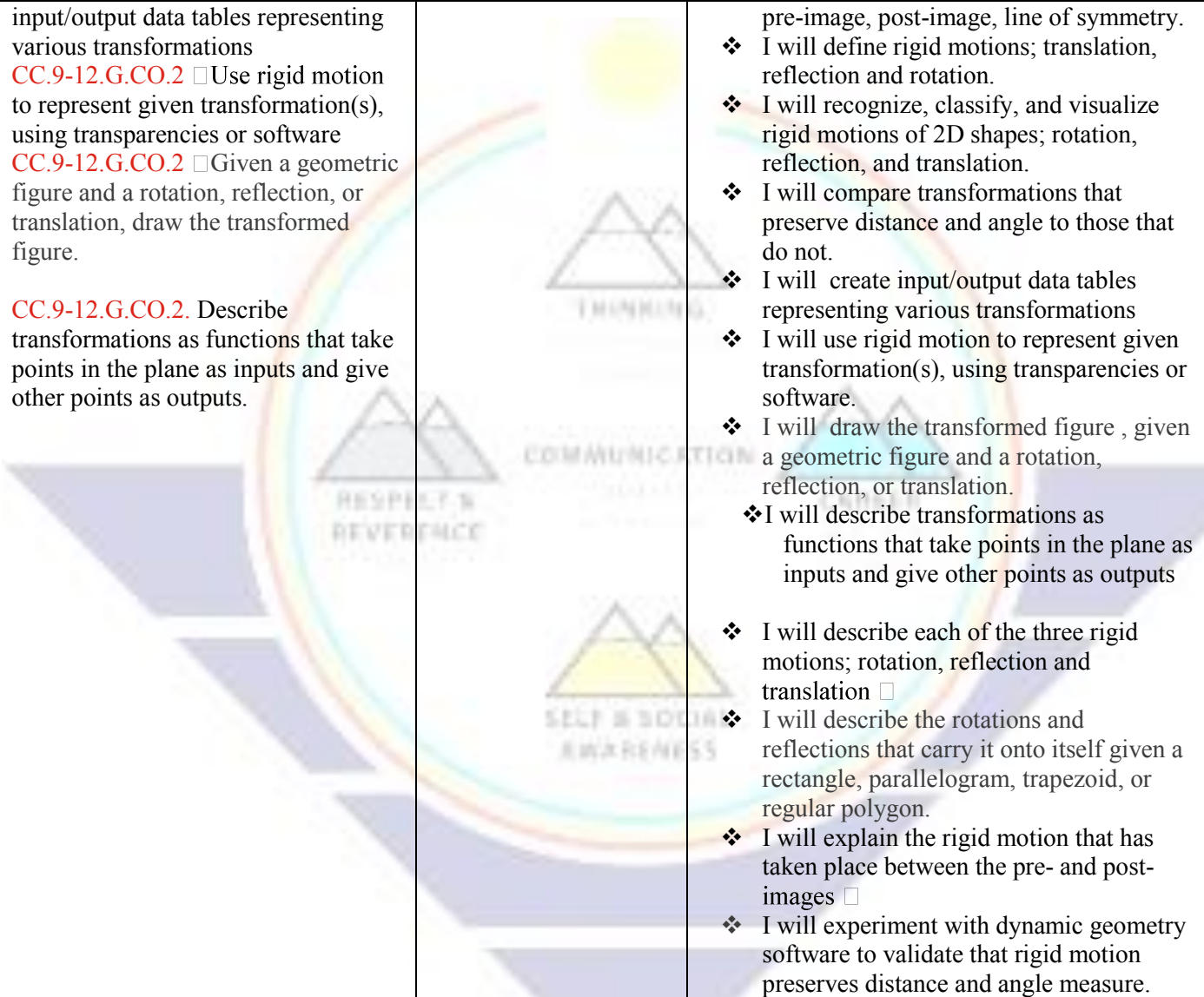# Ganado Unified School District Geometry

PACING Guide SY 2014-2015

Timeline & Resources	AZ & ELA Standards	Essential Question	Learning Goal	Vocabulary
1st Quarter Unit 1 Geometry By Larson PP. 1-7, 42-47, 147-151, 172-187, 572-579, 588-611 http://www.kutasoftware.com/freeige.html http://www.mathsisfun.com/geometry/reflection.html Prentice Hall Gold Geometry • Teaching Resources Copyright © by Pearson	CC.9-12.G.CO. Transformations and the Coordinate Plane. CC.9-12.G.CO.1 Know precise definitions of geometric terms based on the undefined notion of point, line, distance along a line and distance around a circular arc. CC.9-12.G.CO.4 Develop and use definitions of rigid motion (rotation, reflection and translation). CC.9-12.G.CO.2.Compare transformations that preserve distance and angle to those that do not. CC.9-12.G.CO.2 ☐Create	1. What is rigid motion? How is it used in geometry? 2. What is coordinate geometry? How is it used? 3. How can coordinate geometry describe rigid motion? 4. Explain the significance of undefined terms to the study of geometry.	❖ I will define, name and sketch: Undefined terms (Point, Line, Plane), Ray, Segment, Angle, Vertex Length, Measure, Endpoints*, Midpoint, Distance, Congruent, Postulate, Theorem, Circle, Parallel lines, Perpendicular lines, etc. ❖ I will use notation for angles, points, segments, rays, planes. ❖ I will name and classify polygons ❖ I will classify angles and identify angle pairs (i.e. adjacent, vertical, complementary, supplementary) ❖ Utilize postulates about points, lines and planes ❖ I will distinguish between postulates and theorems ❖ I will compute segments length, solve segment lengths on a coordinate plane, and convert unit lengths ❖ I will solve for angle measures (i.e. supplementary, complementary, etc.) ❖ I will solve perimeter, circumference and area, including irregular polygons. (review from middle school) ❖ I will define glide reflection, isometry,	Angle Line Ray Circle Radius Diameter Transformation Perpendicular line Parallel line Line segment Rotation Reflection Translation Isometry Line of reflection Angle of rotation Fixed point Plane Rectangle Square Trapezoid Regular Polygon Triangle Coordinate Plane Ordered Pair Point Slope

