



Geometry
Curriculum Guide
2022-2023

Subject: Geometry
Teacher Planning Guide

South Carolina College- and Career-Ready (SCCCR) Geometry

Key Concepts	Standards
Circles	The student will:
	G.GCI.1 Prove that all circles are similar.
	G.GCI.2* Identify and describe relationships among inscribed angles, radii, and chords; among inscribed angles, central angles, and circumscribed angles; and between radii and tangents to circles. Use those relationships to solve mathematical and real-world problems.
	G.GCI.3 Construct the inscribed and circumscribed circles of a triangle using a variety of tools, including a compass, a straightedge, and dynamic geometry software, and prove properties of angles for a quadrilateral inscribed in a circle.
	G.GCI.4 Construct a tangent line to a circle through a point on the circle, and construct a tangent line from a point outside a given circle to the circle; justify the process used for each construction.
	G.GCI.5* Derive the formulas for the length of an arc and the area of a sector in a circle and apply these formulas to solve mathematical and real-world problems.
Congruence	The student will:
	G.GCO.1* Define angle, perpendicular line, parallel line, line segment, ray, circle, and skew in terms of the undefined notions of point, line, and plane. Use geometric figures to represent and describe real-world objects.
	G.GCO.2* Represent translations, reflections, rotations, and dilations of objects in the plane by using paper folding, sketches, coordinates, function notation, and dynamic geometry software, and use various representations to help understand the effects of simple transformations and their compositions.
	G.GCO.3* Describe rotations and reflections that carry a regular polygon onto itself and identify types of symmetry of polygons, including line, point, rotational, and self-congruence, and use symmetry to analyze mathematical situations.
	G.GCO.4* Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
	G.GCO.5* Predict and describe the results of transformations on a given figure using geometric terminology from the definitions of the transformations, and describe a sequence of transformations that maps a figure onto its image.
	G.GCO.6* Demonstrate that triangles and quadrilaterals are congruent by identifying a combination of translations, rotations, and reflections in various representations that move one figure onto the other.
	G.GCO.7* Prove two triangles are congruent by applying the Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, and Hypotenuse-Leg congruence conditions.

Subject: Geometry
Teacher Planning Guide

	<p>G.GCO.8* Prove, and apply in mathematical and real-world contexts, theorems about lines and angles, including the following:</p> <ol style="list-style-type: none"> vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent, alternate exterior angles are congruent, and consecutive interior angles are supplementary; any point on a perpendicular bisector of a line segment is equidistant from the endpoints of the segment; perpendicular lines form four right angles.
	<p>G.GCO.9* Prove, and apply in mathematical and real-world contexts, theorems about the relationships within and among triangles, including the following:</p> <ol style="list-style-type: none"> 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.
	<p>G.GCO.10* Prove, and apply in mathematical and real-world contexts, theorems about parallelograms, including the following:</p> <ol style="list-style-type: none"> opposite sides of a parallelogram are congruent; opposite angles of a parallelogram are congruent; diagonals of a parallelogram bisect each other; rectangles are parallelograms with congruent diagonals; a parallelogram is a rhombus if and only if the diagonals are perpendicular.
	<p>G.GCO.11* Construct geometric figures using a variety of tools, including a compass, a straightedge, dynamic geometry software, and paper folding, and use these constructions to make conjectures about geometric relationships.</p>
Geometric Measurement and Dimension	The student will:
	<p>G.GGMD.1* Explain the derivations of the formulas for the circumference of a circle, area of a circle, and volume of a cylinder, pyramid, and cone. Apply these formulas to solve mathematical and real-world problems.</p>
	<p>G.GGMD.2 Explain the derivation of the formulas for the volume of a sphere and other solid figures using Cavalieri's principle.</p>
	<p>G.GGMD.3* Apply surface area and volume formulas for prisms, cylinders, pyramids, cones, and spheres to solve problems and justify results. Include problems that involve algebraic expressions, composite figures, geometric probability, and real-world applications.</p>
	<p>G.GGMD.4 * Describe the shapes of two-dimensional cross-sections of three-dimensional objects and use those cross-sections to solve mathematical and real-world problems.</p>

Subject: Geometry
Teacher Planning Guide

Expressing Geometric Properties with Equations	The student will:
	G.GGPE.1* Understand that the standard equation of a circle is derived from the definition of a circle and the distance formula.
	G.GGPE.4* Use coordinates to prove simple geometric theorems algebraically.
	G.GGPE.5* Analyze slopes of lines to determine whether lines are parallel, perpendicular, or neither. Write the equation of a line passing through a given point that is parallel or perpendicular to a given line. Solve geometric and real-world problems involving lines and slope.
	G.GGPE.6 Given two points, find the point on the line segment between the two points that divides the segment into a given ratio.
	G.GGPE.7* Use the distance and midpoint formulas to determine distance and midpoint in a coordinate plane, as well as areas of triangles and rectangles, when given coordinates.
Modeling	The student will:
	G.GM.1* Use geometric shapes, their measures, and their properties to describe real-world objects.
	G.GM.2 Use geometry concepts and methods to model real-world situations and solve problems using a model.
Similarity, Right Triangles, and Trigonometry	The student will:
	G.GSRT.1 Understand 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. Verify experimentally the properties of dilations given by a center and a scale factor. Understand the dilation of a line segment is longer or shorter in the ratio given by the scale factor.
	G.GSRT.2* Use the definition of similarity to decide if figures are similar and justify decision. Demonstrate that two figures are similar by identifying a combination of translations, rotations, reflections, and dilations in various representations that move one figure onto the other.
	G.GSRT.3* Prove that two triangles are similar using the Angle-Angle criterion and apply the proportionality of corresponding sides to solve problems and justify results.
	G.GSRT.4* Prove, and apply in mathematical and real-world contexts, theorems involving similarity about triangles, including the following: <ul style="list-style-type: none"> a. A line drawn parallel to one side of a triangle divides the other two sides into parts of equal proportion. b. If a line divides two sides of a triangle proportionally, then it is parallel to the third side. c. The square of the hypotenuse of a right triangle is equal to the sum of squares of the other two sides.
	G.GSRT.5* Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.
G.GSRT.6* Understand how the properties of similar right triangles allow the trigonometric ratios to be defined and determine the sine, cosine, and tangent of an acute angle in a right triangle.	

Subject: Geometry
Teacher Planning Guide

	G.GSRT.7	Explain and use the relationship between the sine and cosine of complementary angles.
	G.GSRT.8*	Solve right triangles in applied problems using trigonometric ratios and the Pythagorean Theorem.
The student will:		
Interpreting Data	G.SPID.1*	Select and create an appropriate display, including dot plots, histograms, and box plots, for data that includes only real numbers.
	G.SPID.2*	Use statistics appropriate to the shape of the data distribution to compare center and spread of two or more different data sets that include all real numbers.
	G.SPID.3*	Summarize and represent data from a single data set. Interpret differences in shape, center, and spread in the context of the data set, accounting for possible effects of extreme data points (outliers).

Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

Semester One

South Carolina College-and Career-Ready Process Standards

G.GCO.1: Define angle, perpendicular line, parallel line, line segment, ray, circle, and skew in terms of the undefined notions of point, line, and plane. Use geometric figures to represent and describe real-world objects.

