DARUL ARQAM ACADEMY NORTH

Scope and Sequence

Geometry Honors

1st Quarter			
Resources:			
Week	**Unit/Lesson**	**Learning Objectives**	**Reporting Categories (TEKS SEs)**
1st:	**Welcome, Introduction, Review, and Student Survey.**		
2nd	**Ch.: 1** **Lessons: 1-1, 1-2, 1-3, 1-4**	• Identify and model points lines and planes. • Identify intersecting lines and planes. • Calculate with measures. • Find the distance between two points. • Find the midpoint of the segment. • Locate a point on a segment a give fractional distance from one point. • Measure and classify angles. • Identify ad use congruent angles and the bisector of an angle.	**G.4A** The student uses the process skills with deductive reasoning to understand geometric relationships. The student is expected to distinguish between undefined terms, definitions, postulates, conjectures, and theorems. **G.4B** Identify and determine the validity of the converse, inverse, and contrapositive of a conditional statement and recognize the connection between a bi conditional statement and a true conditional statement with a true converse. **G.2B** Derive and use the distance, slope, and midpoint formulas to verify geometric relationships, including congruence of segments and parallelism or perpendicularity of pairs of lines **G.5B** Construct congruent segments, congruent angles, a segment bisector, an angle bisector, perpendicular lines, the perpendicular bisector of a line segment, and a line parallel to a given line through a point not on a line using a compass and a straightedge

2nd:) *Week 3rd:*	**Lessons: 1-5, 1-6, 1-7, Review and Test**	• Identify ad use special pairs of angles. • Identify perpendicular lines. • Identify and name polygons • Find perimeter, circumference, and the area of two-dimensional figures. • Identify and name three-dimensional figures. • Find surface area and volume.	**G.10 B** Identify the shapes of two-dimensional cross-sections of prisms, pyramids, cylinders, cones, and spheres and identify three-dimensional objects generated by rotations of two-dimensional shapes **G. 11C** Apply the formulas for the total and lateral surface area of three-dimensional figures, including prisms, pyramids, cones, cylinders, spheres, and composite figures, to solve problems using appropriate units of measure **G.11D** Apply the formulas for the volume of three-dimensional figures, including prisms, pyramids, cones, cylinders, spheres, and composite figures, to solve problems using appropriate units of measure
4th:	**Ch: 2** **Lessons: 2-1, 2-2,2-3**	• Make conjecture based on inductive reasoning. • Find counterexamples. • Determine truth values of negation, conjunction, and disjunctions using Venn diagrams. • Analyze statements in if-then form. • Write the converse, inverse, and contra-positive of the if-then statement.	**G.4 C** Verify that a conjecture is false using a counterexample **G.5 A** Investigate patterns to make conjectures about geometric relationships, including angles formed by parallel lines cut by a transversal, criteria required for triangle congruence, special segments of triangles, diagonals of quadrilaterals, interior and exterior angles of polygons, and special segments and angles of circles choosing from a variety of tools **G.4 B** Identify and determine the validity of the converse, inverse, and contrapositive of a

			conditional statement and recognize the connection between a bi conditional statement and a true conditional statement with a true converse
5th:	**2-4, 2-5**	• Use the law of detachment. • Use the law of syllogism. • Identify and use basic postulates about points, lines, and planes. • Write paragraph proofs.	**G.4 A** Distinguish between undefined terms, definitions, postulates, conjectures, and theorems
5th:	**2-6, 2-7, 2-8, Review and Test**	• Use algebra to write two column proofs. • Use properties of equality to write geometric proofs. • Write proofs involving segment addition. • Write proofs involving segment congruence. • Write proofs involving supplementary and complementary angles.	**G.6 A** Verify theorems about angles formed by the intersection of lines and line segments, including vertical angles, and angles formed by parallel lines cut by a transversal and prove equidistance between the endpoints of a segment and points on its perpendicular bisector and apply these relationships to solve problems
6th:	**Ch: 3** **Lessons: 3-1, 3-2, 3-3, 3-4**	• Identify the relationship between two lines and two planes. • Name angle pairs formed by parallel lines and transversal. • Use theorems to determine the relationship between specific pairs of angles. • Use algebra to find angle measurements. • Find slopes of lines. • Use slope to identify parallel and perpendicular lines.	**G.5 A** Investigate patterns to make conjectures about geometric relationships, including angles formed by parallel lines cut by a transversal, criteria required for triangle congruence, special segments of triangles, diagonals of quadrilaterals, interior and exterior angles of polygons, and special segments and angles of circles choosing from a variety of tools

