

# Information for Course Syllabus

Name of Course: Geometry Advanced

Grade Level: 9-10

School: ORHS

Major Assignments: Vonari Diagrams Constructions  
Project

Field Trips: None

How can parents access instructional materials?  
Canvas

# Geometry Advanced

## 2021-2022

### Term 1

<b>Parallel and Perpendicular Lines Unit</b>	<b>G.CO.A.1</b> Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, plane, distance along a line, and distance around a circular arc.
	<b>G.CO.C.9</b> Prove theorems about lines and angles.
	<b>G.GPE.B.2</b> Use coordinates to prove simple geometric theorems algebraically.
	<b>G.GPE.B.3</b> Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems.
	<b>G.GPE.B.4</b> Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

<b>Triangle Theorems and Congruence Unit</b>	<b>G.CO.B.7</b> 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.
	<b>G.CO.B.8</b> Explain how the criteria for triangle congruence (ASA, SAS, AAS, and SSS) follow from the definition of congruence in terms of rigid motions.
	<b>G.CO.C.10</b> Prove theorems about triangles.
	<b>G.GPE.B.5</b> Know and use coordinates to compute perimeters of polygons and areas of triangles and rectangles.

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### Term 1

<b>Triangle Properties and Basic Constructions Unit</b>	<b>G.CO.C.10</b> Prove theorems about triangles.
	<b>G.CO.D.12</b> Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.).
	<b>G.C.A.3</b> Construct the incenter and circumcenter of a triangle and use their properties to solve problems in context.
	<b>G.GPE.B.2</b> Use coordinates to prove simple geometric theorems algebraically.

<b>Quadrilaterals Unit</b>	<b>G.CO.C.11</b> Prove theorems about parallelograms.
	<b>G.GPE.B.5</b> Know and use coordinates to compute perimeters of polygons and areas of triangles and rectangles.

<b>Similarity and Similar Triangle Proofs Unit</b>	<b>G.SRT.A.2</b> 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.
	<b>G.SRT.A.3</b> Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.
	<b>G.SRT.B.4</b> Prove theorems about similar triangles.
	<b>G.SRT.B.5</b> Use congruence and similarity criteria for triangles to solve problems and to justify relationships in geometric figures.

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### Term 2

<b>The Pythagorean Theorem Unit</b>	<b>G.SRT.C.6</b> 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.
	<b>G.SRT.C.7</b> Explain and use the relationship between the sine and cosine of complementary angles.
	<b>G.SRT.C.8</b> Solve triangles. a. Know and use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. b. Know and use the Law of Sines and Law of Cosines to solve problems in real life situations. Recognize when it is appropriate to use each.

<b>Transformations and Symmetry Unit</b>	<b>G.CO.A.2</b> Represent transformations in the plane in multiple ways, including technology. Describe transformations as functions that take points in the plane (pre-image) as inputs and give other points (image) as outputs. Compare transformations that preserve distance and angle measure to those that do not (e.g., translation versus horizontal stretch).
	<b>G.CO.A.3</b> Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry the shape onto itself.
	<b>G.CO.A.4</b> Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
	<b>G.CO.A.5</b> Given a geometric figure and a rigid motion, draw the image of the figure in multiple ways, including technology. Specify a sequence of rigid motions that will carry a given figure onto another.
	<b>G.CO.B.6</b> 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 determine informally if they are congruent.
	<b>G.SRT.A.1</b> Verify informally the properties of dilations given by a center and a scale factor.

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## 2021-2022

### Term 2

<b>Circles Unit</b>	<b>G.C.A.1</b> Recognize that all circles are similar.
	<b>G.C.A.2</b> Identify and describe relationships among inscribed angles, radii, and chords.
	<b>G.C.B.4</b> Know the formula and find the area of a sector of a circle in a real-world context.
	<b>G.GPE.A.1</b> Know and write the equation of a circle of given center and radius using the Pythagorean Theorem.

<b>Surface Area and Volume Unit</b>	<b>G.GMD.A.1</b> Give an informal argument for the formulas for the circumference of a circle and the volume and surface area of a cylinder, cone, prism, and pyramid.
	<b>G.GMD.A.2</b> Know and use volume and surface area formulas for cylinders, cones, prisms, pyramids, and spheres to solve problems.
	<b>G.MG.A.1</b> Use geometric shapes, their measures, and their properties to describe objects.
	<b>G.MG.A.2</b> Apply geometric methods to solve real world problems.

**End Of Course Review**

**Algebra 2 Skills Preview**