

# Seymour Public Schools Curriculum

<b>Grade: 9-12</b>	<p style="text-align: center;"><b>Subject:</b> <b>Geometry Geometric Terms</b></p> <p>Narrative.....The student learns that critical thinking is essential in geometry. The basic concepts of geometry are introduced: point, line, and plane. The student will extend these basic concepts and use them to define rays, segments, and angles. The student will learn the relationship of real numbers and measurement is defined in geometry through the Protractor Postulate, Angle Addition Postulate, and the Ruler Postulate. Next, postulates explaining the relationships of the basic figures to each other are introduced.</p>
<b>CSDE Standard</b>	25.3 MATHEMATICS - GEOM & MEASUREMT
<b>Enduring Understanding</b>	Points, lines, and planes are the basic building blocks of geometry.
<b>Essential Questions</b>	Why are points, lines and planes undefined terms?
<b>Content Standard:</b>	<p>05.0.5.9.4 Students will use techniques of algebra, geometry and trigonometry to measure quantities indirectly</p> <p>05.0.6.9.2 Students will deduce properties of, and relationships among, figures from given assumptions</p>
<b>Performance Expectations (Student outcomes)</b>	<p>The student will identify points, lines, and planes.</p> <p>The student will draw representations of points and lines and planes.</p> <p>The student will apply the terms collinear, coplanar, and intersection</p> <p>The student will use the correct symbols for lines, segments, rays and distances.</p> <p>The student will use absolute value to find distances on a number line.</p> <p>The student will state and use the Ruler Postulate and the Segment Addition Postulate.</p> <p>The student will apply postulates and theorems relating to points, lines, and planes.</p> <p>The student will state and apply distance and midpoint formulas.</p>



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## Geometric Reasoning

<b>Grade:</b> <b>9-12</b>	<p style="text-align: center;"><b>Subject:</b>  <b>Geometry Reasoning</b></p> <p>Narrative.....In order to learn mathematics, it is necessary to learn to think logically. The student will study the different forms of if-then statements which are used extensively in geometry and other branches of mathematics. The differences between deductive and inductive reasoning and how to apply both forms of reasoning will be introduced to the student.</p>
<b>CSDE Standard</b>	25.3 MATHEMATICS - GEOM & MEASUREMT .
<b>Enduring Understanding</b>	<p style="text-align: center;">Logic is used to prove theorems. Logic is the basic building block of geometry and other forms of math.</p>
<b>Essential Questions</b>	<p style="text-align: center;">How is logic used to “prove” theorems? What are the types of logic? When are the different types of logic applied?</p>
<b>Content Standard:</b>	25.3.1.9.4 Students will recognize the validity of an argument. 25.3.1.9.6 Students will recognize the relationships between a conditional statement and its converse, inverse, and contrapositive. 25.3.1.9.8 Students will use deductive arguments, including direct and indirect proofs, to develop an understanding of an axiomatic approach to geometry
<b>Performance Expectations (Student outcomes)</b>	The student will recognize the hypothesis and conclusion of an if- then statement. The student will state the converse of an if- then statement. The student will use a counterexample to disprove a statement. The student will identify and restate a biconditional statement. The student will state the contrapositive and inverse of a statement. The student will understand the relationship between logically equivalent statements.

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<b>Strategies/Modes (examples)</b>	<b>Materials/Resources (examples)</b>	<b>Assessments (examples)</b>
<b>Homework</b> <b>Projects</b> <b>Guided practice</b> <b>Worksheets</b> <b>Cooperative learning</b> <b>Math labs</b> <b>Quizzes</b> <b>Tests</b>	Chapter 2 - Sections 1,3 3 - Section 6 6 - Sections 2,3	Notebook and/or homework Test, quizzes and alternate assignments

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<b>Grade:</b> 9-12	<p style="text-align: center;">Subject: Special Angles</p> <p>This unit introduces the concepts of supplementary, complementary, and vertical angles. These three pairs of special angles are very powerful tools used in theorems and proofs. These three pairs of special angles are used throughout the year.</p>
<b>CSDE Standard</b>	<p>25.2 MATHEMATICS - NUMERICAL &amp; PROP REASONING</p> <p>25.3 MATHEMATICS - GEOM &amp; MEASUREMT</p>
<b>Enduring Understanding</b>	<b>The properties of geometric figures can be proven.</b>
<b>Essential Questions</b>	<p><b>What is the difference between congruence and similarity? How are similarity and congruence established?</b></p> <p><b>Why is it important?</b></p>
<b>Content Standard:</b>	<p>25.3.1.5.1 Students will use geometric relationships such as parallel, perpendicular and congruent to describe the attributes of sets and subsets of shapes and solids.</p> <p>25.3.1.6.2 Students will make and test conjectures about side and angle relationships and congruence.</p>
<b>Performance Expectations (Student outcomes)</b>	The student will identify and use the following to solve geometric and real life problems: complementary angles, supplementary angles, vertical angles, and perpendicular lines.