		• Write an equation of a line given information about the graph. • Solve problems by writing equations.	**G.6 A** Verify theorems about angles formed by the intersection of lines and line segments, including vertical angles, and angles formed by parallel lines cut by a transversal and prove equidistance between the endpoints of a segment and points on its perpendicular bisector and apply these relationships to solve problems **G.2 B** Derive and use the distance, slope, and midpoint formulas to verify geometric relationships, including congruence of segments and parallelism or perpendicularity of pairs of lines **G.2 C** Determine an equation of a line parallel or perpendicular to a given line that passes through a given point
7th:	**3-5, 3-6, Review and Test**	• Recognize angle pairs that occur with parallel lines. • Prove that two lines are parallel. • Find the distance between a point and a line. • Find the distance between two parallel lines.	**G.5 B** Construct congruent segments, congruent angles, a segment bisector, an angle bisector, perpendicular lines, the perpendicular bisector of a line segment, and a line parallel to a given line through a point not on a line using a compass and a straightedge **G.2 B** Derive and use the distance, slope, and midpoint formulas to verify geometric relationships, including congruence of segments and parallelism or perpendicularity of pairs of lines
8th:	**Ch: 4** **Lessons: 4-1, 4-2, 4-3, 4-4**	• Identify and classify triangles by angle measure.	

		• Identify and classify triangles by side measure. • Apply the triangle Angle Sum Theorem • Apply the Exterior Angle Theorem. • Name and use corresponding pairs of congruent polygons. • Prove triangles congruent using the definition of congruence. • Use the SSS Postulate to test for triangle congruence. • Use the SAS Postulate to test for triangle congruence.	**G.5 A** Investigate patterns to make conjectures about geometric relationships, including angles formed by parallel lines cut by a transversal, criteria required for triangle congruence, special segments of triangles, diagonals of quadrilaterals, interior and exterior angles of polygons, and special segments and angles of circles choosing from a variety of tools **G.6 D** Verify theorems about the relationships in triangles, including proof of the Pythagorean Theorem, the sum of interior angles, base angles of isosceles triangles, mid segments, and medians, and apply these relationships to solve problems **G.5 B** Construct congruent segments, congruent angles, a segment bisector, an angle bisector, perpendicular lines, the perpendicular bisector of a line segment, and a line parallel to a given line through a point not on a line using a compass and a straightedge
9th:	**4-5, 4-6**	• Use the ASA Postulate to test for triangle congruence. • Use the AAS Postulate to test for triangle congruence. • Use properties of isosceles triangles. • Use properties of equilateral triangles.	**G.6 D** Verify theorems about the relationships in triangles, including proof of the Pythagorean Theorem, the sum of interior angles, base angles of isosceles triangles, mid segments, and medians, and apply these relationships to solve problems **G.6 B** Prove two triangles are congruent by applying the Side-Angle-Side, Angle-Side-

			Angle, Side-Side-Side, Angle-Angle-Side, and Hypotenuse-Leg congruence conditions
2nd Quarter			
Resources:			
Week	**Unit/Lesson**	**Learning Objectives**	**Reporting Categories (TEKS SEs)**
1st:	**4-7, 4-8, Review and Test**	• Identify reflections, translations, and rotations. • Verify congruence after a congruence transformation. • Position and label triangles for use in coordinate proofs. • Write coordinate proofs.	**G.6 D** Verify theorems about the relationships in triangles, including proof of the Pythagorean Theorem, the sum of interior angles, base angles of isosceles triangles, mid segments, and medians, and apply these relationships to solve problems **G.6 C** Apply the definition of congruence, in terms of rigid transformations, to identify congruent figures and their corresponding sides and angles **G.2 B** Derive and use the distance, slope, and midpoint formulas to verify geometric relationships, including congruence of segments and parallelism or perpendicularity of pairs of lines
2nd:)	**Ch: 5** **Lessons: 5-1, 5-2, 5-3, 5-4, 5-5**	• Identify and use perpendicular bisectors in triangles. • Identify and use angle bisectors in triangles. • Identify and use medians in triangles. • Identify and use altitudes in triangles.	**G.5 C** Use the constructions of congruent segments, congruent angles, angle bisectors, and perpendicular bisectors to make conjectures about geometric relationships **G.6 A** Verify theorems about angles formed by the intersection of lines and line segments, including vertical angles, and angles formed by parallel lines cut by a transversal and