Unit 1: Foundations of Geometry Part 1

Unit Focus: Students will describe and measure geometric figures and develop an understanding of equality and congruence.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G.GCO.1	I can: <ul style="list-style-type: none">● Identify and model points, line, and planes.● Identify intersecting lines and planes.● Use the Ruler and the Segment Addition Postulates.● Use the Protractor and the Angle Addition Postulates.● Identify congruent segments and congruent angles.	4 Days	EnVision Geometry: <ul style="list-style-type: none">● 1-1 Measuring Segments and Angles Glencoe Geometry: <ul style="list-style-type: none">● 1-1 Points, Lines, and Planes● 1-2 Line Segments and Distance● 1-4 Angle Measure	PPT Basic Definitions PPT Understanding Points, Lines and Planes PPT Measuring Constructing Line Segments Worksheet Measuring and Constructing Line Segments PPT Measuring and Constructing Angles Worksheet Measuring and Construction Angles

Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

G.GCO.11: Construct geometric figures using a variety of tools, including a compass, a straightedge, dynamic geometry software, and paper folding, and use these constructions to make conjectures about geometric relationships.

G.GCO.8c: Prove, and apply in mathematical and real-world contexts, theorems about lines and angles, any point on a perpendicular bisector of a line segment is equidistant from the endpoints of the segment.

Unit 1: Foundations of Geometry Part 2

Unit Focus: Students will construct segments and angles and then apply constructions to solve real-world problems.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G.GCO.11 GCO.8.c	I can: <ul style="list-style-type: none">• Construct copies of segments and angles, perpendicular bisectors of segments and bisectors of angles.• Apply construction to solve problems	2 Days	EnVision Geometry: <ul style="list-style-type: none">• 1-2 Basic Constructions Glencoe Geometry: <ul style="list-style-type: none">• 1-5 Angle Relationships	Worksheet: Copy and Construct PPT Construction

Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards	
<p>G.GCO.8: Prove, and apply in mathematical and real-world contexts, theorems about lines and angles, including the following:</p> <ol style="list-style-type: none"> a) vertical angles are congruent. b) when a transversal crosses parallel lines, alternate interior angles are congruent, alternate exterior angles are congruent, and consecutive interior angles are supplementary. c) any point on a perpendicular bisector of a line segment is equidistant from the endpoints of the segment. d) perpendicular lines form four right angles. 	<p>G.GCO.10: Prove, and apply in mathematical and real-world contexts, theorems about parallelograms, including the following:</p> <ol style="list-style-type: none"> a) opposite sides of a parallelogram are congruent. b) opposite angles of a parallelogram are congruent. c) diagonals of a parallelogram bisect each other. d) rectangles are parallelograms with congruent diagonals. e) a parallelogram is a rhombus if and only if the diagonals are perpendicular.
<p>G.GCO.9: Prove, and apply in mathematical and real-world contexts, theorems about the relationships within and among triangles, including the following:</p> <ol style="list-style-type: none"> a) measures of interior angles of a triangle sum to 180°. b) base angles of isosceles triangles are congruent. c) the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length. d) the medians of a triangle meet at a point. 	

Unit 1: Foundations of Geometry Part 3

Unit Focus: Students will use inductive reasoning and develop an understanding of geometric relationships in diagrams.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G.GCO.8 G.GCO.9 G.GCO.10	<p>I can:</p> <ul style="list-style-type: none"> ● Use inductive reasoning to identify patterns and predictions based on data. ● Use inductive reasoning to provide evidence that conjectures are true or 	6 Days	<p>EnVision Geometry:</p> <ul style="list-style-type: none"> ● 1-4 Inductive Reasoning ● 1-5 Conditional Statement ● 1-6 Deductive Reasoning <p>Glencoe Geometry:</p> <ul style="list-style-type: none"> ● 2-1 Conjectures and Counterexamples ● 2-2 Statements, Conditionals, and Biconditionals 	<p>PPT Using Inductive Reasoning to Make Conjectures</p> <p>Worksheet Using Inductive Reasoning to Make Conjectures</p> <p>PPT Conditional Statements</p> <p>Worksheet Conditional Statements</p> <p>PPT Biconditional Statements and Definitions</p>

Subject: Geometry

Teacher Planning Guide

	<p>provide counterexamples to disprove them.</p> <ul style="list-style-type: none">• Write conditional and biconditional statements.• Find the contrapositive, converse, and inverse of a conditional statement.• Use deductive reasoning to draw a valid conclusion based on a set of as given facts		<ul style="list-style-type: none">• 2-3 Deductive Reasoning	<p>PPT Using Deductive Reasoning to Verify Conjectures</p> <p>Worksheet Using Deductive Reasoning to Verify Conjectures</p>
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Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

G.GCO.1: Define angle, perpendicular line, parallel line, line segment, ray, circle, and skew in terms of the undefined notions of point, line, and plane. Use geometric figures to represent and describe real-world objects

G.GCO.8: Prove, and apply in mathematical and real-world contexts, theorems about lines and angles, including the following:

- a) vertical angles are congruent.
- b) when a transversal crosses parallel lines, alternate interior angles are congruent, alternate exterior angles are congruent, and consecutive interior angles are supplementary.
- c) any point on a perpendicular bisector of a line segment is equidistant from the endpoints of the segment.
- d) perpendicular lines form four right angles

Unit 2: Parallel and Perpendicular Lines Part 1

Unit Focus: Students will describe angle pairs, use properties and postulates, and angle pair relationships.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G.GCO.1 G.GCO.8	I can: <ul style="list-style-type: none">● Define parallel lines using the undefined terms <i>point</i> and <i>line</i>.● Prove theorems about lines and angles.● Use theorems to find the measures of angles formed by parallel lines and a transversal.	2 Days	EnVision Geometry: <ul style="list-style-type: none">● 2-1 Parallel Line	PPT Lines and Angles PPT Angles Formed by Parallel Lines and Transversal

Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

<p>G.GCO.9: Prove, and apply in mathematical and real-world contexts, theorems about the relationships within and among triangles, including the following:</p> <ul style="list-style-type: none"> a) measures of interior angles of a triangle sum to 180°. b) base angles of isosceles triangles are congruent. c) the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length. d) the medians of a triangle meet at a point. 	<p>G.GCO.8: Prove, and apply in mathematical and real-world contexts, theorems about lines and angles, including the following:</p> <ul style="list-style-type: none"> a) vertical angles are congruent. b) when a transversal crosses parallel lines, alternate interior angles are congruent, alternate exterior angles are congruent, and consecutive interior angles are supplementary. c) any point on a perpendicular bisector of a line segment is equidistant from the endpoints of the segment. d) perpendicular lines form four right angles.
<p>G.GM.2: Use geometry concepts and methods to model real-world situations and solve problems using a model.</p>	<p>G.GM.1: Use geometric shapes, their measures, and their properties to describe real-world objects.</p>
<p>G. GGPE.5: Analyze slopes of lines to determine whether lines are parallel, perpendicular, or neither. Write the equation of a line passing through a given point that is parallel or perpendicular to a given line. Solve geometric and real-world problems involving lines and slope.</p>	

