

## Community Unit District 308 Geometry Scope & Sequence

Standards taught and Assessed through Formative Assessments
 Standards taught and Assessed through Summative Assessments

• Standards taught and Assessed	tnrougr			Assess							
McGraw-Hill Geometry Chapter	1	2	3	4	5	6	7	9	8	10	11&12
Approximate Time Frames per Unit (in weeks)	3	2	2	4	3	3	2	3	3	3	3
High School	I: Geom	netry									
	uence										
HSG.CO.A Experiment with		mation	s in th	e plane							
HSG.CO.A.1 Know precise definitions of angle, circle, perpendicular line, parallel line, and											
line segment, based on the undefined notions of point, line, distance along a line, and	•										
distance around a circular arc.											
HSG.CO.A.2 Represent transformations in the plane using, e.g., transparencies and											
geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and											
angle to those that do not (e.g., translation versus horizontal stretch).											
HSG.CO.A.3 Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the											
rotations and reflections that carry it onto itself.											
HSG.CO.A.4 Develop definitions of rotations, reflections, and translations in terms of angles,											
circles, perpendicular lines, parallel lines, and line segments.								•			
HSG.CO.A.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.											
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HSG.CO.B Understand congru HSG.CO.B.6 Use geometric descriptions of rigid motions to transform figures and to predict	ence in	terms	or rigit	11101101	15.	T T	T T		l l	1	1
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.											
HSG.CO.B.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.											
HSG.CO.B.8 Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.											
	4	. 41									
HSG.CO.C Prove g HSG.CO.C.9 Prove theorems about lines and angles. Theorems include: vertical angles are	eometri	c tneor	ems.		1	1	1	1	T T	1	ı
congruent; when a transversal crosses parallel lines, alternate interior angles are congruent											
and corresponding angles are congruent; points on a perpendicular bisector of a line segment		•									
are exactly those equidistant from the segment's endpoints.											
<b>HSG.CO.C.10</b> Prove theorems about triangles. Theorems include: measures of interior											
angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the											
segment joining midpoints of two sides of a triangle is parallel to the third side and half the											
length; the medians of a triangle meet at a point.											
HSG.CO.C.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.						•					
HSG.CO.D Make geo	netric c	onstru	ctions	•							
HSG.CO.D.12 Make formal geometric constructions with a variety of tools and methods											
(compass and straightedge, string, reflective devices, paper folding, dynamic geometric											
software, etc.). 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.											
and constructing a line parallel to a given line unough a point not on the line.											
HSG.CO.D.13 Construct an equilateral triangle, a square, and a regular hexagon inscribed in											
a circle.											
Similarity, Right Triang											
HSG.SRT.A Understand similarity in	terms	of simil	arity ti	ransforr	nations	<b>5.</b>	1	1	1	ı	
HSG.SRT.A.1a Verify experimentally the properties of dilations given by a center and a scale											
factor: a) A dilation takes a line not passing through the center of the dilation to a parallel line, and											
leaves a line passing through the center unchanged.											
HSG.SRT.A.1b Verify experimentally the properties of dilations given by a center and a scale				1							
factor:											
b) The dilation of a line segment is longer or shorter in the ratio given by the scale factor.											
HSG.SRT.A.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.											
HSG.SRT.A.3 Use the properties of similarity transformations to establish the AA criterion for				1							
two triangles to be similar.											
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HSG.SRT.B Prove theore	ms inv	olving	similaı	rity.		1					
<b>HSG.SRT.B.4</b> Prove theorems about triangles. 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.							•		•		
HSG.SRT.B.5 Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.				•			•		•		
HSG.SRT.C Define trigonometric ratios and	solve	proble	ms inv	olving ı	right tri	angles.				L	
<b>HSG.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>HSG.SRT.C.7</b> Explain and use the relationship between the sine and cosine of complementary angles.	•								•		
<b>HSG.SRT.C.8</b> Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.									•		
HSG.SRT.D Apply trigonor	netry to	gener	al triar	ngles.		L				l	
HSG.SRT.C.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.									•		
HSG.SRT.D.10 (+) Prove the Laws of Sines and Cosines and use them to solve problems.											
HSG.SRT.D.11 (+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).											
Circ	les										
HSG.C.A Understand and ap	ply the	orems	about	circles.							
HSG.C.A.1 Prove that all circles are similar.											
<b>HSG.C.A.2</b> Identify and describe relationships among inscribed angles, radii, and chords. <i>Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.</i>										•	
HSG.C.A.3 Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.										•	
<b>HSG.C.A.4</b> (+) Construct a tangent line from a point outside a given circle to the circle.										•	
HSG.C.B Find arc lengths an	d area	of sect	ors of	circles.		L				l	
<b>HSG.C.B.5</b> 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.										•	
Expressing Geometric Pr											
HSG.GPE.A Translate between the geometric de	escripti	on and	the ec	quation	for a co	nic sec	tion.			ı	
<b>HSG.GPE.A.1</b> 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.										•	
HSG.GPE.A.2 Derive the equation of a parabola given a focus and directrix.											
HSG.GPE.A.3 (+) Derive the equations of ellipses and hyperbolas given the foci, using the fact that the sum or difference of distances from the foci is constant.											
HSG.GPE.B Use coordinates to prove si	nple g	eometri	ic theo	rems al	gebraio	cally.					
<b>HSG.GPE.B.4</b> 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 $(1, \sqrt{3})$ lies on the circle centered at the origin and containing the point $(0, 2)$ .				•		•					
<b>HSG.GPE.B.5</b> 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).			•								
<b>HSG.GPE.B.6</b> Find the point on a directed line segment between two given points that partitions the segment in a given ratio.										•	
HSG.GPE.B.7 Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.*	•										
Geometric Measuren											
HSG.GMD.A Explain volume formula	s and	use the	m to s	olve pro	oblems					ı	
<b>HSG.GMD.A.1</b> 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>										•	•
<b>HSG.GMD.A.2</b> (+) Give an informal argument using Cavalieri's principle for the formulas for the volume of a sphere and other solid figures.											
HSG.GMD.A.3 Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.*											•



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HSG.GMD.B Visualize relationships between two-dimensional and three-dimensional objects.											
<b>HSG.GMD.B.4</b> Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.											•
Modeling with Geometry											
HSG.MG. A Apply geometric concepts in modeling situations.											
<b>HSG.MG.A.1</b> Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*	•					•					•
<b>HSG.MG.A.2</b> Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).*											•
<b>HSG.MG.A.3</b> Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).*		•	•		•	•	•		•	•	•