		• Recognize and apply properties of inequalities to the measures of the angles of a triangle. • Recognize and apply properties of inequalities to the relationships between the angles and the sides of a triangle. • Write indirect algebraic proofs. • Write indirect geometric proofs. • Use the Triangle Inequality Theorem to identify possible triangles. • Prove triangle relationships using the Triangle Inequality Theorem.	prove equidistance between the endpoints of a segment and points on its perpendicular bisector and apply these relationships to solve problems **G.6 D** Verify theorems about the relationships in triangles, including proof of the Pythagorean Theorem, the sum of interior angles, base angles of isosceles triangles, mid segments, and medians, and apply these relationships to solve problems **G.5 A** Investigate patterns to make conjectures about geometric relationships, including angles formed by parallel lines cut by a transversal, criteria required for triangle congruence, special segments of triangles, diagonals of quadrilaterals, interior and exterior angles of polygons, and special segments and angles of circles choosing from a variety of tools **G.6 D** Verify theorems about the relationships in triangles, including proof of the Pythagorean Theorem, the sum of interior angles, base angles of isosceles triangles, mid segments, and medians, and apply these relationships to solve problems **G.5 D** Verify the Triangle Inequality theorem using constructions and apply the theorem to solve problems

3rd:	**5-6, Ch: 5 Review & Test**	• Apply the Hinge Theorem or its converse to make comparisons in two triangles. • Prove triangle relationships using the Hinge Theorem or its converse.	**G.6 D** Verify theorems about the relationships in triangles, including proof of the Pythagorean Theorem, the sum of interior angles, base angles of isosceles triangles, midsegments, and medians, and apply these relationships to solve problems
4th: *)*	**Ch: 6** **Lessons 6-1, 6-2, 6-3, 6-4, 6-5**	• Find and use the sum of the measures of the interior angles of a polygon. • Find and use the sum of the measures of the exterior angles pf a polygon. • Recognize and apply the properties of the sides and angles of parallelograms. • Recognize and apply the properties of the diagonals of parallelograms. • Recognize the conditions that ensure a quadrilateral is a parallelogram. • Prove that a set of points forms a parallelogram in the coordinate plane. • Recognize and apply properties of rectangles. • Determine whether parallelograms are rectangles. • Recognize and apply the properties of rhombi and squares. • Determine whether quadrilaterals are rectangles, rhombi, or squares.	**G. 5A** Investigate patterns to make conjectures about geometric relationships, including angles formed by parallel lines cut by a transversal, criteria required for triangle congruence, special segments of triangles, diagonals of quadrilaterals, interior and exterior angles of polygons, and special segments and angles of circles choosing from a variety of tools **G.6 E** Prove a quadrilateral is a parallelogram, rectangle, square, or rhombus using opposite sides, opposite angles, or diagonals and apply these relationships-to solve problems
5th: *)*	**6-6, Ch: 6 Review & Test**		**G.2 B** Derive and use the distance, slope, and midpoint formulas to verify geometric

	Ch: 7 **Lessons: 7-1, 7-2**	• Recognize and apply the properties of trapezoids, including the medians of trapezoids. • Recognize and apply the properties of kites. • Write ratios. • Write and solve proportions. • Use proportions to identify similar polygons. • Solve problems using the properties of similar polygons.	relationships, including congruence of segments and parallelism or perpendicularity of pairs of lines **G.10 B** Determine and describe how changes in the linear dimensions of a shape affect its perimeter, area, surface area, or volume, including proportional and non-proportional dimensional change
6th: Nov *)*	**7-3, 7-4**	• Identify similar using the AA Similarity. Postulate and the SSS and SAS Similarity Theorems. • Use similar triangles to solve problems. • Use proportional parts within triangles. • Use proportional parts with parallel lines.	**G.7 B** Apply the Angle-Angle criterion to verify similar triangles and apply the proportionality of the corresponding sides to solve problems **G.8 A** Prove theorems about similar triangles, including the Triangle Proportionality theorem, and apply these theorems to solve problems **G.6 D** Verify theorems about the relationships in triangles, including proof of the Pythagorean Theorem, the sum of interior angles, base angles of isosceles triangles, midsegments, and medians, and apply these relationships to solve problems

7th:	**7-5, 7-6, 7-7, Ch: 7 Review & Test**	• Recognize and use proportional relationships of corresponding segments of similar triangles. • Use the Triangle Angle Bisector Theorem. • Identify similarity transformations.	**G.8 A** Prove theorems about similar triangles, including the Triangle Proportionality theorem, and apply these theorems to solve problems **G.7 A** Apply the definition of similarity in terms of a dilation to identify similar figures and their proportional sides and the congruent corresponding angles
8th:)	**DCA Review (Ch. 1-7)**		
9th:)	**DCA Exams**		