Unit 2: Parallel and Perpendicular Lines Part 2

Unit Focus: Students will use properties and theorems to prove that two lines are parallel.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
<p>G.GCO.8 G.GM.1 G.GM.2 G.GCO.9 G. GGPE.5</p>	<p>I can:</p> <ul style="list-style-type: none"> ● Prove that two lines cut by a transversal are parallel using the converses of parallel line angle relationship theorems. ● Use properties of parallel lines and transversals to solve real-world and mathematical problems. 	<p>10 Days</p>	<p>EnVision Geometry:</p> <ul style="list-style-type: none"> ● 2-2 Proving Lines Parallel ● 2-3 Parallel Lines and Triangle Angle Sums ● 2-4 Slopes of Parallel and Perpendicular Lines <p>Glencoe Geometry:</p> <ul style="list-style-type: none"> ● 2-7 Parallel Lines and Transversals ● 2-8 Slope and Equations of Lines ● 2-9 Proving Lines Parallel ● 2-10 Perpendiculars and Distance 	<p>PPT Proving Lines are Parallel PPT Slopes of Lines PPT Parallel Lines and Triangle Angle Sums PPT Angles of a Triangle PPT Exterior Angles Theorem PPT Perpendicular Lines</p>

Subject: Geometry

Teacher Planning Guide

	<ul style="list-style-type: none">● Use lines constructed parallel to another line to solve problems and prove theorems.● Use the sum of the angle measures in a triangle to solve problems.● Show that two lines in the coordinate plane are parallel by comparing their slopes and solve problems.● Show that two lines in the coordinate plane are perpendicular by comparing their slopes and use the information to solve problems.			
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Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

<p>G.GCO.2: Represent translations, reflections, rotations, and dilations of objects in the plane by using paper folding, sketches, coordinates, function notation, and dynamic geometry software, and use various representations to help understand the effects of simple transformations and their compositions.</p>	<p>G.GCO.3: Describe rotations and reflections that carry a regular polygon onto itself and identify types of symmetry of polygons, including line, point, rotational, and self-congruence, and use symmetry to analyze mathematical situations.</p>
<p>G.GCO.4: Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.</p>	<p>G.GCO.5: Predict and describe the results of transformations on a given figure using geometric terminology from the definitions of the transformations and describe a sequence of transformations that maps a figure onto its image.</p>
<p>G.GCO.6: Demonstrate that triangles and quadrilaterals are congruent by identifying a combination of translations, rotations, and reflections in various representations that move one figure onto the other.</p>	

Unit 3: Transformation

Unit Focus: Students will transform polygons through translations, reflections, and rotations.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
<p>G.GCO.2 G.GCO.3 G.GCO.4 G.GCO.5 G.GCO.6</p>	<p>I can:</p> <ul style="list-style-type: none"> ● Find a reflected image and write a rule for a reflection. ● Define reflection as a transformation across a line of a reflection with given properties and perform reflections on and off a coordinate grid. ● Translate a figure and write a rule for a translation. ● Find the image of a figure after a composition of rigid motions. ● Rotate a figure and write a rule for a rotation. 	<p>6 Days</p>	<p>EnVision Geometry:</p> <ul style="list-style-type: none"> ● 3-1 Reflections ● 3-2 Translations ● 3-3 Rotations ● 3-4 Classification of Rigid Motions ● 3-5 Symmetry <p>Glencoe Geometry:</p> <ul style="list-style-type: none"> ● 3-1 Reflections ● 3-2 Translations ● 3-3 Rotations ● 3-4 Compositions of Transformations ● 3-5 Symmetry 	<p>PPT Translations PPT Reflections PPT Rotations PPT Dilations</p>

Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards	
G.GCO.5: Predict and describe the results of transformations on a given figure using geometric terminology from the definitions of the transformations and describe a sequence of transformations that maps a figure onto its image.	G.GCO.6: Demonstrate that triangles and quadrilaterals are congruent by identifying a combination of translations, rotations, and reflections in various representations that move one figure onto the other.
G.GCO.7: Prove two triangles are congruent by applying the Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, and Hypotenuse-Leg congruence conditions.	G.GCO.9: Prove, and apply in mathematical and real-world contexts, theorems about the relationships within and among triangles, including the following: <ul style="list-style-type: none"> a) measures of interior angles of a triangle sum to 180°; b) base angles of isosceles triangles are congruent; c) the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; d) the medians of a triangle meet at a point.
G. GSRT.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	

Unit 4: Triangle Congruence				
Unit Focus: Students will use the ratios to solve triangles and prove congruency.				
Standards	Sequenced Objectives	Scope	Content-Location	Resources
G.GCO.5, G.GCO.6, G.GCO.7 G.GCO.9 G. GSRT.5	I can: <ul style="list-style-type: none"> ● Demonstrate that two figures are congruent by using one or more rigid motions to map one onto the other. ● Identify congruent triangles using properties of isosceles and equilateral triangles (solve problems). ● Prove triangle congruence by SAS and SSS criteria and use triangle congruence to solve problems. 	10 Days	EnVision Geometry <ul style="list-style-type: none"> ● 4-1 Congruence ● 4-2 Isosceles and Equilateral Triangles ● 4-3 Proving and Applying the SAS and SSS Congruence Criteria ● 4-4 Proving and Applying the ASA and AAS Congruence Criteria Glencoe Geometry: <ul style="list-style-type: none"> ● 4-1 Angles of Triangles ● 4-2 Congruent Triangles ● 4-6 Isosceles and Equilateral Triangles ● 4-3 Proving Triangle Congruent – SSS, SAS ● 4-4 Proving Triangles Congruent – ASA, AAS 	PPT Triangle Congruence: SSS & SAS PPT Triangle Congruence CPCPTC PPT Triangle Congruence, AAS, ASA, HL

Subject: Geometry

Teacher Planning Guide

	<ul style="list-style-type: none">• Prove that two triangles are congruent using ASA and AAS criteria and apply ASA to solve problems.• Prove and use the Hypotenuse-Leg Theorem.		<ul style="list-style-type: none">• 4-5 Congruence in Right Triangles	
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Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

<p>G.GCO.6: Demonstrate that triangles and quadrilaterals are congruent by identifying a combination of translations, rotations, and reflections in various representations that move one figure onto the other</p>	<p>G.GCO.10: Prove, and apply in mathematical and real-world contexts, theorems about parallelograms, including the following:</p> <ul style="list-style-type: none"> a) opposite sides of a parallelogram are congruent; b) opposite angles of a parallelogram are congruent. c) diagonals of a parallelogram bisect each other. d) rectangles are parallelograms with congruent diagonals. e) a parallelogram is a rhombus if and only if the diagonals are perpendicular.
<p>G.GCO.7: Prove two triangles are congruent by applying the Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, and Hypotenuse-Leg congruence conditions.</p>	<p>G. GSRT.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.</p>
<p>G.GCI.3: Construct the inscribed and circumscribed circles of a triangle using a variety of tools, including a compass, a straightedge, and dynamic geometry software, and prove properties of angles for a quadrilateral inscribed in a circle.</p>	

