East Penn School District
Secondary Curriculum

A Planned Course Statement
for
Geometry CP Lab

Course #   **312L**   Grade(s)   9-12

Department: Mathematics

Length of Period (mins.)   41   Total Clock Hours: 62

Periods per Cycle: 3   Length of Course (yrs.)   1

Type of Offering: required _____   elective √

Credit: 0.5 elective

Adopted: 6/28/10

Developed by:

Laura Leiby

Description of Course 312L:

Course Title: Geometry CP Lab

Description: This course provides students with a transition from Algebra 1 Seminar to Geometry CP with additional support. Geometry Lab enriches the Geometry CP curriculum with applications and activities to reinforce class topics. Students are encouraged to apply topics from Geometry CP to solve problems logically. The content includes logic, proofs, and plane and solid figures. This course must be taken concurrently with Geometry CP.

Goals:
- To understand geometry as a mathematical system and to be able to think logically, analyze situations, and form substantiated conclusions.

 Requirements:
- Students must have achieved at least an 84% in Algebra 1 Seminar during the previous year.
- Students must be enrolled concurrently in Geometry CP.

Text: Charles, R. I., Hall, B., Kennedy, D., Bass, L.E., Johnson, A., Haenisch, S., Murphy, S.J., & Wiggins, G. (2011).   Prentice Hall Geometry. Boston, MA: Pearson.

*** ***A graded project will be completed during each semester in this course.***

*** ***Careers that utilize the mathematics taught in this course will be discussed during the first semester.***

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 that 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
Algebra Review	1	Students will solve problems by writing and solving equations using the properties of equality.	U	• Write equations and solve for variables • Manipulate equations using square roots	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.1.8.G 2.1.11.A 2.2.8.A 2.4.8.C 2.4.11.A 2.5.8.C 2.5.11.A 2.5.11.C 2.8.8.B 2.8.8.C 2.8.8.E 2.8.8.J 2.8.11.A 2.8.11.D 2.8.11.N 2.8.11.O
Tools of Geometry	2	Students will define, identify, and describe basic geometric figures.	U	• Identify and label points, lines and planes • Define and identify lines, segments, and rays • Differentiate between acute, right, obtuse, and straight angles • Apply the angle and segment measurement postulates • Apply the perpendicular and angle bisector theorems • Calculate midpoint and distance between points	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.9.11 G 2.9.8 B 2.9.11 A M11.B.2.1.1 M11.C.3.1.1 M11.B.2.2.3 M11.C.1.1.1
Reasoning and Proof	3	Students will observe patterns and apply logic to prove geometric relationships using definitions, properties, postulates, and theorems.	U	• Identify the hypothesis and conclusion for conditional statements • Write the converse of a conditional statement • Write biconditional statements • Apply the Law of Detachment and the Law of Syllogism • Apply deductive reasoning to conditional statements • Apply theorems to mathematical proofs • Apply logic laws to conditional statements	• Teacher Observation • Assignments • Quizzes • Tests • Alternative Assessments	2.9.11 G 2.9.11 B M11.C.3.1

Unit	Num	Objective	Level	Content	Evaluation	Standard
Parallel and Perpendicular Lines	4	Students will use the properties of parallel lines and transversal to draw conclusions and prove lines parallel.	U	• Apply properties of parallel lines with transversals to angles • Use angles to prove lines are parallel • Classify triangles by sides and angles • Calculate slope • Determine the equation of a line • Use slope to classify lines as parallel, perpendicular, or neither	• Assignments/Hands-on Activities • Vocabulary Review / Reinforcement • Quizzes • Dynamic geometry tools (Geometer Sketchpad) • Independent Work • Group Work • Teacher Observation • Tests • Alternative Assessments	2.9.11 G 2.9.8.E M11.D.2.1.2 M11.D.2.1.3 M11.D.3.2.1 M11.D.3.2.2 M11.D.3.2.3
Congruent Triangles	5	Students will construct proofs for congruent triangles and corresponding parts of congruent triangles.	U	• Apply properties, theorems, postulates, and definitions to prove two triangles are congruent • Use SSS, SAS, ASA, and AAS, to prove triangles are congruent • Use HL to prove right triangles are congruent • Use corresponding parts of congruent triangles (CPCTC) to prove sides and angles of triangles are congruent • Apply properties of isosceles and right triangles to determine lengths of sides and angle measures	• Assignments/Hands-on Activities • Vocabulary Review / Reinforcement • Quizzes • Independent Work • Teacher Observation • Alternative Assessments	2.9.11 B M11.C.1.2.1 M11.C.1.2.3
Relationships Within Triangles	6	Students will recognize and differentiate between median, angle bisector, altitude, and perpendicular bisector.	U	• Calculate the distance between points • Determine the location of the midpoint of a segment • Distinguish between median, angle bisector, altitude, and perpendicular bisector • Distinguish between concurrent points in triangles (incenter, circumcenter, centroid, and orthocenter) • Apply the midsegment theorem • Determine if three side lengths can compose a triangle	• Assignments/Hands-on Activities • Vocabulary Review / Reinforcement • Quizzes • Dynamic geometry tools (Geometer Sketchpad) • Independent Work • Group Work • Teacher Observation • Alternative Assessments	2.9.11 C 2.9.11 D M11.C.1.2.1