Education, Inc., or its affiliates. http://www.ati-online.com/ http://puzzlemaker.discoveryeducation.com/ 5 weeks	input/output data tables representing various transformations CC.9-12.G.CO.2 ☐Use rigid motion to represent given transformation(s), using transparencies or software CC.9-12.G.CO.2 ☐Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure. CC.9-12.G.CO.2. Describe transformations as functions that take points in the plane as inputs and give other points as outputs.		pre-image, post-image, line of symmetry. ❖ I will define rigid motions; translation, reflection and rotation. ❖ I will recognize, classify, and visualize rigid motions of 2D shapes; rotation, reflection, and translation. ❖ I will compare transformations that preserve distance and angle to those that do not. ❖ I will create input/output data tables representing various transformations ❖ I will use rigid motion to represent given transformation(s), using transparencies or software. ❖ I will draw the transformed figure , given a geometric figure and a rotation, reflection, or translation. ❖I will describe transformations as functions that take points in the plane as inputs and give other points as outputs ❖ I will describe each of the three rigid motions; rotation, reflection and translation ☐ ❖ I will describe the rotations and reflections that carry it onto itself given a rectangle, parallelogram, trapezoid, or regular polygon. ❖ I will explain the rigid motion that has taken place between the pre- and post-images ☐ ❖ I will experiment with dynamic geometry software to validate that rigid motion preserves distance and angle measure.	Angle measures
1st Quarter Unit 1	CC.9- 12.G.GPE.5. Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems		❖ I will recognize that: • Parallel lines have the same slope . • Perpendicular lines have slopes that	

			are opposite reciprocals. • Perpendicular lines intersect at a 90 degree angle. • Perpendicular lines have slope that are opposite reciprocals. • Parallel lines are coplanar and never intersect so they must have the same slope (equidistant) ❖ I will identify the equation of a line parallel or perpendicular to a given line that passes through a given point Identify and use intercepts. ❖ Compile a list of all the lines that are parallel and/or perpendicular within a given complex figure. ❖ I will rove that the slopes of parallel lines are equal ▯ ❖ Prove that the product of the slopes of perpendicular lines is -1. ❖ I will solve geometric problems using slope criteria for parallel and perpendicular lines ▯ ❖ I will solve problems about parallel and perpendicular lines using previous knowledge of transformations to ▯ ❖ I will write the equation of a line parallel or perpendicular to a given line from an equation or a graph, passing through a given point. ❖ I will graph parallel and perpendicular lines using transformations	
	CC.9-12.G.GPE.4. Use Coordinate Geometry to prove simple geometric theorems, and properties algebraically. CC.9-12.G.GPE.6. Find the point on a		❖ I will use the of distance formula. ❖ I will use the of slope formula to determine parallel and perpendicular line. ❖ I will use the definition of points, lines, planes.	

| | | directed line segment between two given points that partitions the segment in a given ratio.

CC.9-12.G.GPE.7.Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula. | | ❖ I will use the formulas for: distance, slope, midpoint ☐
❖ I will recognize: angle classification, addition of segments and angles, transversals and angle relationships (parallel and perpendicular lines), interior and exterior angles of polygons, congruence and inequality, rotation, reflection, translation, classification and properties of (special) triangles and other polygons and non-polygons , basic rules for solving algebraic equations

❖ I will use coordinate geometry to prove simple geometric theorems algebraically; prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle.
❖ I will find the point on a directed line segment between two given points that partitions the segment in a given ratio.
❖ I will use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.
❖ I will construct congruent figures using points and segments.
❖ I will prove that segments are congruent and that distances are equal.
❖ I will determine classification(s) of triangles and other polygons .I will use algebraic foundations to determine segment length; polygon perimeter and area ☐
❖ I will use coordinate geometry to verify properties of simple polygons.
❖ I will use coordinate geometry to verify/prove theorems. | |

| | | | ❖ I will find area of triangle, quadrilaterals (square, parallelogram, rectangle, and trapezoids).
❖ I will prove midpoint of the hypotenuse of a right triangle is equidistant from the three vertices.
❖ I will deduce whether figures are congruent Interpret how many lines of symmetry a polygon has Realize areas of simple shapes can be added to represent the area of a more complex shape. | |
| 1st Quarter
Unit 2