Unit 5: Quadrilaterals and Other Polygons

Unit Focus: Students will use angle relationships in polygons and parallelograms and classify quadrilaterals by their properties.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
<p>G. GSRT.5, G.GCO.6 G.GCO.7 G.GCO.10 G.GCI.3</p>	<p>I can:</p> <ul style="list-style-type: none"> ● Show that sum of the exterior angles of a polygon is 360° and use that to solve problems. ● Show that the sum of the interior angles of a polygon is the product of 180° and two less than the number of sides and use that to solve problems. 	<p>10 Days</p>	<p>EnVision Geometry:</p> <ul style="list-style-type: none"> ● 6-1 The Polygon Angle-Sum Theorems ● 6-3 Properties of Parallelograms ● 6-5 Properties of Special Parallelograms <p>Glencoe Geometry:</p> <ul style="list-style-type: none"> ● 6-1 Angles of a Polygon ● 6-2 Parallelograms ● 6-4 Rectangles ● 6-5 Parallelograms, Rhombus, Squares 	<p>PPT Angles of a Polygon PPT Properties of Parallelograms PPT Properties of Trapezoid PPT Special Parallelogram PPT Properties and Attributes of Polygon PPT Properties of a Parallelogram</p>

Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

G.GCO.5: Predict and describe the results of transformations on a given figure using geometric terminology from the definitions of the transformations and describe a sequence of transformations that maps a figure onto its image.	G.GCO.1: Define angle, perpendicular line, parallel line, line segment, ray, circle, and skew in terms of the undefined notions of point, line, and plane. Use geometric figures to represent and describe real-world objects.
G. GSRT.4: Prove, and apply in mathematical and real-world contexts, theorems involving similarity about triangles, including the following: a) A line drawn parallel to one side of a triangle divides the other two sides into parts of equal proportion. b) If a line divides two sides of a triangle proportionally, then it is parallel to the third side. c) The square of the hypotenuse of a right triangle is equal to the sum of squares of the other two sides.	G.GCO.9: Prove, and apply in mathematical and real-world contexts, theorems about the relationships within and among triangles, including the following: a) measures of interior angles of a triangle sum to 180° . b) base angles of isosceles triangles are congruent. c) the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length. d) the medians of a triangle meet at a point.
G. GSRT.1: Understand 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. Verify experimentally the properties of dilations given by a center and a scale factor. Understand the dilation of a line segment is longer or shorter in the ratio given by the scale factor.	G. GSRT.2: Use the definition of similarity to decide if figures are similar and justify decision. Demonstrate that two figures are similar by identifying a combination of translations, rotations, reflections, and dilations in various representations that move one figure onto the other.
G. GSRT.3: Prove that two triangles are similar using the Angle-Angle criterion and apply the proportionality of corresponding sides to solve problems and justify results.	G. GSRT.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures

Unit 6: Similarity

Unit Focus: Students will use properties of parallel lines and triangles, simplify expressions, and find perimeter to solve real-world problems.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G. GSRT.1 G.GCO.1 G.GCO.5 G. GSRT.4 G. GSRT.5 G. GSRT.4 G.GCO.9 G. GSRT.2 G. GSRT.3	I can: <ul style="list-style-type: none"> Dilate figures on and off the coordinate plane. Identify a combination of rigid motions and dilation that maps one figure to a similar figure. Identify the coordinates of an image under a 	8 Days	EnVision Geometry: <ul style="list-style-type: none"> 7-1 Dilations 7-2 Similarity Transformations 7-4 Similarity in Right Triangles Geometry: <ul style="list-style-type: none"> 7-1 Dilations 7-2 Polygon 7-3 AA Similarity 7-4 SSS and SAS Similarity 	PPT Ratios and Proportions PPT Similar Figures

Subject: Geometry

Teacher Planning Guide

	<p>similarity transformation.</p> <ul style="list-style-type: none">● Use similarity of right triangles to solve problems.● Use length relationships of the sides of right triangles and an altitude drawn to the hypotenuse to solve problems.			
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Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

G. GSRT.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	G. GSRT.6: Understand how the properties of similar right triangles allow the trigonometric ratios to be defined and determine the sine, cosine, and tangent of an acute angle in a right triangle.
G. GSRT.7: Explain and use the relationship between the sine and cosine of complementary angles.	G. GSRT.8: Solve right triangles in applied problems using trigonometric ratios and the Pythagorean Theorem.

Unit 7: Right Triangles

Unit Focus: Students will use the Pythagorean Theorem and its converse, and special relationships in right triangles.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G. GSRT.5 G. GSRT.6 G. GSRT.7 G. GSRT.8	I can: <ul style="list-style-type: none"> • Prove the Pythagorean Theorem using similar right triangles. • Understand and apply the relationships between side lengths in $45^\circ - 45^\circ - 90^\circ$ and $30^\circ - 60^\circ - 90^\circ$ triangles. 	4 Days	EnVision Geometry: <ul style="list-style-type: none"> • 8-1 Right Triangles and the Pythagorean Theorem Geometry: <ul style="list-style-type: none"> • 8-2 The Pythagorean Theorem & Its Inverse • 8-3 Special Right Triangles 	PPT Special Right Triangles PPT Pythagorean Theorem

Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

G.GCO.1: Define angle, perpendicular line, parallel line, line segment, ray, circle, and skew in terms of the undefined notions of point, line, and plane. Use geometric figures to represent and describe real-world objects.	G. GGPE.7: Use the distance and midpoint formulas to determine distance and midpoint in a coordinate plane, as well as areas of triangles and rectangles, when given coordinates.
G. GGPE.1: Understand that the standard equation of a circle is derived from the definition of a circle and the distance formula.	G. GGPE.4: Use coordinates to prove simple geometric theorems algebraically.
G. GGPE.6: Given two points, find the point on the line segment between the two points that divides the segment into a given ratio.	

Unit 8: Coordinate Geometry

Unit Focus: Students will use area formulas for polygons, relate length, perimeter, and area ratios in similar polygons. Students will also measure for parts of circles and the whole circle

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G. GGPE.4 G. GGPE.6 G. GGPE.7 G.GCO.1 G. GGPE.1	I can: <ul style="list-style-type: none"> Solve problems involving triangles and polygons on coordinate plane. Write and graph the equation for a circle given the graph of the circle or given the center and radius of the circle. Calculate the area and circumference of a circle. Measure angles and arcs of a circle. Find the surface area of a given shape 	6 Days	EnVision Geometry: <ul style="list-style-type: none"> 9-1 Polygons in the Coordinate Plane 9-3 Circles in the Coordinate Plane Geometry: <ul style="list-style-type: none"> 10-1 Areas of Parallelograms & Triangles 10-2 Area of Trapezoids, Rhombi, and Kites 10-3 Area of Circle & Sectors 10-4 Areas of Regular Polygons 10-5 Area of Non-rigid Transformations 10-6 Surface Area 	PPT Similar Solids

Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

G.GCO.1: Define angle, perpendicular line, parallel line, line segment, ray, circle, and skew in terms of the undefined notions of point, line, and plane. Use geometric figures to represent and describe real-world objects.	G.GCO.11: Construct geometric figures using a variety of tools, including a compass, a straightedge, dynamic geometry software, and paper folding, and use these constructions to make conjectures about geometric relationships.
G.GCI.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	G.GCI.2: Identify and describe relationships among inscribed angles, radii, and chords; among inscribed angles, central angles, and circumscribed angles; and between radii and tangents to circles. Use those relationships to solve mathematical and real-world problems.

