Geometry Curriculum Map
Middlesex High School

SEMESTER ONE

Time Frame	Topic	SOL			Correlation to Textbook
Quarter 1 Unit One 4-6 days	Foundational Information for SOL understanding			Basic Geometric Terms Segment Addition Postulate Angle Measures – Acute, Right, Acute, Straight Angle Pairs – Linear Pair. Complementary, Supplementary, Angle Bisector, Angle Addition Postulate	Lesson 1-2 Lesson 1-3 Lesson 1-4 Lesson 1-5
		G4.a	Construct: A line segment congruent to a given line segment	Copy Segment	
		G4.f	Construct: An angle congruent to a given angle	Copy Angle	
		G4. e	Construct: the bisector of a given angle	Bisect Angle	

Time Frame	Topic	SOL	Standard	Essential Knowledge and Skills	Correlation to Textbook
Quarter 1 Unit Two 6-8 days	Coordinate Geometry Distance, Midpoint, Parallel and Perpendicular Lines	G.3a	Investigate and use formulas for finding distance, midpoint, and slope	Find the coordinates of the midpoint of a segment, using the midpoint formula. --- Apply the distance formula to find the length of a line segment when given the coordinates of the endpoint. --- Use a formula to find the slope of a line.	Lesson 1-7 Lesson 1-7
		G.3b, G.2a	Apply slope to verify and determine whether lines are parallels or perpendicular	Compare the slopes to determine whether two lines are parallel, perpendicular, or neither.	Lesson 3-8
	Recognize and graph the equation of a circle	G.12	The student, given the coordinates of the center of a circle and a point on the circle, will write the equation of a circle.	Identify the center, radius, and diameter of a circle from a given standard equation. Use the distance formula to find the radius of a circle. Given the coordinates of the center of the circle and radius of a circle, identify a point on the circle. Given the equation of circle in standard form, identify the coordinates of the center and find the radius. Given the coordinates of the endpoints of a diameter, find the equation of a circle. Given the coordinates of the center and a point on the circle, find the equation of a circle. Recognize that the equation of a circle of a given center and radius are derived using the Pythagorean Theorem.	Lesson 3-8
	Constructions	G 4.b	Construct: The perpendicular bisector of a line segment		
		G4.c	Construct: A perpendicular to a given line from a point not on the line.		
		G4.d	Construct: A perpendicular to a given line at a given point on a line.		

Time Frame	Topic	SOL	Standard	Essential Knowledge and Skills	Textbook Correlation and Other Resources
Quarter 1 Unit 3 6 days	Logic and Proof	G.1a	Identify the converse, inverse, and contrapositive of a conditional statement.	Identify the converse, inverse, and contrapositive of a conditional statement.	Lesson 2-2 Lesson 2-3 Lesson 2-4 Lesson 2-5 VA -3 Teacher Made Materials (Venn Diagrams)
		G.1b	Translate a short verbal argument into symbolic form	Translate verbal arguments into symbolic form, such as (p →q) and (~p → ~q). Determine the validity of a logical argument. Recognize and use the symbols of formal logic, which include →, ↔, ~, ˅, ^	
		G.1c	Using Venn diagrams to represent set relationships	Use Venn diagrams to represent set relationships, such as intersection and union. Interpret Venn diagrams.	
		G.1d	Using deductive reasoning.	Use valid forms of deductive reasoning, including the law of syllogism, the law of contrapositive, the law of detachment, and counterexamples. Select and use various types of reasoning and methods: Introduction to proofs	

Time Frame	Topic	SOL	Standard	Essential Knowledge and Skills	Textbook Correlation and Other Resources
Quarter 2 Unit 4 8 days	Parallel Lines and Angle Relation-ships	G.2 a, b, c G4.g	The student will use the relation ships between angles formed by two lines cut by a transversal to a) determine whether two lines are parallel; b) verify the parallelism, using algebraic and coordinate methods as well as deductive proofs; and c) solve real-world problems involving angles formed when parallel lines are cut by a transversal. Construct: A line parallel to a given line through a point not on the given line.	Use algebraic and coordinate methods as well as deductive proofs to verify wither two lines are parallel. Solve problems by using the relationships between pairs of angles formed by the intersection of two parallel lines and a transversal including corresponding angles, alternate interior angles, alternate exterior angles, and same side (consecutive) interior angles. Solve real-world problems involving intersecting and parallel lines in a plane.	Lesson 1-4, Lesson 1-5; Chapter 3