Geometry by Holt McDougal, Larson, Et. Al.
Chapter 2 : pages 122-131
Chapter 3: pages 154-170
Chapter 4: pages 214 - 2280
http://www.kutasoftware.com/freeige.html
http://www.mathsisfun.com/geometry/reflection.html | CC.9-12.G.CO. Congruence, Proof and Construction

CC.9-12.G.CO.7 Use the definition of congruence, in terms of rigid motions, to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.
CC.9-12.G.CO.6 Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.
CC.9-12.G.CO. 8. Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions

CC.9-12.G.CO.9. Prove theorems about lines and angles. Theorems include: vertical angles are congruent; | 1. What does it mean for two figures to be congruent? How is rigid motion used to prove congruence? How is coordinate geometry used to prove congruence?
2. What are the two types of reasoning that are used to prove statements true? How are they similar and different? | ❖ I will use rigid motion to translate two triangles or map one figure onto another figure .
❖ I will recognize the effects of rigid motion on orientation and location of figures; that congruent figures share the same size and shape regardless of orientation or location □
❖ I will use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.
❖ I will determine corresponding parts of triangles □
❖ I will identify congruence transformations □
❖ I will set up appropriate congruent statements of corresponding sides, angles, and triangles
❖ I will explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions. | Corresponding sides

Corresponding angles

Congruent figures (congruent angles)

Vertical angles

Angle bisector

Segment bisector

Perpendicular bisector

Perpendicular lines

Transversal line

Equidistant |

when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segments' endpoints.

CC.9-12.G.CO.12 Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.

❖ I will present and support arguments using deductive reasoning to show ASA, SAS, and SSS proves congruence and that AAA and SSA does not.
❖ Critiquing arguments of others using definitions of rigid motion and congruence for triangles.

❖ I will recognize that:
  • Vertical angles use rotation
  • Alternate interior angles use rotation and translation
  • Corresponding angles use translation
  • Perpendicular lines use reflection

❖ I will define inductive reasoning, conjecture, counterexample, deductive reasoning and proof.
❖ I will recognize the three types of proofs as two-column, flowchart, and paragraph Identify angles formed by two lines and a transversal.

❖ I will perform rigid motion on the coordinate plane to prove that:
  • Alternate interior angles congruent
  • Corresponding angles congruent ▢
❖ I will use a coordinate plane and rigid motions to:
  • justify parallel and perpendicular lines
  • Show preservation of distance and angle measures ▢
❖ I will show any point on the perpendicular bisector of a line segment to be is equidistant to the two end points

Parallel lines

Right angle

Congruent angles

Congruent figures (triangle)

			of that line segment, given the perpendicular bisector .
			❖ I will explain how rigid motion can be used to prove theorems.
			❖ I will explain how rigid motion leads to the properties of angle relationships (vertical angles, alternate interior angles and corresponding angles).
			❖ I will compare and contrast inductive versus deductive reasoning.
			❖ Use geometric symbols associated with congruence, parallel, perpendicular, pre-image and post-image.