Unit 9: Circles

Unit Focus: Students will use properties of segments that intersect circles, apply angle relationships in circles and use circles in the coordinate plane

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G.GCO.1 G.GCI.5 G.GCI.2 G.GCO.11	I can: <ul style="list-style-type: none"> • Calculate the length of an arc when the central angle is given in degrees or radians. • Calculate the circumference and area of a circles & its sectors. • Find lengths of chords given the distance from the center of the circle. • Use the tangent line to solve problems. 	6 Days	EnVision: <ul style="list-style-type: none"> • 10-1 Arcs and Sectors • 10-2 Lines Tangent to a Circle • 10-3 Chords Geometry: <ul style="list-style-type: none"> • 9-1 Circles & Circumference • 9-2 Measuring Angles & Arcs • 9-3 Arcs and Chords • 9-7 Equations of Circles 	PPT Circle, Arcs, Angles PPT Segments Lengths and Sectors PPT Equations of a Circle PPT Area of a Circle

Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards	
G.GM.1: Use geometric shapes, their measures, and their properties to describe real-world objects.	G.GM.2: Use geometry concepts and methods to model real-world situations and solve problems using a model
G. GGMD.1: Explain the derivations of the formulas for the circumference of a circle, area of a circle, and volume of a cylinder, pyramid, and cone. Apply these formulas to solve mathematical and real-world problems.	G. GGMD.2: Explain the derivation of the formulas for the volume of a sphere and other solid figures using Cavalieri’s principle.
G. GGMD.3: Apply surface area and volume formulas for prisms, cylinders, pyramids, cones, and spheres to solve problems and justify results. Include problems that involve algebraic expressions, composite figures, geometric probability, and real-world applications.	G. GGMD.4: Describe the shapes of two-dimensional cross-sections of three-dimensional objects and use those cross sections to solve mathematical and real-world problems.

Unit 10: Two- and Three-Dimensional Models				
Unit Focus: Students will explore solids and their properties, solve problems using surface area and volume and connect similarity to solid				
Standards	Sequenced Objectives	Scope	Content-Location	Resources
G. GGMD.4 G. GGMD.1 G.GGMD.2 G. GGMD.3 G.GM.1 G.GM.2	I can: <ul style="list-style-type: none"> ● Use Euler’s Formula to calculate the number of vertices, faces, and edges in polyhedrons. ● Describe rotations of polygons about an axis ● Model 3-dimensional figures and calculate volumes and surface areas of spheres, prisms, spheres, pyramids, and composite figures. 	8 Days	EnVision: <ul style="list-style-type: none"> ● 11-1 Three Dimensional Figures and Cross Sections ● 11-2 Volumes of Prisms and Cylinders ● 11-3 Pyramids and Cones ● 11.4 Spheres 	PPT Area of Polygons & Circles PPT Prisms & Cylinders PPT Pyramids & Cones PPT Spheres

Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

G. SPID.1: Select and create an appropriate display, including dot plots, histograms, and box plots, for data that includes only real numbers.	G. SPID.2: Use statistics appropriate to the shape of the data distribution to compare center and spread of two or more different data sets that include all real numbers.
G. SPID.3: Summarize and represent data from a single data set. Interpret differences in shape, center, and spread in the context of the data set, accounting for possible effects of extreme data points (outliers).	

Unit 11: Data Analysis

Unit Focus: Students will construct, organize and display data to answer questions and use descriptive statistics to summarize data sets.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G. SPID.1 G. SPID.3 G. SPID.2	<p>I can:</p> <ul style="list-style-type: none"> Construct dot plots, histogram, and box plots of data sets. Summarize data sets by describing the central tendency, variation, and shape of the distribution. Describe the skewness and symmetry of a graph of data set. Compare data sets using central tendency, variation, and shape of the distribution. 	6 Days	<p>EnVision:</p> <ul style="list-style-type: none"> 12-1 Data Presentation 12-2 Shapes of Distribution 	Stats

Subject: Geometry
Teacher Planning Guide
Based on 90 Minutes of Daily Instruction
Semester Two

South Carolina College-and Career-Ready Process Standards

G.GCO.1: Define angle, perpendicular line, parallel line, line segment, ray, circle, and skew in terms of the undefined notions of point, line, and plane. Use geometric figures to represent and describe real-world objects.

Unit 1: Foundations of Geometry Part 1

Unit Focus: Students will describe and measure geometric figures and develop an understanding of equality and congruence.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G.GCO.1	I can: <ul style="list-style-type: none"> ● Identify and model points, line, and planes. ● Identify intersecting lines and planes. ● Use the Ruler and the Segment Addition Postulates. ● Use the Protractor and the Angle Addition Postulates. ● Identify congruent segments and congruent angles. 	4 Days	EnVision Geometry: <ul style="list-style-type: none"> ● 1-1 Measuring Segments and Angles Glencoe Geometry: <ul style="list-style-type: none"> ● 1-1 Points, Lines, and Planes ● 1-2 Line Segments and Distance ● 1-4 Angle Measure 	PPT Basic Definitions PPT Understanding Points, Lines and Planes PPT Measuring Constructing Line Segments Worksheet Measuring and Constructing Line Segments PPT Measuring and Constructing Angles Worksheet Measuring and Construction Angles

Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

G.GCO.11: Construct geometric figures using a variety of tools, including a compass, a straightedge, dynamic geometry software, and paper folding, and use these constructions to make conjectures about geometric relationships.

G.GCO.8c: Prove, and apply in mathematical and real-world contexts, theorems about lines and angles, any point on a perpendicular bisector of a line segment is equidistant from the endpoints of the segment.

Unit 1: Foundations of Geometry Part 2

Unit Focus: Students will construct segments and angles and then apply constructions to solve real-world problems.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G.GCO.11 GCO.8.c	I can: <ul style="list-style-type: none">• Construct copies of segments and angles, perpendicular bisectors of segments and bisectors of angles.• Apply construction to solve problems	2 Days	EnVision Geometry: <ul style="list-style-type: none">• 1-2 Basic Constructions Glencoe Geometry: <ul style="list-style-type: none">• 1-5 Angle Relationships	Worksheet: Copy and Construct PPT Construction

Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards	
<p>G.GCO.8: Prove, and apply in mathematical and real-world contexts, theorems about lines and angles, including the following:</p> <ul style="list-style-type: none"> e) vertical angles are congruent. f) when a transversal crosses parallel lines, alternate interior angles are congruent, alternate exterior angles are congruent, and consecutive interior angles are supplementary. g) any point on a perpendicular bisector of a line segment is equidistant from the endpoints of the segment. h) perpendicular lines form four right angles. 	<p>G.GCO.10: Prove, and apply in mathematical and real-world contexts, theorems about parallelograms, including the following:</p> <ul style="list-style-type: none"> f) opposite sides of a parallelogram are congruent. g) opposite angles of a parallelogram are congruent. h) diagonals of a parallelogram bisect each other. i) rectangles are parallelograms with congruent diagonals. j) a parallelogram is a rhombus if and only if the diagonals are perpendicular.
<p>G.GCO.9: Prove, and apply in mathematical and real-world contexts, theorems about the relationships within and among triangles, including the following:</p> <ul style="list-style-type: none"> e) measures of interior angles of a triangle sum to 180°. f) base angles of isosceles triangles are congruent. g) the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length. h) the medians of a triangle meet at a point. 	

