Pacing Guide: Geometry B					
Content and Duration	**Content Expectation (GLCE/HSCE)**	**Student Learning Targets**	**Content Vocabulary**	**Required Activities**	**Common Assessments and Rubrics**
Unit 7 Lengths and Areas **9 days**	**G1.2.2 Construct and justify arguments and solve multi-step problems involving angle measure, side length, perimeter, and area of all types of triangles.** **G1.4.1 Solve multi-step problems and construct proofs involving angle measure, side length, diagonal length, perimeter, and area of squares, rectangles, parallelograms, kites and trapezoids.** **G1.5.1 Know and use subdivision or circumscription methods to find areas of polygons** **G1.5.2 Know, justify, and use formulas for the perimeter and area of a regular n-gon and formulas to find interior and exteriors angles of a regular n-gon and their sums.** **G1.6.1 Solve multi-step problems involving circumference and area of circles.** **G1.6.4 Know and use properties of arcs and sectors, and find lengths of arcs and areas of sectors.** **G2.1.1 Know and demonstrate the relationships between the area formula of a triangle, the**	**I can calculate the perimeters of parallelograms, kites, and equilateral polygons from appropriate lengths and vice versa.** **I can describe or apply a method for determining the area of an irregularly shaped region.** **I can calculate areas of squares, rectangles, parallelograms, trapezoids, triangles, and regular polygons from relevant lengths.** **I can apply the Pythagorean Theorem to calculate lengths of segments and areas in right triangles and other figures.** **I can apply the Pythagorean Converse Theorem.** **I can apply the special right triangle relationships to find lengths and areas.** **I can tell how to derive formulas for area.** **I can apply the perimeter formulas, area formulas, and the Pythagorean**	Perimeter Area Square units Height of a triangle Altitude of a triangle Altitude of a trapezoid Height of a trapezoid Pythagorean triple 45-45-90 triangle 30-60-90 triangle apothem circumference pi π sector of a circle	Read 8-1 to 8-9 p. 454: 1-24 p 460: 1-22 p 464: 1-17 In Class Activity—Finding areas of lakes p 471: 1-25 p 477: 1-25 In Class Activity—Where do area formulas come from? p 484: 1-26 p 492: 1-21 p 497: 1-24 p 503: 1-21 Shaded Areas Worksheet	Quadrilateral Lengths and Areas Review (formative) Lengths and Areas Quiz Lengths and Areas Review (formative) Lengths and Areas Test Project 4: Geometric Poetry Project 5: Option 1 Finding Surface Area and Volume of 2 objects Option 2 Finding Lateral Area, Surface Area and Volume of your bedroom along with the cost to paint and floor the room. Exam B

	area formula of a parallelogram, and the area formula of a trapezoid. **G2.1.2 Know and demonstrate the relationships between the area formulas of various quadrilaterals.**	**Theorem to real situations.** **I can apply formulas for the area and circumference of a circle to real situations.** **I can determine the area of a polygon in the coordinate plane.**			
Unit 8 Three Dimensional Figures **8 days**	**G1.8.1 Solve multi-step problems involving surface area of pyramids, prisms, cones, and cylinders.** **G1.8.2 Identify symmetries of pyramids, prisms, cones, cylinders, hemispheres, and spheres** **G2.2.1 Identify or sketch a possible three-dimensional figure, given two-dimensional views. Create a two-dimensional representation of a three-dimensional figure.** **G2.2.2 Identify or sketch cross sections of three-dimensional figures. Identify or sketch solids formed by revolving two-dimensional figures around lines.**	**I can draw common 3-dimensional shapes.** **I can give views of a figure from the top, sides, or bottom.** **I can calculate surface areas and lengths in prisms, cylinders, pyramids, and cones.** **I can make and analyze perspective drawings.** **I can make conclusions based on the Point-Line-Plane Postulate.** **I can identify parts of common 3-dimensional figures.** **I can distinguish 3-dimensional figures by their defining properties.** **I can determine symmetry planes in 3-dimensional figures.** **I can draw plane sections of real-life 3-dimensional figures.** **I can apply formulas for lateral and surface area to**	Angle formed by a line and a plane Line perpendicular to a plane Parallel planes Distance between parallel planes Distance to a plane from a point Skew lines Dihedral angle Edge of a dihedral angle Perpendicular planes Surface, sold Interior, exterior of a surface Face, edge, vertices of a surface Cylindrical solid Lateral surface	Read 9-1 to 9-10 P 523: 1-27 P 529: 1-24 P 535: 1-21 P 541: 1-21 P 547: 1-20 P 556: 1-22 P 562: 1-22 P 567: 1-23 P 574: 1-25 P 580: 1-17 In Class Activity Building polyhedra	Review Drawing 3-D Figures, Views of Figures, and Labeling 3-D Figures Quiz Drawing 3-D Figures, Views of Figures, and Labeling 3-D figures Review Drawing Plane Sections, Nets, Conic Sections and Finding Lateral Area and Surface Area Quiz Drawing Plane Sections, Nets, Conic Sections and Finding Lateral Area and Surface Area Project 4: Geometric Poetry Project 5: Option 1 Finding Surface Area and Volume of 2 objects Option 2 Finding Lateral Area, Surface Area and Volume of your bedroom along with the cost to paint and floor the room. Exam B