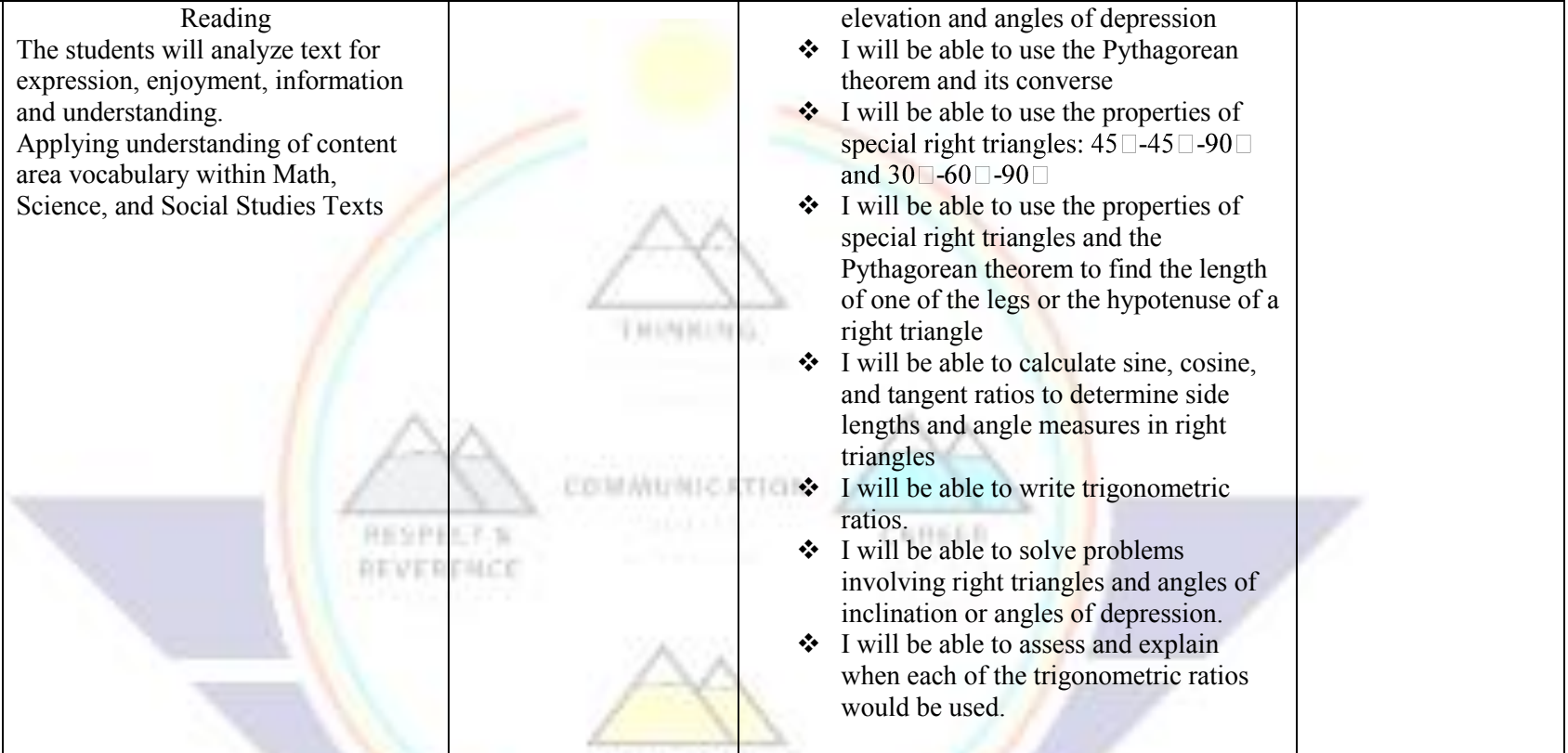| Timeline & Resources	AZ & ELA Standards	Essential Question	Learning Goal	Vocabulary
2nd Quarter Unit 2 Geometry By Larson http://www.kutasoftware.com/freeige.html http://www.mathsisfun.com/ge	Congruence, Proof and Construction (5 weeks) CC.9-12.G.CO.10 Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180 degrees; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point. CC.9-12.G.CO.13 Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle. ELL Standard: Standard 4 Reading The students will analyze text for expression, enjoyment, information	1. What does it mean for two figures to be congruent? How is rigid motion used to prove congruence? How is coordinate geometry used to prove congruence? 2. What are the two types of reasoning that are used to prove statements true? How are they similar and different?	❖ I will be able to classify triangles by sides and angles . ❖ I will recognize properties of triangles, such as: ➢ All triangles have three angles and three sides ➢ Isosceles triangles are triangles with two congruent sides. ❖ I will recognize properties of: ➢ midsegments ➢ medians ➢ altitudes ➢ parallel ➢ inequalities ❖ I will be able to define midsegment, median, centroid, altitude, deductive reasoning, inductive reasoning, concurrency ❖ I will be able to use three different methods for constructing a proof .	Inscribed polygons Median of a triangle Regular polygon Midsegment Incircle Circumcenter Base angles Interior angles Exterior Angles

ometry/reflection.html
 	
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http://www.ati-online.com/
 	
http://puzzlemaker.discoveryeducation.com/
 	
Dynamic geometry software for showing triangles congruent http://illuminations.nctm.org/ActivityDetail.aspx?ID=4
 	
☐ Dynamic geometry software for discovering properties of
	and understanding.
	Applying understanding of content area vocabulary within Math, Science, and Social Studies Texts.
	CC.9-12.G.CO.11 Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.
	
	CC.9-12.G.CO.13 Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.
	
	ELL Standard: Standard 4
	        Reading
	The students will analyze text for expression, enjoyment, information and understanding.
	Applying understanding of content area vocabulary within Math, Science, and Social Studies Texts.
			❖ I will be able to use isometries to prove base angles of isosceles triangles are congruent.
			❖ I will be able to fold paper to show that the midsegment of a triangle is half the length of the third side
			❖ I will be able to use parallel lined to prove the triangle angle sum theorem.
			❖ I will be able to use coordinate geometry to prove concurrency of medians theorem.
			❖ Compare and contrast median, midsegment, and altitude.
			❖ Plan and explain a means for proving particular triangle theorems
			
			❖ I will be able to classify quadrilaterals
			❖ I will be able to define and classify parallelograms
			❖ I will review:
			    ➢ Different types of lines: parallel, perpendicular, neither
			    ➢ Angle relationships of alternate interior angles
			    ➢ Properties of congruence
			    ➢ CPCTC
			❖ I will define opposite sides, opposite angles, consecutive angles.
			
			❖ I will use side and angle relationships of parallelograms
			❖ I will use diagonal relationships of parallelograms, rhombuses, rectangles, and squares
			❖ I will use properties and definitions to
				Parallelogram
				
