~4 Weeks
Chapter 6 Polygons and Quadrilaterals	• Identify and apply properties and attributes of polygons • Identify and apply properties of parallelograms • Apply conditions for parallelograms • Identify and apply properties of special parallelograms • Apply conditions for special parallelograms • Identify and apply properties of kites and trapezoids	~3 Weeks
Chapter 7 Similarity	• Define and set-up ratios • Define and solve proportions • Set-up ratios and solve proportions in similar polygons • Identify and apply triangle similarity theorems: AA, SSS, and SAS • Apply properties of similar triangles • Use proportional relationships • Identify and apply dilations and similarity in the coordinate plane	~3 Weeks
Chapter 8 Right Triangles and Trigonometry	• Identify and apply similarity in right triangles • Identify and apply trigonometric ratios • Solve for missing angles and side lengths in right triangles • Identify and solve for angles of elevation and angles of depression	~3 Weeks
Chapter 9 Extending Perimeter, Circumference, and Area	• Develop formulas for triangles and quadrilaterals • Develop formulas for circles and regular polygons • Calculate perimeter and area of	~3 Weeks

	• composite figures • Calculate perimeter and area in the coordinate plane • Investigate the effects of changing dimensions proportionally • Solve problem situations involving geometric probability	
Chapter 10 Spatial Reasoning	• Identify, construct, and represent three-dimensional figures • Apply formulas in three dimensions Calculate the surface area of prisms and cylinders • Calculate the surface area of pyramids and cones • Calculate the volume of prisms and cylinders • Calculate the volume of pyramids and cones • Calculate the surface area and volume of spheres	~3 Weeks
Chapter 11 Circles	• Identify and apply properties of lines that intersect circles • Define, identify, construct and calculate the measure of arcs and chords • Apply formulas for sector area and arc length • Define, identify, construct and calculate the measure of inscribed angles • Identify and apply angle relationships in circles • Identify and apply segment relationships in circles • Write equations and graph circles in the coordinate plane • Solve problems using the equation of a circle and/or the graph of a circle	~3 Weeks

Depending on the needs of the class or changes in the school year, the course outline is subject to change.