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<b>Strategies/Modes (examples)</b>	<b>Materials/Resources (examples)</b>	<b>Assessments (examples)</b>
<p>Homework Projects Guided practice Worksheets Cooperative learning Math labs Quizzes Tests</p>	<p>Chapter 2.4-2.6</p>	<p>Notebook and/or homework Test, quizzes and alternate assignments</p>

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<b>Grade:</b> 9-12	<p style="text-align: center;"><b>Subject:</b> <b>Convex polygons</b></p> <p>Narrative.....Angle and degree measurements are presented along with the classification of triangles by angles and sides. The properties of parallel lines are used to prove the important theorem about the sum of the measures of the angles of a triangle. The concept of angle sums is extended to polygons. Students will identify, describe, and use medians, altitudes, and perpendicular bisectors to solve real life problems. The study of the angles of polygons will lead to a study of quadrilaterals, how four sided figures are classified, and how to use the attributes of quadrilaterals to solve real life problems.</p>
<b>CSDE Standard</b>	25.3 MATHEMATICS - GEOM & MEASUREMT
<b>Enduring Understanding</b>	Convex polygons have many interesting properties that can be used to solve geometric and real world problems.
<b>Essential Questions</b>	What are the properties of convex polygons? How are these properties used to solve geometric and real world problems?
<b>Content Standard:</b>	<p>25.3.1.0.1 Students will sort, order, compare and use comparative language to describe small sets of objects sequenced by size, length, area and volume.</p> <p>25.3.1.8.1 Students will explore the effect of scale factors on the length, area, and volume ratios of similar polygons, circles and solids.</p> <p>25.3.2.6.1 Students will explore similarity of polygons as a result of dilations (a reduction or enlargement) and their effects on their measures.</p>
<b>Performance Expectations (Student outcomes)</b>	<p>The student will classify triangles according to sides and to angles.</p> <p>The student will state and apply theorems and corollaries about the sum of the measures of the angles.</p> <p>The student will state and apply theorems about the measure of an exterior angle of a triangle.</p> <p>The student will recognize and name convex polygons and regular polygons.</p> <p>The student will find the measures of interior angles and exterior angles of convex polygons.</p> <p>The student will apply the definitions of the median and the altitude of a triangle and the perpendicular bisector of a</p>

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	segment. The student will apply theorems about a point on the perpendicular bisector of a segment and a point.	
<b>Strategies/Modes (examples)</b> Homework Projects Guided practice Worksheets Cooperative learning Math labs Quizzes Tests	<b>Materials/Resources (examples)</b> Chapter 1 Section 4 3 Sections 4 and 5 4 Sections 4,7 5 Sections 1,2,4,5	<b>Assessments (examples)</b> Notebook and/or homework Test, quizzes and alternate assignments Algebra Review - the Coordinate Plane CAPT activities



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Narrative..... Ratio and proportion are vital concepts in geometry, which lead to the concept of similarity or having the same shape but not necessarily the same size. Similarity is used to solve extensive real life problems in many field of endeavor and also leads to the concept of right triangle similarity and trigonometry.

<b>Grade: 9-12</b>	<p style="text-align: center;"><b>Subject: Geometry Similarities</b></p> <p>Narrative..... Ratio and proportion are vital concepts in geometry, which lead to the concept of similarity or having the same shape but not necessarily the same size. Similarity is used to solve extensive real life problems in many field of endeavor and also leads to the concept of right triangle similarity and trigonometry.</p>
<b>CSDE Standard</b>	25.3 MATHEMATICS - GEOM & MEASUREMT
<b>Enduring Understanding</b>	Proportional reasoning is used to solve problems involving rational numbers including ratios, proportion, percent, scale, and similarity. Proportional reasoning is critical to the understanding of geometry.
<b>Essential Questions</b>	<p>How is the concept of ratio and proportion related to similar figures in geometry and real life?</p> <p>When is a triangle a right triangle?</p> <p>What does <math>a^2 + b^2 = c^2</math> really mean?</p> <p>What is the Pythagorean Theorem?</p> <p>How can you prove that a triangle is a right triangle?</p> <p>How is the Pythagorean Theorem used?</p>
<b>Content Standard:</b>	<p>25.3.1.0.1 Students will sort, order, compare and use comparative language to describe small sets of objects sequenced by size, length, area and volume.</p> <p>25.3.1.8.1 Students will explore the effect of scale factors on the length, area, and volume ratios of similar polygons, circles and solids.</p> <p>25.3.2.6.1 Students will explore similarity of polygons as a result of dilations (a reduction or enlargement) and their effects on their measures.</p>
<b>Performance Expectations (Student outcomes)</b>	<p>The student will solve real life problems using ratio and proportion.</p> <p>The student will use the characteristics of similar polygons to solve real life problems.</p> <p>The student will prove two or more triangles are similar.</p> <p>The student will use the properties of similar polygons to find proportional lengths.</p> <p>The student will use the Pythagorean Theorem to solve real life and geometric problems.</p>