				Square
				
				Rhombus
				
				Rectangle
				
				Diagonal
				
				Bisect
				
				Opposite angles
				
				Adjacent angles

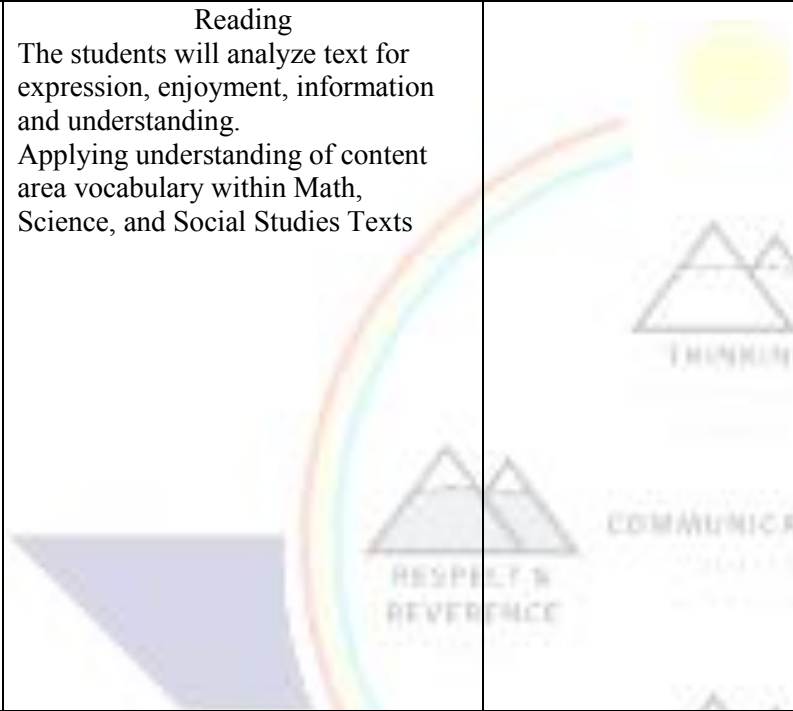| quadrilateral diagonals			- prove theorems about parallelograms - I will use coordinate geometry to prove theorems about parallelograms. - I will explain the distinction between parallelograms and other quadrilaterals using properties of side length, parallel sides, angle measures and relationships, and diagonals - I will write proofs in multiple ways	
2nd Quarter Unit 3 Geometry By Larson http://www.kutasoftware.com/freeige.html http://www.mathsisfun.com/geometry/reflection.html	Similarity, Proof and Trigonometry (4 weeks) CC.9-12.G.SRT.5 Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures. ELL Standard: Standard 4 Reading The students will analyze text for expression, enjoyment, information and understanding. Applying understanding of content area vocabulary within Math, Science, and Social Studies Texts.		- I will be able to recognize: - AA similarity postulate - SAS and SSS similarity theorems - SAS, SSS, and ASA congruence postulates - AAS and HL congruence theorems - I will be able to review cross product property, properties of proportions, pre-image, post-image - I will be able to define ratios, extended ratios, proportions, extremes, means, scale factor, fractals, indirect measurements, geometric mean, dilation, enlargement, reduction - I will be able identify similar polygons - I will write ratios and solve proportions - I will solve proportions - I will determine if polygons are similar - I will use similarity of polygons to solve for missing side lengths	Congruence / similarity criteria for triangles Trigonometric ratios Pythagorean Theorem Similar triangles Dilation Legs of right triangle Hypotenuse Complementary angles Ratio

			❖ I will determine scale factors	Proportion
			❖ I will use scale factors to calculate a length	
			❖ I will use similarity to find indirect measurements	Scale Factor
			❖ I will find and use relationships in similar right triangles.	Right Triangle
			➢ Drawing the altitude to the hypotenuse of a right triangle, creates three similar right triangles	Corresponding Sides
			❖ I will compose dilation images of figures .	Corresponding Angles
			❖ I will compare and contrast similarity versus congruence	
			❖ I compare and contrast the theorems/postulates for showing triangles similar and congruent	