Unit 1: Foundations of Geometry Part 3

Unit Focus: Students will use inductive reasoning and develop an understanding of geometric relationships in diagrams.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G.GCO.8 G.GCO.9 G.GCO.10	<p>I can:</p> <ul style="list-style-type: none"> ● Use inductive reasoning to identify patterns and predictions based on data. ● Use inductive reasoning to provide evidence that conjectures are true or provide counterexamples to disprove them. 	6 Days	<p>EnVision Geometry:</p> <ul style="list-style-type: none"> ● 1-4 Inductive Reasoning ● 1-5 Conditional Statement ● 1-6 Deductive Reasoning <p>Glencoe Geometry:</p> <ul style="list-style-type: none"> ● 2-1 Conjectures and Counterexamples ● 2-2 Statements, Conditionals, and Biconditionals ● 2-3 Deductive Reasoning 	<p>PPT Using Inductive Reasoning to Make Conjectures</p> <p>Worksheet Using Inductive Reasoning to Make Conjectures</p> <p>PPT Conditional Statements</p> <p>Worksheet Conditional Statements</p> <p>PPT Biconditional Statements and Definitions</p> <p>PPT Using Deductive Reasoning to Verify Conjectures</p>

Subject: Geometry

Teacher Planning Guide

	<ul style="list-style-type: none">• Write conditional and biconditional statements.• Find the contrapositive, converse, and inverse of a conditional statement.• Use deductive reasoning to draw a valid conclusion based on a set of as given facts			Worksheet Using Deductive Reasoning to Verify Conjectures
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Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

G.GCO.1: Define angle, perpendicular line, parallel line, line segment, ray, circle, and skew in terms of the undefined notions of point, line, and plane. Use geometric figures to represent and describe real-world objects

G.GCO.8: Prove, and apply in mathematical and real-world contexts, theorems about lines and angles, including the following:

- e) vertical angles are congruent.
- f) when a transversal crosses parallel lines, alternate interior angles are congruent, alternate exterior angles are congruent, and consecutive interior angles are supplementary.
- g) any point on a perpendicular bisector of a line segment is equidistant from the endpoints of the segment.
- h) perpendicular lines form four right angles

Unit 2: Parallel and Perpendicular Lines Part 1

Unit Focus: Students will describe angle pairs, use properties and postulates, and angle pair relationships.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G.GCO.1 G.GCO.8	I can: <ul style="list-style-type: none"> ● Define parallel lines using the undefined terms <i>point</i> and <i>line</i>. ● Prove theorems about lines and angles. ● Use theorems to find the measures of angles formed by parallel lines and a transversal. 	2 Days	EnVision Geometry: <ul style="list-style-type: none"> ● 2-1 Parallel Line 	PPT Lines and Angles PPT Angles Formed by Parallel Lines and Transversal

Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

<p>G.GCO.9: Prove, and apply in mathematical and real-world contexts, theorems about the relationships within and among triangles, including the following:</p> <ul style="list-style-type: none"> e) measures of interior angles of a triangle sum to 180°. f) base angles of isosceles triangles are congruent. g) the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length. h) the medians of a triangle meet at a point. 	<p>G.GCO.8: Prove, and apply in mathematical and real-world contexts, theorems about lines and angles, including the following:</p> <ul style="list-style-type: none"> e) vertical angles are congruent. f) when a transversal crosses parallel lines, alternate interior angles are congruent, alternate exterior angles are congruent, and consecutive interior angles are supplementary. g) any point on a perpendicular bisector of a line segment is equidistant from the endpoints of the segment. h) perpendicular lines form four right angles.
<p>G.GM.2: Use geometry concepts and methods to model real-world situations and solve problems using a model.</p>	<p>G.GM.1: Use geometric shapes, their measures, and their properties to describe real-world objects.</p>
<p>G. GGPE.5: Analyze slopes of lines to determine whether lines are parallel, perpendicular, or neither. Write the equation of a line passing through a given point that is parallel or perpendicular to a given line. Solve geometric and real-world problems involving lines and slope.</p>	

Unit 2: Parallel and Perpendicular Lines Part 2

Unit Focus: Students will use properties and theorems to prove that two lines are parallel.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
<p>G.GCO.8 G.GM.1 G.GM.2 G.GCO.9 G. GGPE.5</p>	<p>I can:</p> <ul style="list-style-type: none"> ● Prove that two lines cut by a transversal are parallel using the converses of parallel line angle relationship theorems. ● Use properties of parallel lines and transversals to solve real-world and mathematical problems. ● Use lines constructed parallel to another line to 	<p>10 Days</p>	<p>EnVision Geometry:</p> <ul style="list-style-type: none"> ● 2-2 Proving Lines Parallel ● 2-3 Parallel Lines and Triangle Angle Sums ● 2-4 Slopes of Parallel and Perpendicular Lines <p>Glencoe Geometry:</p> <ul style="list-style-type: none"> ● 2-7 Parallel Lines and Transversals ● 2-8 Slope and Equations of Lines ● 2-9 Proving Lines Parallel ● 2-10 Perpendiculars and Distance 	<p>PPT Proving Lines are Parallel PPT Slopes of Lines PPT Parallel Lines and Triangle Angle Sums PPT Angles of a Triangle PPT Exterior Angles Theorem PPT Perpendicular Lines</p>

Subject: Geometry

Teacher Planning Guide

	<p>solve problems and prove theorems.</p> <ul style="list-style-type: none">● Use the sum of the angle measures in a triangle to solve problems.● Show that two lines in the coordinate plane are parallel by comparing their slopes and solve problems.● Show that two lines in the coordinate plane are perpendicular by comparing their slopes and use the information to solve problems.			
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Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards	
G.GCO.2: Represent translations, reflections, rotations, and dilations of objects in the plane by using paper folding, sketches, coordinates, function notation, and dynamic geometry software, and use various representations to help understand the effects of simple transformations and their compositions.	G.GCO.3: Describe rotations and reflections that carry a regular polygon onto itself and identify types of symmetry of polygons, including line, point, rotational, and self-congruence, and use symmetry to analyze mathematical situations.
G.GCO.4: Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.	G.GCO.5: Predict and describe the results of transformations on a given figure using geometric terminology from the definitions of the transformations and describe a sequence of transformations that maps a figure onto its image.
G.GCO.6: Demonstrate that triangles and quadrilaterals are congruent by identifying a combination of translations, rotations, and reflections in various representations that move one figure onto the other.	

Unit 3: Transformation				
Unit Focus: Students will transform polygons through translations, reflections, and rotations.				
Standards	Sequenced Objectives	Scope	Content-Location	Resources
G.GCO.2 G.GCO.3 G.GCO.4 G.GCO.5 G.GCO.6	<p>I can:</p> <ul style="list-style-type: none"> ● Find a reflected image and write a rule for a reflection. ● Define reflection as a transformation across a line of a reflection with given properties and perform reflections on and off a coordinate grid. ● Translate a figure and write a rule for a translation. ● Find the image of a figure after a composition of rigid motions. ● Rotate a figure and write a rule for a rotation. 	6 Days	<p>EnVision Geometry:</p> <ul style="list-style-type: none"> ● 3-1 Reflections ● 3-2 Translations ● 3-3 Rotations ● 3-4 Classification of Rigid Motions ● 3-5 Symmetry <p>Glencoe Geometry:</p> <ul style="list-style-type: none"> ● 3-1 Reflections ● 3-2 Translations ● 3-3 Rotations ● 3-4 Compositions of Transformations ● 3-5 Symmetry 	<p>PPT Translations</p> <p>PPT Reflections</p> <p>PPT Rotations</p> <p>PPT Dilations</p>

