

East Penn School District  
Secondary Curriculum

A Planned Course Statement  
for  
**Geometry Concepts**

Course # 310 Grade(s) 10-12

Department: Mathematics

Length of Period (mins.) 41 Total Clock Hours: 126

<sup>1</sup> Periods per Cycle: 6 Length of Course (yrs.) 1

Type of Offering:      required  elective

Credit: 1

Adopted: 6/28/10

Developed by:

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**Description of Course:** This is a geometry course designed for the students who want exposure to geometric concepts without the rigor of the Geometry C.P. course. The course studies points, lines, planes, angles, congruence, similarity, polygons and their characteristics, circles and their characteristics, area, volume, and right triangle relationships. The course will prepare students for many real world applications of geometry and will cover all geometric concepts necessary for standardized tests.

**Course Title:** Geometry Concepts

**Goals:** To develop proficiency in the students' ability to use geometry to translate geometric situations and solve problems in everyday living.

**Requirements:**

- Algebra 1
- Calculator

**Text:** Cord, Geometry, Globe Feraron, 1999

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**Key to Levels of Achievement (Listed with each learning objective)**

Awareness (A):	Students are introduced to concepts, forms, and patterns.
Learning (L):	Students are involved in a sequence of steps and practice activities which involved further development and allow evaluation of process.
Understanding (U):	Students demonstrate ability to apply acquired concepts and skills to individual assignments and projects on an independent level.
Reinforcement (R):	Students maintain and broaden understanding of concepts and skills to accomplish tasks at a greater level of sophistication.

Unit	Num	Objective	Level	Content	Evaluation	Standard
<b>Reasoning in Geometry</b>	1	Students will learn key ideas, vocabulary, and thought processes used in geometry.	L U R	<ul style="list-style-type: none"> <li>Identify patterns</li> <li>Use inductive reasoning</li> <li>Identify, draw models of , and use postulates about points, lines, and planes</li> <li>Write conditional statements and their converses</li> <li>Use compass and straightedge for constructions (optional)</li> </ul>	<ul style="list-style-type: none"> <li>Tests</li> <li>Quizzes</li> <li>Assignments</li> <li>Alternate assessment</li> </ul>	2.9.11.I 2.4.11.B
<b>Segment Measure and Coordinate Graphing</b>	2	Students will understand the concept of and notation for segment measure as well as elements of coordinate geometry including midpoint and distance.	L U	<ul style="list-style-type: none"> <li>Find the distance between two points on a number line</li> <li>Apply properties of real numbers to the measures of segments</li> <li>Identify congruent segments</li> <li>Find the midpoints of segments on the number line.</li> <li>Name and graph ordered pairs on a coordinate plane</li> <li>Find the coordinated of the midpoint of a segment on the Cartesian coordinate plane.</li> <li>Find the distance between two points</li> </ul>	<ul style="list-style-type: none"> <li>Tests</li> <li>Quizzes</li> <li>Assignments</li> <li>Alternate assessment</li> </ul>	2.3.11.A 2.5.11.B 2.9.11.I
<b>Angles</b>	3	Students will acquire and in-depth knowledge of angle.	L U R	<ul style="list-style-type: none"> <li>Identify parts of an angle</li> <li>Measure, draw, classify, and find the bisector of an angle</li> <li>Identify and used adjacent angles, linear pairs of angles, complementary and supplementary angles, and congruent and vertical angles.</li> <li>Identify and use properties of perpendicular lines and segments</li> </ul>	<ul style="list-style-type: none"> <li>Tests</li> <li>Quizzes</li> <li>Assignments</li> <li>Alternate assessment</li> </ul>	2.3.11.A 2.3.11.B 2.9.11.I 2.5.11.B 2.5.11.D
<b>Parallels</b>	4	Students will explore parallel and skew relationships among lines, segments and planes.	L	<ul style="list-style-type: none"> <li>Describe relationships among lines, parts of lines, and planes</li> <li>Identify relationships among angles formed by two parallel lines and a transversal</li> <li>Find the slopes of lines and use slope to identify parallel and perpendicular lines.</li> <li>Write and graph equations of</li> </ul>	<ul style="list-style-type: none"> <li>Tests</li> <li>Quizzes</li> <li>Assignments</li> <li>Alternate assessment</li> </ul>	2.5.11.A 2.5.11.B 2.4.11.E 2.9.11.I