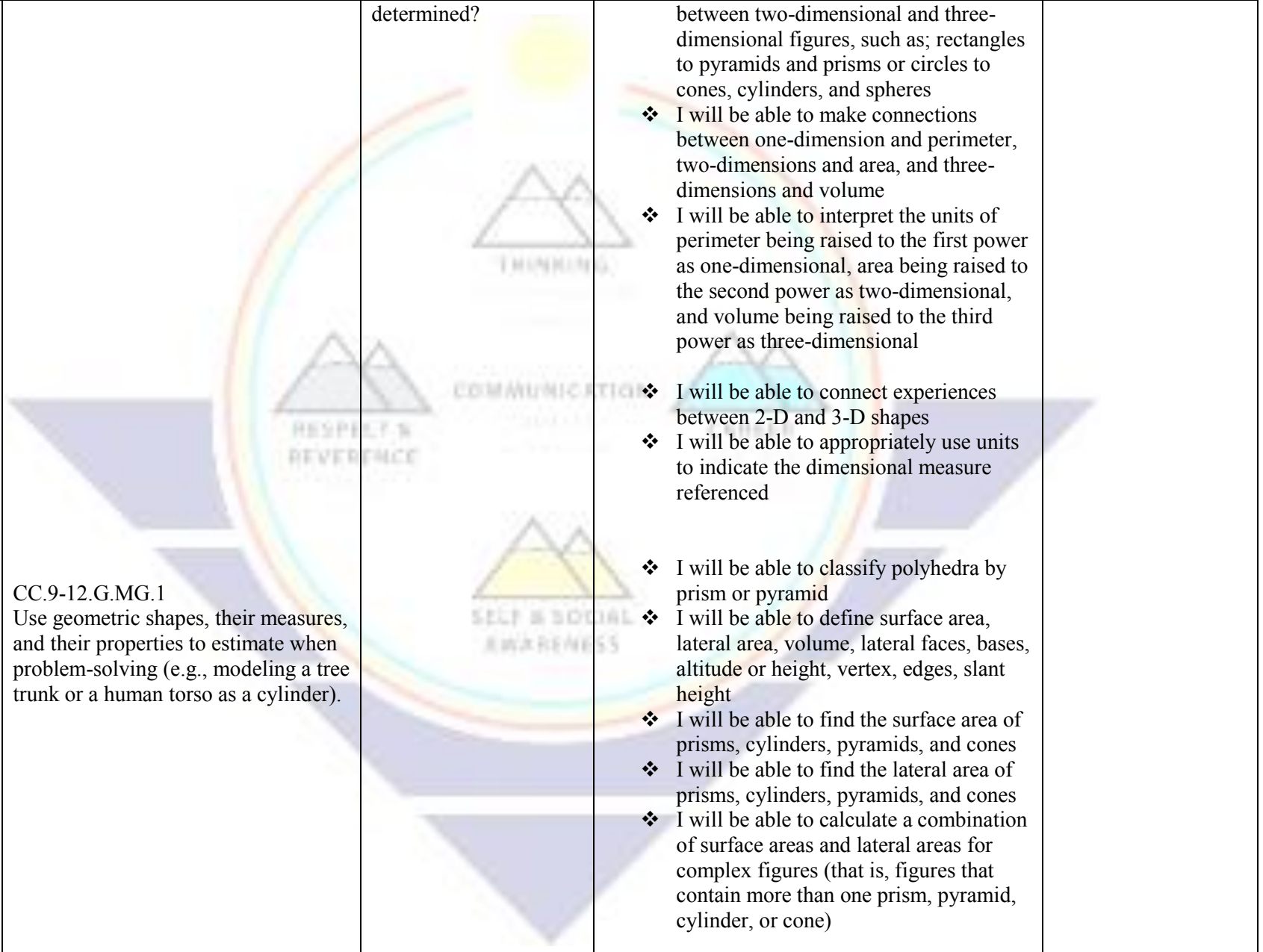| Timeline & Resources	AZ & ELA Standards	Essential Question	Learning Goal	Vocabulary
3rd Quarter Unit 4 Prentice Hall Gold Geometry • Teaching Resources http://www.ati-online.com/ http://puzzlemaker.discoveryeducation.com/	Similarity, Proof and Trigonometry CC.9-12.G.SRT.4 Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity. ELL Standard: Standard 4 Reading The students will analyze text for expression, enjoyment, information and understanding. Applying understanding of content	1. What are the triangle congruence postulates/theorems? How do you use them to solve problems? 2. How are rigid motion and dilation used to prove similar figures? 3. How are congruent triangles similar triangles similar and different? 4. How are side lengths or angle measures	❖ I will be able to review parallel lines, proportions, the Pythagorean theorem, the distance formula, classification of triangles ❖ I will be able to prove the Pythagorean theorem in multiple ways: ➢ using a coordinate plane and a right triangle whose sides are Pythagorean triples ➢ using rectangles ❖ I will be able to use the Pythagorean theorem to find the length of one of the	Ratio Proportion Scale Factor Right Triangle Corresponding Sides Corresponding Angles Congruence / similarity criteria

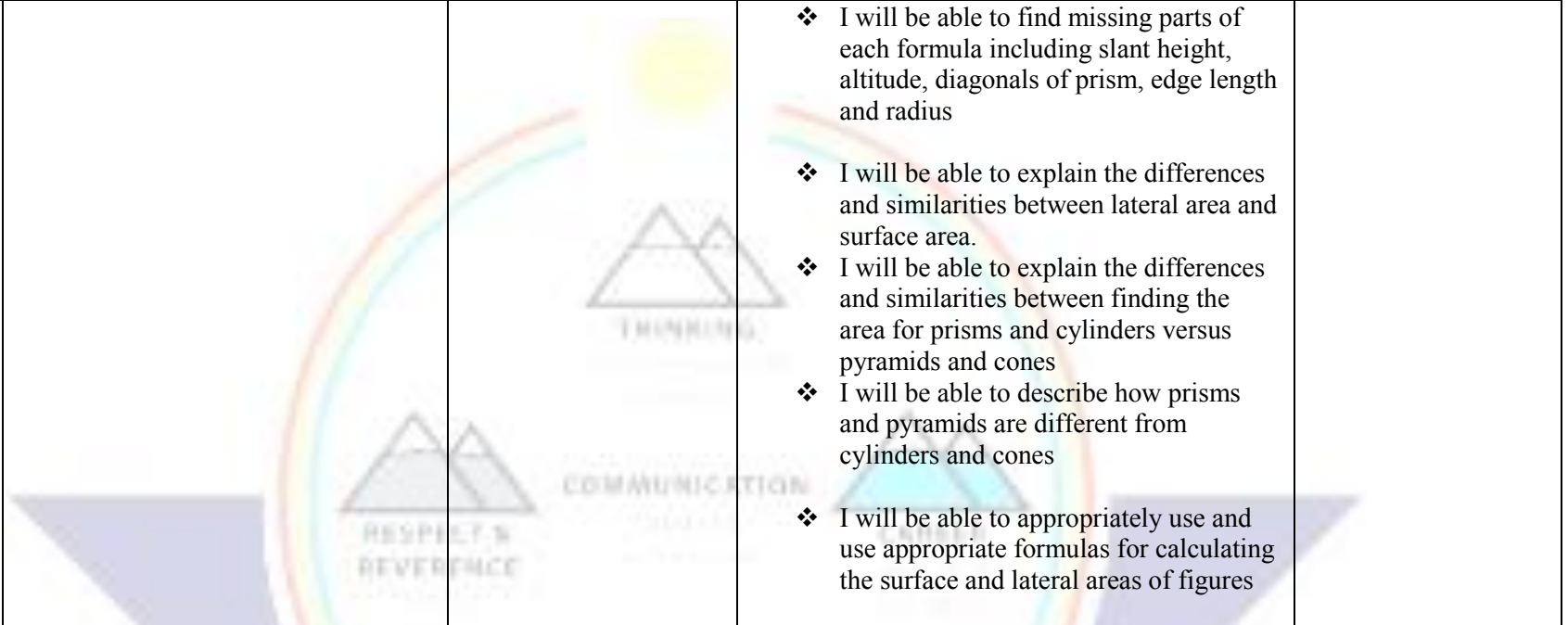|				
	area vocabulary within Math, Science, and Social Studies Texts.	found in right triangles?	legs or the hypotenuse of a right triangle . ❖ I will be able to compare and compare and contrast the Pythagorean theorem with the converse of the Pythagorean theorem; what does each reflect?	for triangles Trigonometric ratios Pythagorean Theorem Similar triangles Dilation Legs of right triangle Hypotenuse Complementary angles
3rd Quarter Unit 4 Prentice Hall Gold Geometry • Teaching Resources http://www.ati-online.com/ http://puzzlemaker.discoveryeducation.com/	Similarity, Proof and Trigonometry CC.9-12.G.SRT.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.* CC.9-12.G.SRT.6 Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles. CC.9-12.G.SRT.7 Explain and use the relationship between the sine and cosine of complementary angles. ELL Standard: Standard 4		❖ I will be able to understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles. ❖ I will be able to summarize the six trigonometric ratios ❖ I will review right triangles, the Pythagorean theorem, hypotenuse of a right triangle, legs of a right triangle ❖ I will be able to define Pythagorean triples, angles of elevation, angles of depression ❖ I will be able to identify angles of	