Based on 90 Minutes of Daily Instruction

Subject: Geometry

Teacher Planning Guide

South Carolina College-and Career-Ready Process Standards	
G.GCO.5: Predict and describe the results of transformations on a given figure using geometric terminology from the definitions of the transformations and describe a sequence of transformations that maps a figure onto its image.	G.GCO.6: Demonstrate that triangles and quadrilaterals are congruent by identifying a combination of translations, rotations, and reflections in various representations that move one figure onto the other.
G.GCO.7: Prove two triangles are congruent by applying the Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, and Hypotenuse-Leg congruence conditions.	G.GCO.9: Prove, and apply in mathematical and real-world contexts, theorems about the relationships within and among triangles, including the following: <ul style="list-style-type: none"> e) measures of interior angles of a triangle sum to 180°; f) base angles of isosceles triangles are congruent; g) the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; h) the medians of a triangle meet at a point.
G. GSRT.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	

Unit 4: Triangle Congruence				
Unit Focus: Students will use the ratios to solve triangles and prove congruency.				
Standards	Sequenced Objectives	Scope	Content-Location	Resources
G.GCO.5, G.GCO.6, G.GCO.7 G.GCO.9 G. GSRT.5	I can: <ul style="list-style-type: none"> ● Demonstrate that two figures are congruent by using one or more rigid motions to map one onto the other. ● Identify congruent triangles using properties of isosceles and equilateral triangles (solve problems). ● Prove triangle congruence by SAS and SSS criteria and use triangle congruence to solve problems. ● Prove that two triangles are congruent using ASA and AAS criteria and 	10 Days	EnVision Geometry <ul style="list-style-type: none"> ● 4-1 Congruence ● 4-2 Isosceles and Equilateral Triangles ● 4-3 Proving and Applying the SAS and SSS Congruence Criteria ● 4-4 Proving and Applying the ASA and AAS Congruence Criteria Glencoe Geometry: <ul style="list-style-type: none"> ● 4-1 Angles of Triangles ● 4-2 Congruent Triangles ● 4-6 Isosceles and Equilateral Triangles ● 4-3 Proving Triangle Congruent – SSS, SAS ● 4-4 Proving Triangles Congruent – ASA, AAS ● 4-5 Congruence in Right Triangles 	PPT Triangle Congruence: SSS & SAS PPT Triangle Congruence CPCPTC PPT Triangle Congruence, AAS, ASA, HL

Subject: Geometry

Teacher Planning Guide

	<p>apply ASA to solve problems.</p> <ul style="list-style-type: none">• Prove and use the Hypotenuse-Leg Theorem.			
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Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

G.GCO.6: Demonstrate that triangles and quadrilaterals are congruent by identifying a combination of translations, rotations, and reflections in various representations that move one figure onto the other	G.GCO.10: Prove, and apply in mathematical and real-world contexts, theorems about parallelograms, including the following: a) opposite sides of a parallelogram are congruent; f) opposite angles of a parallelogram are congruent. g) diagonals of a parallelogram bisect each other. h) rectangles are parallelograms with congruent diagonals. i) a parallelogram is a rhombus if and only if the diagonals are perpendicular.
G.GCO.7: Prove two triangles are congruent by applying the Side-Angle-Side, Angle-Side-Angle, Angle-Angle-Side, and Hypotenuse-Leg congruence conditions.	G. GSRT.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.
G.GCI.3: Construct the inscribed and circumscribed circles of a triangle using a variety of tools, including a compass, a straightedge, and dynamic geometry software, and prove properties of angles for a quadrilateral inscribed in a circle.	

Unit 5: Quadrilaterals and Other Polygons

Unit Focus: Students will use angle relationships in polygons and parallelograms and classify quadrilaterals by their properties.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G. GSRT.5, G.GCO.6 G.GCO.7 G.GCO.10 G.GCI.3	I can: <ul style="list-style-type: none"> Show that sum of the exterior angles of a polygon is 360° and use that to solve problems. Show that the sum of the interior angles of a polygon is the product of 180° and two less than the number of sides and use that to solve problems. 	10 Days	EnVision Geometry: <ul style="list-style-type: none"> 6-1 The Polygon Angle-Sum Theorems 6-3 Properties of Parallelograms 6-5 Properties of Special Parallelograms Glencoe Geometry: <ul style="list-style-type: none"> 6-1 Angles of a Polygon 6-2 Parallelograms 6-4 Rectangles 6-5 Parallelograms, Rhombus, Squares 	PPT Angles of a Polygon PPT Properties of Parallelograms PPT Properties of Trapezoid PPT Special Parallelogram PPT Properties and Attributes of Polygon PPT Properties of a Parallelogram

Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

G.GCO.5: Predict and describe the results of transformations on a given figure using geometric terminology from the definitions of the transformations and describe a sequence of transformations that maps a figure onto its image.	G.GCO.1: Define angle, perpendicular line, parallel line, line segment, ray, circle, and skew in terms of the undefined notions of point, line, and plane. Use geometric figures to represent and describe real-world objects.
G. GSRT.4: Prove, and apply in mathematical and real-world contexts, theorems involving similarity about triangles, including the following: d) A line drawn parallel to one side of a triangle divides the other two sides into parts of equal proportion. e) If a line divides two sides of a triangle proportionally, then it is parallel to the third side. f) The square of the hypotenuse of a right triangle is equal to the sum of squares of the other two sides.	G.GCO.9: Prove, and apply in mathematical and real-world contexts, theorems about the relationships within and among triangles, including the following: b) measures of interior angles of a triangle sum to 180° . e) base angles of isosceles triangles are congruent. f) the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length. g) the medians of a triangle meet at a point.
G. GSRT.1: Understand 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. Verify experimentally the properties of dilations given by a center and a scale factor. Understand the dilation of a line segment is longer or shorter in the ratio given by the scale factor.	G. GSRT.2: Use the definition of similarity to decide if figures are similar and justify decision. Demonstrate that two figures are similar by identifying a combination of translations, rotations, reflections, and dilations in various representations that move one figure onto the other.
G. GSRT.3: Prove that two triangles are similar using the Angle-Angle criterion and apply the proportionality of corresponding sides to solve problems and justify results.	G. GSRT.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures

Unit 6: Similarity

Unit Focus: Students will use properties of parallel lines and triangles, simplify expressions, and find perimeter to solve real-world problems.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G. GSRT.1 G.GCO.1 G.GCO.5 G. GSRT.4 G. GSRT.5 G. GSRT.4 G.GCO.9 G. GSRT.2 G. GSRT.3	I can: <ul style="list-style-type: none"> Dilate figures on and off the coordinate plane. Identify a combination of rigid motions and dilation that maps one figure to a similar figure. Identify the coordinates of an image under a 	8 Days	EnVision Geometry: <ul style="list-style-type: none"> 7-1 Dilations 7-2 Similarity Transformations 7-4 Similarity in Right Triangles Geometry: <ul style="list-style-type: none"> 7-1 Dilations 7-2 Polygon 7-3 AA Similarity 7-4 SSS and SAS Similarity 	PPT Ratios and Proportions PPT Similar Figures

Subject: Geometry

Teacher Planning Guide

	<p>similarity transformation.</p> <ul style="list-style-type: none">● Use similarity of right triangles to solve problems.● Use length relationships of the sides of right triangles and an altitude drawn to the hypotenuse to solve problems.			
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Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

G. GSRT.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	G. GSRT.6: Understand how the properties of similar right triangles allow the trigonometric ratios to be defined and determine the sine, cosine, and tangent of an acute angle in a right triangle.
G. GSRT.7: Explain and use the relationship between the sine and cosine of complementary angles.	G. GSRT.8: Solve right triangles in applied problems using trigonometric ratios and the Pythagorean Theorem.