Time Frame	Topic	SOL	Standard	Essential Knowledge and Skills	Textbook Correlation and Other Resources
Quarter 2 Unit 5 4 days	Triangles –Lengths of sides and measure of angles	G.5 G.5a G.5 b G5.c G5 G 4	Using real-world contexts, the student, given information concerning the lengths of sides and/or measures of angles in triangles will: Order the sides by length, given the angle measures Order the angles by degree measure, given the side lengths Determine whether a triangle exists Determine the range in which the length of the third side must lie.	Order the sides of a triangle by their lengths when given the measures of the angles. Order the angles of a triangle by their measures when given the lengths of their sides. Given the lengths of three segments, determine whether a triangle can be formed. Given the lengths of two sides of a triangle determine the range in which the length of the third side must lie. Solve real-world problems given information about the lengths of sides and /or measures of angles in triangles. Construct an equilateral triangle	Lesson 5-6 ; Teacher created materials

Time Frame	Topic	SOL	Standard	Essential Knowledge and Skills	Textbook Correlation and Other Resources
Quarter 2 Unit 6 5 days	Triangle Congruency	G.6	The student, given information in the form of a figure or statement, will prove two triangles are congruent, using algebraic and coordinate methods as well as deduction proofs.	Use definitions, postulates, and theorems to prove triangles congruent. Use coordinate methods, such as the distance formula and the slope formula, to prove two triangles are congruent. Use algebraic methods to prove two triangles are congruent.	Lesson 4-2, 4-3, 4-4, 4-6, and 4-7

Time Frame	Topic	SOL	Standard	Essential Knowledge and Skills	Textbook Correlation and Other Resources
Quarter 2 Unit 11 3 days	Transformations and Symmetry	G.3c	Investigate symmetry and determine whether a figure is symmetric with respect to a line or a point	Determine whether a figure has point symmetry, line symmetry, both, or neither.	Lesson 9-4
		G.3d	Determine whether a figure has been translated, reflected, rotated, dilated, using coordinate methods.	Given an image and pre-image, identify the transformation that has taken place as a reflection, rotation, dilation, or translations.	Lesson 9-1, 9-2, 9-3, 9-5, 9-6

Note: Review the concepts of ratios and proportions before beginning this unit. Lesson 7-1

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Quarter 2 **Unit 7** **4 days**	Triangle Similarity	G.7	The student, given information in the form of a figure or a statement, will prove two triangles are similar, using algebraic and coordinate methods as well as deductive proofs.	Use definitions, postulates, and theorems to prove triangles similar. Use algebraic methods to prove that triangles are similar. Use coordinate methods, such as the distance formula, to prove two triangles are similar.	Lessons 7-3, 7-4, 7-5 VA -4

MIDTERMS

SEMESTER TWO

Time Frame	Topic	SOL	Standard	Essential Knowledge and Skills	Textbook Correlation and Other Resources
Quarter 3 Unit 8 5 days	Right Triangles	G.8	The student will solve real-world problems involving right triangles by using the Pythagorean Theorem and its converse, properties of special right triangles, and right triangle geometry.	Determine whether a triangle formed with three given lengths forms a right triangle. Solve for missing lengths in geometric figures, using properties of 45°-45°-90° triangles. Solve for missing lengths in geometric figures, using properties of 30°-60°-90° triangles. Solve problems involving right triangles, using sine, cosine, and tangent ratios. Solve real-world problems, using right triangle trigonometry and properties of right triangles. Explain and use the relationship between the sine and cosine of complementary angles.	Chapter 8

