

Geometry

Unit	Time Period	Essential Skills	Standards
Foundations of Geometry	11 days	Points, Lines, & Planes Measuring Segments and Angles Segments & Angles with Algebra Coordinate Plane	<p>G.LA.1: Use precise definitions and standard geometric notation for angles, perpendicular lines, parallel lines, and line segments based on the undefined notions of point, line, and distance along a line.</p> <p>G.LA.7: Prove and apply theorems about lines and angles including:</p> <ul style="list-style-type: none"> ● Vertical angles, ● Angles formed by parallel lines cut by a transversal, and ● Points on a perpendicular bisector.
Geometric Reasoning	10 days	Inductive & Deductive Reasoning Conditional Statements Matrix Logic Venn Diagrams	<p>G.LA.7: Prove and apply theorems about lines and angles including:</p> <ul style="list-style-type: none"> ● Vertical angles, ● Angles formed by parallel lines cut by a transversal, and ● Points on a perpendicular bisector. <p>G.LA.5: Prove and apply slope criteria of parallel and perpendicular lines to solve problems.</p> <p>G.RT.2: Prove and apply the Pythagorean Theorem and its converse.</p> <p>G.GF.7: Prove that a given quadrilateral is a parallelogram, rhombus, rectangle, square, kite, or trapezoid, and apply these relationships to solve problems.</p> <p>G.GF.8: Prove and apply theorems about triangles including:</p> <ul style="list-style-type: none"> ● Angle-Sum Theorem, ● Exterior Angle Theorem, ● Isosceles Triangle Theorem and its converse, ● Midsegment Theorem, ● Proportionality Theorem, ● Inequality Theorem and its converse, and ● Geometric Mean Theorem.
Distance & Midpoint	8-9 days	Distance Formula	G.LA.3: Determine the point that cuts a line

		Midpoint Formula Pythagorean Theorem Constructions	segment into a specified ratio on a number line and a coordinate plane, including finding the midpoint. G.LA.4: Derive the distance and midpoint formulas and use the formulas, including the slope formula, to verify geometric relationships on a coordinate plane. G.LA.2: Make formal geometric constructions with a variety of tools and methods including: <ul style="list-style-type: none"> • Congruent segments and angles, • Segment and angle bisectors, • Perpendicular lines and perpendicular bisectors of a line segment, • Parallel lines, and • An equilateral triangle, a square, and a regular hexagon inscribed in a circle.
Parallel Lines with Transversals	12-14 days	Lines and Angles Parallel lines and Transversals Perpendicular Lines	G.LA.7: Prove and apply theorems about lines and angles including: <ul style="list-style-type: none"> • Vertical angles, • Angles formed by parallel lines cut by a transversal, and • Points on a perpendicular bisector.
Equations of Lines	10 days	Slopes Point-Slope Slope-Intercept Parallel/Perpendicular Equations	G.LA.6: Write an equation of a line that is parallel or perpendicular to a given line and passing through a given point. G.LA.5: Prove and apply slope criteria of parallel and perpendicular lines to solve problems.
Properties & Attributes of Triangles & Triangle Congruence	10-13	Classifying Triangles Congruent Triangles Isosceles and Equilateral Triangles Perpendicular and angle bisectors Medians and Altitudes of Triangles Midsegments of Triangles Pythagorean Theorem	G.SC.4: Explain, using rigid motion transformations, why two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent. G.SC.5: Develop and apply the criteria for triangle congruence (ASA, SAS, AAS, SSS, and HL) to solve problems and prove geometric relationships. G.GF.4: Apply the Pythagorean Theorem to determine missing measurements in a three-dimensional figure. G.RT.2: Prove and apply the Pythagorean