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The student will use the basic trigonometric ratios (sine, cosine, and tangent) to solve problems.		
<b>Strategies/Modes (examples)</b> Homework Projects Guided practice Worksheets Cooperative learning Math labs Quizzes Tests	<b>Materials/Resources (examples)</b> Chapter 7 Section 1,2,3,4,6	<b>Assessments (examples)</b> Notebook and/or homework Test, quizzes and alternate assignments Algebra Review - Evaluating Formulas

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<b>Grade:</b> 9-12	<p style="text-align: center;"><b>Subject: Geometry</b> Inequalities for One Triangles Inequalities for One Triangle</p> <p>Narrative.....Two theorems establish the relationships between unequal sides and the angles opposite them in a triangle. If the sides of a triangle are unequal, then the angles opposite them are also unequal in the same order. These theorems are used to prove whether three segments make a triangle and find a range of measures for the third side of a triangle. Solving basic inequality statements from Algebra is reviewed. The student is also introduced to colleries of the inequality theorems which establish that the shortest segment from a point to a line or a plane is the perpendicular segment.</p>
<b>CSDE Standard</b>	25.3 MATHEMATICS - GEOM & MEASUREMT
<b>Enduring Understanding</b>	The properties of inequality from algebra are used to study segment, length, and angle measures that are not equal.
<b>Essential Questions</b>	How are the length of the sides and the size of the angles related in a triangle? Do three segments always make a triangle? Why? Or Why not?
<b>Content Standard:</b>	25.3.1.5.2 Students will make and test conjectures about geometric relationships. 25.3.1.9.1 Students will use models and constructions to make, test, and summarize conjectures involving properties of geometric figures.
<b>Performance Expectations (Student outcomes)</b>	Classify triangles according to sides and to angles State and apply theorems and corollaries about the sum of the measures of the angles State and apply theorems about the measure of an exterior angle of a triangle Recognize and name convex polygons and regular polygons Find the measures of interior angles and exterior angles of convex polygons Apply the definitions of the median and the altitude of a triangle and the perpendicular bisector of a segment Apply theorems about a point on the perpendicular bisector of a segment and a point

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<b>Strategies/Modes (examples)</b>	<b>Materials/Resources (examples)</b>	<b>Assessments (examples)</b>
<p>Homework Projects Guided practice Worksheets Cooperative learning Math labs Quizzes tests</p>	<p>Chapter 6 Section 4</p>	<p>Notebook and/or homework Test, quizzes and alternate assignments CAPT activities</p>

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<b>Grade: 9-12</b>	<p style="text-align: center;"><b>Subject:</b> <b>Geometry Two Dimensional Figures</b></p> <p>Narrative.....In this section, the concept of the area of a geometric figure is introduced. Three postulates are stated that give basic information about the area of a square, areas of congruent figures, and the addition of areas. Next, the student is introduced to the areas of parallelograms, triangles, trapezoids, and rhombuses.</p>
<b>CSDE Standard</b>	25.3 MATHEMATICS - GEOM & MEASUREMT
<b>Enduring Understanding</b>	The areas of two dimensional figures can be determined by using formulas and geometric postulates.
<b>Essential Questions</b>	What is area? How is it measured? How are the basics of geometry applied to find the area of figures that do not have a special formula?
<b>Content Standard:</b>	<p>25.3.3.9.4 Students will use two dimensional representations, formal, and informal methods to solve surface area and volume problems.</p> <p>25.3.3.9.6 Students will use properties of similarity and techniques of trigonometry to make indirect measurements of lengths and angles to solve a variety of problems.</p> <p>25.3.3.6.3 Students will use different ratios to convert between units of length, area and volume in the customary and metric system.</p> <p>25.3.3.6.2 Students will select and use appropriate units, strategies and tools to measure and solve problems involving length, perimeter, area, volume, capacity, weight, mass, temperature and angles.</p>
<b>Performance Expectations (Student outcomes)</b>	<p>The student will use the formulas for areas and perimeters of circles, triangles, quadrilaterals and other polygons to determine area and to solve real life problems.</p> <p>The student identifies, analyses, and describes patterns that emerge from two dimensional geometric figures.</p>

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<b>Strategies/Modes (examples)</b>	<b>Materials/Resources (examples)</b>	<b>Assessments (examples)</b>
<b>Strategies/Modes (examples)</b> Homework Projects Guided practice Worksheets Cooperative learning Math labs Quizzes Tests	Chapter 11 Section 1,2,3,4,5,6,7,8	Notebook and/or homework Test, quizzes and alternate assignments