Unit 7: Right Triangles

Unit Focus: Students will use the Pythagorean Theorem and its converse, and special relationships in right triangles.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G. GSRT.5 G. GSRT.6 G. GRST.7 G. GSRT.8	I can: <ul style="list-style-type: none">• Prove the Pythagorean Theorem using similar right triangles.• Understand and apply the relationships between side lengths in $45^\circ - 45^\circ - 90^\circ$ and $30^\circ - 60^\circ - 90^\circ$ triangles.	4 Days	EnVision Geometry: <ul style="list-style-type: none">• 8-1 Right Triangles and the Pythagorean Theorem Geometry: <ul style="list-style-type: none">• 8-2 The Pythagorean Theorem & Its Inverse• 8-3 Special Right Triangles	PPT Special Right Triangles PPT Pythagorean Theorem

Subject: Geometry

Teacher Planning Guide

Based on 90 Minutes of Daily Instruction

South Carolina College-and Career-Ready Process Standards

G.GCO.1: Define angle, perpendicular line, parallel line, line segment, ray, circle, and skew in terms of the undefined notions of point, line, and plane. Use geometric figures to represent and describe real-world objects.	G. GGPE.7: Use the distance and midpoint formulas to determine distance and midpoint in a coordinate plane, as well as areas of triangles and rectangles, when given coordinates.
G. GGPE.1: Understand that the standard equation of a circle is derived from the definition of a circle and the distance formula.	G. GGPE.4: Use coordinates to prove simple geometric theorems algebraically.
G. GGPE.6: Given two points, find the point on the line segment between the two points that divides the segment into a given ratio.	

Unit 8: Coordinate Geometry

Unit Focus: Students will use area formulas for polygons, relate length, perimeter, and area ratios in similar polygons. Students will also measure for parts of circles and the whole circle

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G. GGPE.4 G. GGPE.6 G. GGPE.7 G.GCO.1 G. GGPE.1	I can: <ul style="list-style-type: none"> Solve problems involving triangles and polygons on coordinate plane. Write and graph the equation for a circle given the graph of the circle or given the center and radius of the circle. Calculate the area and circumference of a circle. Measure angles and arcs of a circle. Find the surface area of a given shape 	6 Days	EnVision Geometry: <ul style="list-style-type: none"> 9-1 Polygons in the Coordinate Plane 9-3 Circles in the Coordinate Plane Geometry: <ul style="list-style-type: none"> 10-1 Areas of Parallelograms & Triangles 10-2 Area of Trapezoids, Rhombi, and Kites 10-3 Area of Circle & Sectors 10-4 Areas of Regular Polygons 10-5 Area of Non-rigid Transformations 10-6 Surface Area 	PPT Similar Solids

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G.GCI.5: Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	G.GCI.2: Identify and describe relationships among inscribed angles, radii, and chords; among inscribed angles, central angles, and circumscribed angles; and between radii and tangents to circles. Use those relationships to solve mathematical and real-world problems.

Unit 9: Circles

Unit Focus: Students will use properties of segments that intersect circles, apply angle relationships in circles and use circles in the coordinate plane

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G.GCO.1 G.GCI.5 G.GCI. 2 G.GCO.11	I can: <ul style="list-style-type: none"> • Calculate the length of an arc when the central angle is given in degrees or radians. • Calculate the circumference and area of a circles & its sectors. • Find lengths of chords given the distance from the center of the circle. • Use the tangent line to solve problems. 	6 Days	EnVision: <ul style="list-style-type: none"> • 10-1 Arcs and Sectors • 10-2 Lines Tangent to a Circle • 10-3 Chords Geometry: <ul style="list-style-type: none"> • 9-1 Circles & Circumference • 9-2 Measuring Angles & Arcs • 9-3 Arcs and Chords • 9-7 Equations of Circles 	PPT Circle, Arcs, Angles PPT Segments Lengths and Sectors PPT Equations of a Circle PPT Area of a Circle

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G.GM.1: Use geometric shapes, their measures, and their properties to describe real-world objects.	G.GM.2: Use geometry concepts and methods to model real-world situations and solve problems using a model
G. GGMD.1: Explain the derivations of the formulas for the circumference of a circle, area of a circle, and volume of a cylinder, pyramid, and cone. Apply these formulas to solve mathematical and real-world problems.	G. GGMD.2: Explain the derivation of the formulas for the volume of a sphere and other solid figures using Cavalieri’s principle.
G. GGMD.3: Apply surface area and volume formulas for prisms, cylinders, pyramids, cones, and spheres to solve problems and justify results. Include problems that involve algebraic expressions, composite figures, geometric probability, and real-world applications.	G. GGMD.4: Describe the shapes of two-dimensional cross-sections of three-dimensional objects and use those cross sections to solve mathematical and real-world problems.

Unit 10: Two- and Three-Dimensional Models				
Unit Focus: Students will explore solids and their properties, solve problems using surface area and volume and connect similarity to solid				
Standards	Sequenced Objectives	Scope	Content-Location	Resources
G. GGMD.4 G. GGMD.1 G.GGMD.2 G. GGMD.3 G.GM.1 G.GM.2	I can: <ul style="list-style-type: none"> ● Use Euler’s Formula to calculate the number of vertices, faces, and edges in polyhedrons. ● Describe rotations of polygons about an axis ● Model 3-dimensional figures and calculate volumes and surface areas of spheres, prisms, spheres, pyramids, and composite figures. 	8 Days	EnVision: <ul style="list-style-type: none"> ● 11-1 Three Dimensional Figures and Cross Sections ● 11-2 Volumes of Prisms and Cylinders ● 11-3 Pyramids and Cones ● 11.4 Spheres 	PPT Area of Polygons & Circles PPT Prisms & Cylinders PPT Pyramids & Cones PPT Spheres

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G. SPID.1: Select and create an appropriate display, including dot plots, histograms, and box plots, for data that includes only real numbers.	G. SPID.2: Use statistics appropriate to the shape of the data distribution to compare center and spread of two or more different data sets that include all real numbers.
G. SPID.3: Summarize and represent data from a single data set. Interpret differences in shape, center, and spread in the context of the data set, accounting for possible effects of extreme data points (outliers).	

Unit 11: Data Analysis

Unit Focus: Students will construct, organize and display data to answer questions and use descriptive statistics to summarize data sets.

Standards	Sequenced Objectives	Scope	Content-Location	Resources
G. SPID.1 G. SPID.3 G. SPID.2	I can: <ul style="list-style-type: none"> ● Construct dot plots, histogram, and box plots of data sets. ● Summarize data sets by describing the central tendency, variation, and shape of the distribution. ● Describe the skewness and symmetry of a graph of data set. ● Compare data sets using central tendency, variation, and shape of the distribution. 	6 Days	EnVision: <ul style="list-style-type: none"> ● 12-1 Data Presentation ● 12-2 Shapes of Distribution 	Stats