

Honors Geometry Scope and Sequence

Text: *Discovering Geometry 4th Edition*

Unit 1: Lines and Angles, Non-Triangle Based Proof			
Pacing	Power Standards	Resources	Assessments
8 days	<p>G-CO.1 G-CO.9 Prove theorems about lines and angles. <i>Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent;</i></p> <p>G-GPE.5 Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).</p>	<p>Text</p> <ul style="list-style-type: none">• Chapter 1<ul style="list-style-type: none">○ 1.1○ 1.2 congruence markings only○ 1.3 – 1.6 emphasis on vocabulary only○ p694 Properties of Equality• Chapter 2<ul style="list-style-type: none">○ LTF – Translations of Linear Functions○ 2.5<ul style="list-style-type: none">▪ Vertical angles proof handout○ 2.6<ul style="list-style-type: none">▪ Parallel Lines Proofs Handout○ p167 Algebra Skills○ p212 Algebra Skills	<p>Quiz Unit Test</p>

Unit 2: Triangle Properties, Transformations, Symmetry, Congruence, Constructions			
Pacing	Power Standards	Resources	Assessments
20 days	<p>G-CO.2 G-CO.3 G-CO.4 G.CO.5 Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.</p> <p>G-CO.7 Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.</p> <p>G-CO.8 G-CO.9 Prove theorems about lines and angles. <i>... points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.</i></p> <p>G-CO.10 G-CO.12 Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). <i>Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.</i></p> <p>G-CO.13 G-GC.3 G-GC.4(+)</p>	<p>Text</p> <ul style="list-style-type: none"> • Chapter 7 <ul style="list-style-type: none"> ○ 7.1 – 7.3 ○ LTF – Linear Reflections ○ Rotations in the Coordinate Plane ○ Representing and Combining Transformations (Card Activity) ○ LTF – Transformations of Piecewise functions • Chapter 4 <ul style="list-style-type: none"> ○ 4.1 <ul style="list-style-type: none"> ▪ Proof of Triangle Sum Theorem Handout ▪ Triangle Congruence Exploration ○ 4.2 – 4.7 • Chapter 3 <ul style="list-style-type: none"> ○ 3.1 – 3.8 <p>Note: students must write proofs to demonstrate how constructions work</p> 	<p>Quiz Unit Test</p>

Unit 3: Polygons, Coordinate Geometry, Circles			
Pacing	Power Standards	Resources	Assessments
15 days Note: Teach this unit last during spring semester	<p>G-CO.11 Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.</p> <p>G-CO.1 G-GC.1 G-GC.2 G-GC.5 Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.</p> <p>G-CO.MA.11.a G-C.MA.3.a</p> <p>G-GPE.4 Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1,) lies on the circle centered at the origin and containing the point (0, 2).</p> <p>G-GPE.5 Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).</p> <p>G-GPE.6 G-GPE.7</p>	<p>Textbook</p> <ul style="list-style-type: none"> • Chapter 1 lesson 1.7 • Chapter 5 • Chapter 6 	<p>Quiz Unit Test</p>

Unit 4: Dilation and Similarity, Pythagorean Theorem, Trigonometry

Pacing	Power Standards	Resources	Assessments
14 days	<p>G-SRT.1 G-SRT.2 Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides. G-SRT.3 G-SRT.4 Prove theorems about triangles. <i>Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.</i> G-SRT.5 G-SRT.6 Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles. G-SRT.7 G-SRT.8 G-SRT.9(+) G-SRT.10(+) G-SRT.11(+) G-GPE.1 Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation. G-GPE.2 Derive the equation of a parabola given a focus and a directrix. G-GPE.4</p>	<p>Textbook Chapter 11 <ul style="list-style-type: none"> ○ 11.1 – 11.3, 11.7 Chapter 9 LTF <ul style="list-style-type: none"> ○ Analyzing Piecewise Functions ○ Pythagorean Theorem Applications ○ Special Right Triangle Applications ○ Introduction to Related Rates: Pythagorean Theorem Chapter 12 <ul style="list-style-type: none"> ○ 12.1 – 12.4 ○ p675 LTF <ul style="list-style-type: none"> ○ Introduction to Trigonometric Ratios with Special Right Triangles ○ Trigonometric Applications ○ Pythagorean Theorem in Motion ○ Introduction to Related Rates: Trigonometric Ratios ○ Law of Sines ○ Area as a Function of an Angle </p>	<p>Quiz Unit Test</p>

Unit 5: Area and Volume			
Pacing	Power Standards	Resources	Assessments
18 days	<p>G-GMD.1 Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. <i>Use dissection arguments, Cavalieri's principle, and informal limit arguments.</i></p> <p>G-GMD.2(+) G-GMD.3</p> <p>G-GMD.4 Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.</p> <p>G-MG.1 G-MG.2 G-MG.3 G-MG.MA.4</p>	<p>Textbook</p> <ul style="list-style-type: none"> • Chapter 8 • Chapter 10 • 10.1 – 10.4, 10.6 – 10.7 <ul style="list-style-type: none"> • LTF Activities <ul style="list-style-type: none"> ○ Solving Systems of Linear Equations ○ Working With Formulas and Function Notation ○ Using Linear Equations to Define Geometry Solids ○ Introduction to Related Rates: Areas, Volumes and Similar Figures ○ Related Rates: Surface Area and Volume ○ Algebraic Functions in Geometry ○ Painting The House 	<p>Quiz Unit Test</p>

Unit 6: Probability			
Pacing	Power Standards	Resources	Assessments
5 days	<p>S-CP.1</p> <p>S-CP.2 Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent. ★</p> <p>S-CP.3 Understand the conditional probability of A given B as $P(A \text{ and } B)/P(B)$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B. ★</p> <p>S-CP.4 S-CP.5</p> <p>S-CP.6 Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model. ★</p> <p>S-CP.7 S-CP.8(+) S-CP.9(+)</p>	<p>LTF Activities</p> <ul style="list-style-type: none"> ○ Calculating Probabilities Using Tree Diagrams ○ Probability Rules! ○ Using Area to Estimate Probability ○ Independence 	<p>Quiz Unit Test</p>