Time Frame	Topic	SOL	Standard	Essential Knowledge and Skills	Textbook Correlation and Other Resources
Quarter 3 Unit 9 5 days	Quadrilaterals	G.9	The student will verify characteristics of quadrilaterals and use of properties of quadrilaterals to solve real-world problems.	Solve problems, including real-world problems, using the properties specific to parallelograms, rectangles, rhombi, squares, isosceles trapezoids, and trapezoids. Prove that quadrilaterals have specific properties, using coordinate and coordinate and algebraic methods, such as a distance formula, slope, and midpoint formula. Prove the characteristics of quadrilaterals, using deductive reasoning, algebraic, and coordinate methods. Prove properties of angles for a quadrilateral inscribed in a circle.	Chapter 6 –Lessons 6-2 through 6-6

Time Frame	Topic	SOL	Standard	Essential Knowledge and Skills	Textbook Correlation and Other Resources
Quarter 3 Unit 10 5 days	Polygons	G.10	The student will solve real-world problems involving angles of polygons.	Solve real-world problems involving the measures of interior and exterior angles of polygons. Identify tessellations in art, construction, and nature. Find the sum of the measures of the interior and exterior angles of a convex polygon. Find the measure of each interior and exterior angles of a regular polygon. Find the number of sides of a regular polygon, given the measures of interior or exterior angles of the polygon.	Lesson 6-1; 6-7; 6-8; 9-7
		G 4	Constructions	Construct a square/eq triangle or a regular hexagon inscribed in a circle	

Time Frame	Topic	SOL	Standard	Essential Knowledge and Skills	Textbook Correlation and Other Resources
Quarter 3 Unit 12 5 days	Three-Dimensional Figures	G.13	The student will use formulas for surface area and volume of three-dimensional objects to solve real-world problems.	Find the total surface area of cylinders, prisms, pyramids, cones, and spheres, using appropriate formulas. Calculate the volume of cylinders, prisms, pyramids, cones, and spheres using the appropriate formulas. Solve problems, including real-world problems, involving total surface area and volume of cylinders, prisms, pyramids, cones, and spheres as well as combinations of three-dimensional figures. Calculators may be sued to find the decimal approximation results.	Formula Sheets; Chapter 11

Time Frame	Topic	SOL	Standard	Essential Knowledge and Skills	Textbook Correlation and Other Resources
Quarter 4 Unit 13 5 days	Similarity with 2-D and 3-D objects	G.14a	The student will use similar geometric objects in two-or three-dimensions to: Compare ratios between side lengths, perimeters, areas, and volumes	Compare ratios between side lengths, perimeters, areas, and volumes, given two similar figures.	Chapter 10 Lessons 10-1 to 10-3 to prepare for SOL; Lesson 10-4; Lessons 11-2 through 11-7
		G.14b	Determine how changes in one or more dimensions of an object affect area and/or volume of an object	Determine how changes in one or more dimensions of an object affect other derived measures (perimeter, area, total surface area, and volume) of an object.	
		G.14c	Determine how changes in area and/or volume of an object affect one or more dimensions of the object	Describe how changes in one or more measures (perimeter, area, total surface area, and volume) affect other measures of an object.	
		G.14d	Solve real world problems about similar geometric objects.	Solve real-world problems involving measured attributes of similar objects.	

Time Frame	Topic	SOL	Standard	Essential Knowledge and Skills	Textbook Correlation and Other Resources
Quarter 4 Unit 14 8 days	Circles	G.11a	The student will use angles, arcs, chords, tangents and secants to: Investigate, verify, and apply properties of circles.	Find lengths, angle measures, and arc measures associated with -two intersecting chords -two intersecting secants -an intersecting secant and tangent -two intersecting tangents -central and inscribed angles. Verify properties of circles using deductive reasoning, algebraic, and coordinate methods.	Lessons 12-1 through 12-4,
		G.11b	GIve real-world problems involving properties of circles.	Solve real-world problems associated with circles, using properties of angles, lines, and arcs. Calculate the area of a sector and the length of an arc of a circle, using proportions.	Lessons 10-6, 10-7
		G.11c	find arc lengths and areas of sectors in circles.		

Time Frame	Topic	SOL	Standard	Essential Knowledge and Skills	Textbook Correlation
Quarter 4 Unit 15 3 days	Constructions and Review	G 4		Construct the inscribed and circumscribed circles of a triangle Construct a tangent line from a point outside a given circle to the circle	