Unit	Num	Objective	Level	Content	Evaluation	Standard
				lines		
<b>Triangles and Congruence</b>	5	Students will be provided with an in-depth study of triangle congruency.	L	<ul style="list-style-type: none"> <li>Identify parts of triangles</li> <li>Identify triangles by their parts</li> <li>Use the Angle Sum Theorem</li> <li>Identify translations, reflections and rotations and their corresponding parts (optional)</li> <li>Name and label corresponding parts of congruent triangles</li> <li>Use the SSS, SAS, AAS, ASA tests for congruency</li> </ul>	<ul style="list-style-type: none"> <li>Tests</li> <li>Quizzes</li> <li>Assignments</li> <li>Alternate assessment</li> </ul>	2.5.11.B 2.9.11.B 2.9.11.D 2.9.11.I 2.9.11.J 2.9.11.H
<b>More About Triangles</b>	6	Students will explore special segments of triangles as well as the Pythagorean Theorem in right triangles.	L U R	<ul style="list-style-type: none"> <li>Identify special segments in triangles</li> <li>Identify and use properties of isosceles triangles</li> <li>Use test for congruence of right triangles</li> <li>Use the Pythagorean Theorem and its converse.</li> </ul>	<ul style="list-style-type: none"> <li>Tests</li> <li>Quizzes</li> <li>Assignments</li> <li>Alternate assessment</li> </ul>	2.5.11.B 2.9.11.I 2.4.11.E
<b>Triangle Inequalities</b>	7	Students will study inequalities within triangles.	L	<ul style="list-style-type: none"> <li>Apply inequalities to segment and angle measure</li> <li>Use the Exterior Angle Theorem</li> <li>Identify the relationships between the sides and angles of a triangle</li> <li>Identify and use the Triangle Inequality Theorem</li> </ul>	<ul style="list-style-type: none"> <li>Tests</li> <li>Quizzes</li> <li>Assignments</li> <li>Alternate assessment</li> </ul>	2.5.11.B 2.9.11.A 2.9.11.I
<b>Quadrilaterals</b>	8	Students will identify and use the properties of special quadrilaterals.	L	<ul style="list-style-type: none"> <li>Identify parts of quadrilaterals and find the sum of the measures of the interior angles of a quadrilateral</li> <li>Identify and use the properties of parallelograms</li> <li>Use tests to show if a quadrilateral is a parallelogram</li> <li>Identify and use properties of rectangles, rhombi, squares, trapezoids, and isosceles trapezoids</li> </ul>	<ul style="list-style-type: none"> <li>Tests</li> <li>Quizzes</li> <li>Assignments</li> <li>Alternate assessment</li> </ul>	2.5.11.B 2.9.11.C 2.9.11.I

Unit	Num	Objective	Level	Content	Evaluation	Standard
<b>Proportions and Similarity</b>	9	Students will apply concepts of ratio and proportion to similarity in polygons.	L	<ul style="list-style-type: none"> <li>Use ratios and proportions to solve problems</li> <li>Identify similar polygons and use similarity tests for triangles</li> <li>Identify and use the relationships between proportional parts of triangles</li> <li>Identify and use proportional relationships of similar triangles and parallel lines</li> </ul>	<ul style="list-style-type: none"> <li>Tests</li> <li>Quizzes</li> <li>Assignments</li> <li>Alternate assessment</li> </ul>	2.4.11.E 2.5.11.B 2.9.11.B 2.9.11.I
<b>Polygons and Area</b>	10	Students will explore polygons and their areas.	L	<ul style="list-style-type: none"> <li>Name polygons according to the number of sides and angles</li> <li>Find measures of interior and exterior angles of polygons</li> <li>Estimate and find the areas of all type of polygons</li> </ul>	<ul style="list-style-type: none"> <li>Tests</li> <li>Quizzes</li> <li>Assignments</li> <li>Alternate assessment</li> </ul>	2.9.11.I 2.4.11.E 2.5.11.A 2.5.11.B 2.5.11.D
<b>Circles</b>	11	Students will identify and find measure of parts of circles.	L	<ul style="list-style-type: none"> <li>Identify and use parts of circles</li> <li>Identify major arcs, minor arcs and semicircles and find the measures of arcs and central angles</li> <li>Identify and use relationships among arcs, chords, and diameters</li> <li>Inscribe regular polygons in circles and explore measures</li> <li>Solve problems involving circumferences, areas, and sectors of circles</li> </ul>	<ul style="list-style-type: none"> <li>Tests</li> <li>Quizzes</li> <li>Assignments</li> <li>Alternate assessment</li> </ul>	2.5.11.B 2.3.11.B 2.9.11.E 2.9.11.I 2.5.11.A
<b>Surface Area and Volume</b>	12	Students will find surface area and volume of common solid figures.	L	<ul style="list-style-type: none"> <li>Identify solid figures</li> <li>Find lateral areas, surface areas, and volumes of prisms, cylinders, regular pyramids, and cones</li> <li>Find surface area and volume of spheres</li> </ul>	<ul style="list-style-type: none"> <li>Tests</li> <li>Quizzes</li> <li>Assignments</li> <li>Alternate assessment</li> </ul>	2.4.11.E 2.9.11.I 2.5.11.A 2.5.11.B 2.5.11.D
<b>Special Right Triangles</b>	13	Students will explore special right triangles.	L	<ul style="list-style-type: none"> <li>Multiply, divide and simplify radical expressions</li> <li>Use the properties of the 45-45-90 triangle</li> <li>Use the properties of the 30-60-90 triangle</li> </ul>	<ul style="list-style-type: none"> <li>Tests</li> <li>Quizzes</li> <li>Assignments</li> <li>Alternate assessment</li> </ul>	2.4.11.E 2.5.11.B 2.9.11.I 2.5.11.A

Unit	Num	Objective	Level	Content	Evaluation	Standard
Circle Relationships	14	Students will learn properties of inscribed angle, tangents and secants of circles.	L	<ul style="list-style-type: none"><li>• Identify and find measures of inscribed angles</li><li>• Identify and learn properties of tangents</li><li>• Identify and learn properties of secants</li><li>• Find the measures of chords secants and tangents and the measures of associated arcs and angles</li><li>• Write equations of circles in the coordinate plane</li></ul>	<ul style="list-style-type: none"><li>• Tests</li><li>• Quizzes</li><li>• Assignments</li><li>• Alternate assessment</li></ul>	2.5.11.A 2.5.11.B 2.9.11.F 2.9.11.I