		real situations. **I can make a surface from a net and vice versa.** **I can determine the 3-dimensional figure from the 2-dimenstional views of a figure.**	Height, altitude of a solid Right solid, oblique solid Regular prism, cube Lateral edge of a prism Conic surface and solid Pyramid, cone Lateral edges, base edges, of a pyramid Faces, lateral faces of a pyramid Right pyramid, oblique pyramid, regular pyramid Axis of a cone Slant height Vanishing point Views of a 3-d figure Isometric drawing Sphere Radius, center, diameter or a sphere Great circle, small		

			circle of a sphere Hemisphere Plane section or 2-dimensional cross section Conic Sections Reflecting plane Symmetry plane Polyhedron/ Polyhedra Net Surface Area Lateral Area		
Unit 9 Formulas for Volume 10 days	**Unit 7 objective apply as none of the unit 9 objectives can be completed without the base knowledge from unit 7.** **G1.8.1 Solve multi-step problems involving surface area and volume of pyramids, prisms, cones, cylinders, hemispheres, and spheres.** **G2.1.3 Know and use the relationship between the volumes of pyramids and prisms.**	**I can calculate the volumes of cylindrical solids from appropriate lengths, and vice versa** **I can calculate the volumes of conic solids from appropriate lengths, and vice versa.** **I can calculate the surface area and volume of a sphere from appropriate lengths.** **I can develop formulas for specific figures from more general formulas.** **I can compare the surface areas and volumes of related figures.**	Volume Cubic unites Unit cube Box Cube root <u>Formulas</u>: L.A. = ph L.A. = ½ lp S.A. = L.A. + 2B S.A. = L.A. + B S.A. = $4r^2$ V = Bh V = 1/3 Bh V = 4/3 r^2	Read 10-1 to 10-7 P 600: 1-28 P 606: 1-22 P 612: 1-24 P 619: 1-21 S.A. and Volume Worksheet P 625: 1-21 P 630: 1-19 P 635: 1-19 Formula Note card	Pyramids and Prisms Volume Review Pyramids and Prisms Volume Quiz Volumes Review Volumes Test Project 5: Option 1 Finding Surface Area and Volume of 2 objects Option 2 Finding Lateral Area, Surface Area and Volume of your bedroom along with the cost to paint and floor the room. Exam B

		I can determine what happens to the surface area and volume of a figure when dimensions are multiplied by some number. **I know the conditions under which Cavalieri's Principle can be applied.** **I can use volume in relation to liquid capacity.** **I can apply the formula for surface area of a sphere to real situations.** **I can apply formulas for volumes to real situations.** **I can represent products of two (or three) numbers or expressions as areas of rectangles (or volumes of boxes) and vice versa.**			
Unit 10 Indirect Proofs and Coordinate Proofs 8 days	**L3.1.3 Define and explain the roles of axioms (postulates), definitions, theorems, counterexamples, and proofs in the logical structure of mathematics. Identify and give examples of each.** **L3.2.2 Use the connectives "not", "and", "or", and "if. . ., then" in mathematics and everyday settings. Know the truth table of each connective and how to logically negate statements involving these connectives.** **L3.2.4 Write the converse, inverse, and contrapositive of an "if. . ., then. . ." statement.**	**I can determine the distance between two points in the coordinate plane.** **I can determine the coordinates of the midpoint of a segment in the coordinate plane.** **I can apply the Midsegment of a Trapezoid and Midsegment of a triangle Theorems.** **I can find distances and coordinates of midpoints in 3-D space.** **I can write the converse,**	Negation Inverse Contrapositive Logically equivalent Direct reasoning, direct proof Indirect reasoning, indirect proofs Contradictory statements Convenient location for a figure	Read 11-1 to 11-9 P 650: 1-20 P 660: 1-24 P 667: 1-26 P 673: 1-23 P 679: 1-22 P 685: 1-22 P 691: 1-18 P 697: 1-17 P 705: 1-21 Formula note card	Indirect Proofs Review Indirect Proofs Quiz Indirect and Coordinate Proofs Review Indirect and Coordinate Proofs Test Exam B