	Reading			elevation and angles of depression
	The students will analyze text for expression, enjoyment, information and understanding. Applying understanding of content area vocabulary within Math, Science, and Social Studies Texts			❖ I will be able to use the Pythagorean theorem and its converse ❖ I will be able to use the properties of special right triangles: 45□-45□-90□ and 30□-60□-90□ ❖ I will be able to use the properties of special right triangles and the Pythagorean theorem to find the length of one of the legs or the hypotenuse of a right triangle ❖ I will be able to calculate sine, cosine, and tangent ratios to determine side lengths and angle measures in right triangles ❖ I will be able to write trigonometric ratios. ❖ I will be able to solve problems involving right triangles and angles of inclination or angles of depression. ❖ I will be able to assess and explain when each of the trigonometric ratios would be used.	

Timeline & Resources	AZ & ELA Standards	Essential Question	Learning Goal	Vocabulary
4th Quarter Unit 5 Circle Prentice Hall Gold Geometry • Teaching Resources http://www.ati-online.com/ http://puzzlema	CC.9-12.G.C.2 Identify and describe relationships among inscribed angles, radii, and chords. • relationship between central, inscribed, and circumscribed angles; • inscribed angles on a diameter are right angles; • the radius of a circle is perpendicular to the tangent	1. How can you prove relationships between angles and arcs of a circle. 2. When lines intersect a circle or within a circle, how do you find the measures of resulting arcs, angle	❖ I will define inscribed angles, circumscribed angles, central angle, radius, diameter, chords, arcs, tangent, point of tangency ❖ I will review parallel, perpendicular, angle classifications ❖ Recognize that: ➢ the line tangent to a circle is perpendicular to the circles radius at	Central angle Inscribed angle Intercepted arc Circumscribed angle Tangent Secant Chord Quadratic trinomial Pythagorean theorem Supplementary angles

ker.discoveryeducation.com/	where the radius intersects the circle.
	ELL Standard: Standard 4
	Reading
	The students will analyze text for expression, enjoyment, information and understanding.
	Applying understanding of content area vocabulary within Math, Science, and Social Studies Texts
		and segments?
		3. How do you find the equation of a circle in the coordinate plane?
		4. How can relationships between angles and arcs in a circle be proven?
		5. How do perimeters and areas of similar figures compare?
			the point of tangency.
			➢ the measure of a central angle is equal to its arc .
			➢ the measure of an inscribed angle is half the measure of its arc.
			➢ inscribed angles on a diameter are right angles.
			
			❖ I be able to find the measure of an inscribed angle
			❖ I will be able to find the measure of an angle formed by a tangent and a chord
			❖ I will use the properties of a tangent to a circle
			❖ I will find the length of segments associated with circles
			❖ I will use congruent chords, arcs, and central angles
			❖ I will use perpendicular bisectors to chords
				Inscribed
				Circumscribed
				   Angle bisector
				Perpendicular
				   Bisector
				ncenter
				Circumcenter
				Opposite angles in a
				   quadrilateral
				Quadrilateral

4th Quarter
Unit 5
Prentice Hall
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• Teaching Resources
 	
http://www.ati-online.com/
http://puzzlemaker.discoveryeducation.com/
	CC.9-12.G.C.3
	Construct the inscribed and circumscribed circles of a triangle.
	