			Theorem and its converse.
Right Triangle & Trigonometry	12 days	Trigonometric Ratios Solving Right Triangles Angles of Elevation and Depression Special Right Triangles	<p>G.RT.1: Apply the properties of special right triangles (30°-60°-90° and 45°-45°-90°) to solve real-world and mathematical problems.</p> <p>G.RT.3: Explain how the definitions for trigonometric ratios are developed by similarity and how the side ratios in right triangles are properties of the angles in the triangle.</p> <p>G.RT.4: Explain the relationship between the sine and cosine of complementary angles and use them to solve problems.</p> <p>G.RT.5: Determine the sine, cosine, and tangent ratios of acute angles given the side lengths of right triangles.</p>
Similarity	9 days	Ratios and Proportions Triangle Similarity Properties of Similar triangles	<p>G.SC.1: Given two figures, apply the definition of similarity in terms of a dilation to identify similar figures, proportional sides, and corresponding congruent angles.</p> <p>G.SC.2: Develop and apply the criteria of similarity for triangles (AA^\sim, SAS^\sim, and SSS^\sim) to solve problems and prove geometric relationships.</p> <p>G.SC.3: Use transformations to prove all circle are similar.</p>
Polygons & Quadrilaterals	11 days	Properties and attributes of Polygons Parallelograms	<p>G.GF.6: Apply theorems about quadrilaterals, including those involving angles, diagonals, and sides to solve problems.</p> <p>G.GF.7: Prove that a given quadrilateral is a parallelogram, rhombus, rectangle, square, kite, or trapezoid, and apply these relationships to solve problems.</p> <p>G.GF.8: Prove and apply theorems about triangles including:</p> <ul style="list-style-type: none"> ● Angle-Sum Theorem, ● Exterior Angle Theorem, ● Isosceles Triangle Theorem and its converse, ● Midsegment Theorem, ● Proportionality Theorem, ● Inequality Theorem and its converse, and ● Geometric Mean Theorem.
Transformational	11 days	Rotations and Reflections	G.TRF.1: Describe rotations, reflections, and

Geometry		Transformations Symmetry Tessellations	<p>translations as functions that take points in the coordinate plane as inputs and give other points as outputs; write in prime notation.</p> <p>G.TRF.2: Compare transformations that preserve distance and angle (rotations, reflections, and translations) to those that do not (dilations) to develop definitions for congruence and similarity.</p> <p>G.TRF.3: Apply understanding of angles, circles, perpendicular lines, parallel lines, and line segments to develop definitions for rotations, reflections, and translations.</p> <p>G.TRF.4: Use geometric constructions to represent rotations, reflections, translations, and dilations in the plane with a variety of tools and methods.</p> <p>G.TRF.5: Given two congruent figures, identify the sequence of transformations that maps one figure to another.</p> <p>G.RT.6: Use trigonometric ratios (sine, cosine, and tangent) to calculate missing side lengths and angle measures in a right triangle, including applications of angles of elevation and depression; include real-world and mathematical problems.</p>
Perimeter, Circumference, & Area	12 days	Triangles and Quadrilaterals Circles and Regular Polygons Composite Figures Changing Dimensions Geometric Probability	<p>G.GF.9: Calculate the perimeter of polygons when given the vertices, including using the distance formula.</p> <p>G.GF.10: Calculate the area of triangles and rectangles when given the vertices, including using the distance formula and decomposing figures.</p> <p>G.GF.11: Describe reflectional and rotational symmetry as they apply to a rectangle, parallelogram, trapezoid, or regular polygon.</p> <p>G.GF.12: Calculate probabilities as a proportion of area in a geometric context.</p>
Spatial Reasoning	10 days	Solid Geometry Nets Surface Area and Volume	<p>G.GF.1: Find the volume and surface area of complex three-dimensional figures composed of prisms, pyramids, cones, cylinders, and spheres.</p> <p>G.GF.2: Use three-dimensional geometric figures and their measures to model real-world objects and solve problems.</p> <p>G.GF.3: Explain why the formulas</p>

			<p>for the volume and surface area of a cylinder, pyramid, and cone work.</p> <p>G.GF.4: Apply the Pythagorean Theorem to determine missing measurements in a three-dimensional figure.</p> <p>G.GF.5: Identify the three-dimensional figure generated by rotating a two-dimensional figure.</p>
Circles	9 days	<p>Equations of Circles Arcs and Chords Sector Area and Arc length Inscribed Angles Segment of Circle</p>	<p>G.CIR.1: Apply the precise definition and standard geometric notation for a circle to understand geometric relationships.</p> <p>G.CIR.2: Recognize and apply relationships between angles, radii, and chords, tangents, and secants including:</p> <ul style="list-style-type: none"> • 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, and • The relationship of angles and segments formed by chords, secants and/or tangents to a circle. <p>G.CIR.3: Use the proportional relationship between the measure of an arc length of a circle and the circumference of the circle to solve problems.</p> <p>G.CIR.4: Use the proportional relationship between the measure of the area of a sector of a circle and the area of the circle to solve problems.</p> <p>G.CIR.5: Explain why the formulas for the area and circumference of a circle work using dissection and informal limit arguments.</p> <p>G.CIR.6: Write the equation of a circle, given the radius and center, where the center is at the origin or another point.</p>

			<p>G.CIR.7: Identify the center and radius of a circle, given the equation of a circle, where the center is at the origin or another point.</p> <p>G.CIR.8: Apply the equation of a circle to solve real-world problems.</p>
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