	Use the fact, in mathematical and everyday settings, that the contrapositive is logically equivalent to the original while the inverse and converse are not. **L3.3.2 Construct proofs by contradiction. Use counter-examples, when appropriate, to disprove a statement.** **G1.1.5 Given a line segment in terms of its endpoints in the coordinate plane, determine its length and midpoint.**	**inverse, or contrapositive of a conditional.** **I can follow the basic laws of logic to make conclusions.** **I can write indirect proofs.** **I can use coordinate geometry to deduce properties of figures and prove theorems.** **I can apply laws of logic in real situations.** **I can apply the Distance and Box Diagonal Formulas in real situations.** **I can graph and write an equation for a circle or a sphere given its center and radius, and vice versa.** **I can give convenient locations for triangles and quadrilaterals in the coordinate plane.**	Line tangent to a circle Unit Circle Midsegment of a trapezoid Midsegment of a triangle 2-D coordinate system 3-D coordinate system z-coordinate ordered triple		
Unit 11 Similarity, Similar Triangles and Trigonometry 9 days	**G1.2.4 Prove and use the relationships among the side lengths and the angles of 30-60-90 triangles and 45-45-90 triangles.** **G1.3.1 Define the sine, cosine, and tangent of acute angles in a right triangle as ratios of sides. Solve problems about angles, side lengths, or areas using trigonometric ratios in right triangles.** **G2.3.3 Prove that triangles are**	**I can draw the transformation images of figures.** **I can find angle measures, lengths, perimeters, areas, and volumes in similar figures.** **I can recognize and apply properties of size transformations and similar figures.** **Given a true proportion, I**	Size change, size transformation Size change factor Dilation Expansion Contraction Identity transformation Ratio	Read 12-1 to 12-4, 12-6 to 12-7, 13-3, 13-5 and 13-6 P 724: 1-21 P 727: 1-22 P 735: 1-25 P 742: 1-22 P 753: 1-22 P 760: 1-23 Similarity Worksheet P 790: 1-21	Similar Triangles and Similarity Review Similar Triangles and Similarity Quiz Sine, Cosine, and Tangent Review Sine, Cosine, and Tangent Quiz

	similar by using SSS, SAS, and AA conditions for similarity **G2.3.4 Use theorems about similar triangles to solve problems with and without use of coordinates.** **G2.3.5 Know and apply the theorem stating that the effect of a scale factor of k relating one two-dimensional figure to another or one three-dimensional figure to another, or that length, area, and volume of the figures, is to multiply each by k, k^2, and k^3, respectively.** **G3.2.1 Know the definition of dilation and find the image of a figure under a given dilation.** **G3.2.2 Given two figures that are images of each other under some dilation, identify the center and magnitude of the dilation.**	**can find another true proportion with the same terms.** **I can determine whether triangles are similar using the AA, SAS, or SSS Similarity Theorems.** **I can identify and determine proportional lengths and distances in real situations.** **I can apply the Fundamental Theorem of Similarity in real situations.** **I can find lengths in figures by applying the Side-Splitting Theorems and Side-Splitting Converse Theorem.** **I can determine sines, cosines, and tangents of angles.** **I can use trig ratios to find lengths and angle measures.** **I know the definitions of sine, cosine, and tangent.**	Proportion Extremes Means Similar Ratio of similitude, scale factor Geometric mean Leg opposite and angle Leg adjacent to an angle Tangent of an angle or tan A Sine of an angle or sin A Cosine of an angle or cos A Angle of depression Angle of elevation	P 796: 1-5 P 804: 1-22 P 811: 1-22 Sine, Cosine, Tangent Worksheets	Exam B
Unit 12 Further Work with Circles 3-4 days	**G1.6.2 Solve problems and justify arguments about chords and lines tangent to circles.** **G1.6.3 Solve problems and justify arguments about central angles, inscribed angles, and triangles in circles.**	**I can calculate lengths of chords and arcs.** **I can calculate measures of angles between chords, secants, or tangents from measurements of intercepted arcs, and vice versa.** **I can make deductions from properties of radii,**	Chord of an arc Central angle of a chord Round-robin tournament Secant to a circle Tangent to a circle	Read 14-1 to 14-3 and 14-5 P 828: 1-26 P 835: 1-23 P 840: 1-8 Geometer's Sketchpad Assignment	Angles in Circles Review Angles in Circles Quiz Exam B

		chords, and tangents. **I can apply the method of scheduling round-robin tournaments to real-life situations.**	Circumscribed circle Inscribed circle	Angles in Circles Worksheets	