	CC.9-12.G.C.5
	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality;
	derive the formula for the area of a sector.
	
	ELL Standard: Standard 4
			❖ I will be able to differentiate between inscribed and circumscribed
			❖ I will be able to compare and contrast inscribed circles and circumscribed circles .
			❖ I will use mathematical tools to construct inscribed and circumscribed circles of a triangle.
			
			❖ I will be able to define similarity, proportional, radian, sector
			   ➢ I will review intercepted arc, radius, area
			❖ Recognize that :
			   ➢ angles can be represented in	

	Reading The students will analyze text for expression, enjoyment, information and understanding. Applying understanding of content area vocabulary within Math, Science, and Social Studies Texts		radian units ➤ a radian is the measure of the central angle of a circle created when the radius of the circle is equal in length to the arc create by the central angle ➤ the radian measure of an angle is the constant of proportionality ❖ I will find the areas of circles, sectors, and segments of circles ❖ I will be able to find the area of sectors for concentric circles ❖ I will be able to differentiate between the areas of a sector, triangle, and segment. ❖ I will be able to compare and contrast the area of a circle versus the area of a sector.

4th Quarter
Unit 5
Prentice Hall
Gold Geometry
• Teaching
Resources
 	
http://www.ati-online.com/
http://puzzlemaker.discoveryeducation.com/
 	
Web links that can be used
	CC.9-12.G.GPE.1
	Derive the equation of a circle of given center and radius using the Pythagorean Theorem.
	
	CC.9-12.G.C.1
	Prove that all circles are similar.
			❖ I will be able to review center of a circle, radius, diameter, Pythagorean Theorem, the equation of a circle theorem, the coordinate plane, parabolas, and quadratic functions.
			❖ I will be able to recognize the standard form of an equation of a circle.
			❖ I will be able to use coordinate geometry to draw a circle in order to :
			   ➤ Write an equation for a circle given radius and center.
			   ➤ Write the equation for a circle given endpoints of the diameter.
			❖ I will be able to complete the square to

			find the center and radius of a circle given by an equation.
throughout the curriculum: http://illuminations.nctm.org/Lessons.aspx http://map.mathshell.org/materials/index.php	ELL Standard: Standard 4 Reading The students will analyze text for expression, enjoyment, information and understanding. Applying understanding of content area vocabulary within Math, Science, and Social Studies Texts		❖ I will be able to graph a circle on the coordinate plane given the equation of the circle. ❖ I will be able to prove that all circles are similar. ❖ I will be able to compare the radii, circumference and area of circles that are not congruent. ❖ I will be able to describe the relationship between the radius or diameter and the circumference. ❖ I will be able to actualize that the ratio of circumferences and the ratio of areas of similar circles are related to the ratio of the corresponding measures.	
Unit 6. Three Dimensional	CC.9-12.G.GMD.3 Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.	1. What are the three types of measurement? How do you know which measurement to calculate? What are the units of measure associated with each type of measurement? 2. What is similar and different between measuring area and volume? When do you use each? 3. How can the intersection of a solid and a plane be	❖ I will be able to identify base shapes of cylinders, pyramids, cones, and spheres ❖ I will be able to recognize that volume is the space a figure occupies ❖ I will be able to understand perimeter and area ❖ I will be able to define bases, height ❖ I will be able to find missing parts of each formula including slant height, altitude, diagonals of prism, edge length and radius ❖ I will be able to calculate volume of a cylinder, pyramid, cone, and sphere ❖ I will be able to make connections	Cylinder Pyramid Cones Sphere Volume Surface area Slant height Altitude Diagonal Prism Lateral area

		determined?	between two-dimensional and three-dimensional figures, such as; rectangles to pyramids and prisms or circles to cones, cylinders, and spheres	
			❖ I will be able to make connections between one-dimension and perimeter, two-dimensions and area, and three-dimensions and volume	
			❖ I will be able to interpret the units of perimeter being raised to the first power as one-dimensional, area being raised to the second power as two-dimensional, and volume being raised to the third power as three-dimensional	
			❖ I will be able to connect experiences between 2-D and 3-D shapes	
			❖ I will be able to appropriately use units to indicate the dimensional measure referenced	
CC.9-12.G.MG.1 Use geometric shapes, their measures, and their properties to estimate when problem-solving (e.g., modeling a tree trunk or a human torso as a cylinder).			❖ I will be able to classify polyhedra by prism or pyramid ❖ I will be able to define surface area, lateral area, volume, lateral faces, bases, altitude or height, vertex, edges, slant height ❖ I will be able to find the surface area of prisms, cylinders, pyramids, and cones ❖ I will be able to find the lateral area of prisms, cylinders, pyramids, and cones ❖ I will be able to calculate a combination of surface areas and lateral areas for complex figures (that is, figures that contain more than one prism, pyramid, cylinder, or cone)	

			❖ I will be able to find missing parts of each formula including slant height, altitude, diagonals of prism, edge length and radius ❖ I will be able to explain the differences and similarities between lateral area and surface area. ❖ I will be able to explain the differences and similarities between finding the area for prisms and cylinders versus pyramids and cones ❖ I will be able to describe how prisms and pyramids are different from cylinders and cones ❖ I will be able to appropriately use and use appropriate formulas for calculating the surface and lateral areas of figures	