Unit	Num	Objective	Level	Content	Evaluation	Standard
				• Determine possible lengths for the third side of a triangle • Apply triangle inequality theorems • Read and write indirect proofs		
Quadrilaterals	7	Students will calculate angles in polygons and classify quadrilaterals using angles, sides, and diagonals.	U	• Calculate the sum of the interior angles of a polygon using the Polygon Angle-Sum Theorem • Describe properties of parallelograms • Identify and distinguish between rhombuses, rectangles, squares, trapezoids, and kites	• Assignments/Hands-on Activities • Vocabulary Review / Reinforcement • Quizzes • Independent Work • Group Work • Teacher Observation • Alternative Assessments	2.9.11 C 2.9.11 G 2.9.8 C M11.C.1.2.2
Area	8	Students will use formulas and relationships to calculate area of polygons and circles.	U	• Apply Pythagorean Theorem and its converse • Classify triangles using the side lengths • Calculate angles and side lengths for special right triangles (30-60-90 and 45-45-90) • Calculate perimeter of a polygon • Calculate circumference, arc length, and arc measure • Calculate area of triangles and special quadrilaterals • Calculate area of regular polygons • Calculate area of a circle • Calculate geometric probability of an event	• Assignments/Hands-on Activities • Vocabulary Review / Reinforcement • Quizzes • Independent Work • Group Work • Teacher Observation • Alternative Assessments	2.10.11 B 2.9.11 G 2.9.11 I M11.B.2.2.3 M11.B.2.2.4 M11.B.2.3.1 M11.C.1.1.1 M11.C.1.1.2
Similarity	9	Students will use proportions to determine lengths and angles in similar figures.	U	• Define ratios and proportions • Calculate the geometric mean • Prove triangles similar using AA~, SAS~, and SSS~ • Apply geometric mean to calculate missing sides of right triangles • Use proportions to solve word problems	• Assignments/Hands-on Activities • Vocabulary Review / Reinforcement • Quizzes • Independent Work • Group Work • Teacher Observation • Alternative Assessments	2.9.11 B 2.9.8 F M11.A.2.1.2 M11.A.2.1.3 M11.C.1.3.1

Unit	Num	Objective	Level	Content	Evaluation	Standard
Right Triangle Trigonometry	10	Students will determine side lengths and angle measures in right triangles.	U	• Define the sine, cosine, and tangent ratios • Calculate side lengths and angle measures using sine, cosine, and tangent	• Assignments/Hands-on Activities • Vocabulary Review / Reinforcement • Quizzes • Independent Work • Group Work • Teacher Observation • Alternative Assessments	2.10.11 B M11.A.1.1.1 M11.A.1.1.3 M11.A.2.2.1 M11.1.4.1
Circles	11	Students will use formulas to calculate areas of polygons and circles. Students will use ratios to determine perimeters and areas of similar figures.	U	• Define circle, radius, diameter, arc, arc length, sector, segment, and other terms pertaining to circles • Calculate arc length and arc measure • Calculate area of parallelograms, triangles, trapezoids, rhombuses, and kites • Calculate perimeter of polygons • Apply trigonometric identities to calculate areas of right triangles • Calculate circumference and area • Calculate perimeters and areas of similar polygons using ratios	• Assignments/Hands-on Activities • Vocabulary Review / Reinforcement • Quizzes • Independent Work • Group Work • Teacher Observation • Alternative Assessments	2.9.11 F 2.9.11 E M11.C.1.1.1 M11.C.1.1.2
Surface Area and Volume	12	Students will determine the surface area and volume of a solid figure. Students will use ratios to determine surface areas and volumes of similar solids.	U	• Calculate surface area of prisms, cylinders, pyramids, cones, and spheres • Calculate the volumes of prisms, cylinders, pyramids, cones, and spheres • Apply ratios to calculate surface areas and volumes of similar solids	• Assignments/Hands-on Activities • Vocabulary Review / Reinforcement • Quizzes • Independent Work • Group Work • Teacher Observation • Alternative Assessments	2.9.11 I 2.9.8 D M11.B.2.2.1 M11.B.2.2.2 M11.B.2.2.4 M11.B.2.3.1