3rd Quarter			
Resources:			
Week	**Unit/Lesson**	**Learning Objectives**	**Reporting Categories (TEKS SEs)**
1st)	**Ch.: 8** **Lessons 8-1, 8-2, 8-3**	• Find the geometric mean between two numbers. • Solve problems involving relationships between parts of a right triangle ad the altitude to its hypotenuse. • Use the Pythagorean Theorem. • Use the converse of the Pythagorean Theorem. • Use the properties of 45-45-90 degrees triangles. • Use the properties of 30-60-90 degrees triangles.	**G.8 B** Identify and apply the relationships that exist when an altitude is drawn to the hypotenuse of a right triangle, including the geometric mean, to solve problems. **G.6D** Verify theorems about the relationships in triangles, including proof of the Pythagorean Theorem, the sum of interior angles, base angles of isosceles triangles, mid segments, and medians, and apply these relationships to solve problems **G.9B** Apply the relationships in special right triangles 30°-60°-90° and 45°-45°-90° and the

3rd Quarter			
Resources:			
Week	**Unit/Lesson**	**Learning Objectives**	**Reporting Categories (TEKS SEs)**
			Pythagorean theorem, including Pythagorean triples, to solve problems.
2nd	**8-4, 8-5, 8-6**	• Find trigonometric ratios using right triangles. • Use trigonometric ratios to find angle measure in right triangles. • Solve problems involving angles of elevation and depression. • Use angles of elevation and depression to find the distance between two objects. • Use the law of Sines to solve triangles. • Use the Law of Cosines to solve triangles.	**G.9 A** Determine the lengths of sides and measures of angles in a right triangle by applying the trigonometric ratios sine, cosine, and tangent to solve problems **G.9 B** Apply the relationships in special right triangles 30°-60°-90° and 45°-45°-90° and the Pythagorean theorem, including Pythagorean triples, to solve problems.
3rd)	**8-7, Ch.: 8 Review& Test** **Ch.: 9 Lesson 9-1**	• Draw reflections. • Draw reflections in the coordinate plane.	**G.9 A** Determine the lengths of sides and measures of angles in a right triangle by applying the trigonometric ratios sine, cosine, and tangent to solve problems **G.3 A** Describe and perform transformations of figures in a plane using coordinate notation
4th :	**9-2, 9-3, 9-4**	• Draw translations. • Draw translations in the coordinate plane. • Draw rotations.	**G.3 A** Describe and perform transformations of figures in a plane using coordinate notation **G.10 A** Identify the shapes of two-dimensional cross-sections of prisms,

3rd Quarter			
Resources:			
Week	**Unit/Lesson**	**Learning Objectives**	**Reporting Categories (TEKS SEs)**
		• Draw rotations in the coordinate plane. • Draw glide reflections ad other compositions of isometries in the coordinate plane. • Draw compositions of reflections in parallel and intersecting lines.	pyramids, cylinders, cones, and spheres and identify three-dimensional objects generated by rotations of two-dimensional shapes. **G.3 B** Determine the image or pre-image of a given two-dimensional figure under a composition of rigid transformations, a composition of non-rigid transformations, and a composition of both, including dilations where the center can be any point in the plane. **G.3 C** Identify the sequence of transformations that will carry a given pre-image onto an image on and off the coordinate plane.
5th	**9-5, 9-6, Ch.: 9 Review & Test**	• Identify reflectional and rotational symmetries in two-dimensional figures. • Identify plane and axis symmetries in three-dimensional figures. • Draw dilations. • Draw dilations in the coordinate plane.	**G.3 D** Identify and distinguish between reflectional and rotational symmetry in a plane figure. **G.3 B** Determine the image or pre-image of a given two-dimensional figure under a composition of rigid transformations, a composition of non-rigid transformations, and a composition of both, including dilations where the center can be any point in the plane.

3rd Quarter			
Resources:			
Week	**Unit/Lesson**	**Learning Objectives**	**Reporting Categories (TEKS SEs)**
			G.6 C Apply the definition of congruence, in terms of rigid transformations, to identify congruent figures and their corresponding sides and angles.
6th:	**Ch.: 10** **Lessons 10-1, 10-2, 10-3, 10-4**	• Identify and use parts of circles. • Solve problems involving the circumference of a circle. • Identify central angles, major arcs, minor arcs, and semicircles, and find their measures. • Find arc lengths. • Recognize ad use relationships between arcs and chords. • Recognize and use relationships between arcs, chords, and diameters. • Find measures of inscribed angles. • Find measures of angles of inscribed polygons.	**G.12 B** Apply the proportional relationship between the measure of an arc length of a circle and the circumference of the circle to solve problems. **G.12 D** Describe radian measure of an angle as the ratio of the length of an arc intercepted by a central angle and the radius of the circle. **G.12 A** Apply theorems about circles, including relationships among angles, radii, chords, tangents, and secants, to solve non-contextual problems.
7th	**10-5, 10-6, 10-7, 10-8**	• Use properties of tangents. • Solve problems involving circumscribed polygons. • Find measures of angles formed by lines intersecting on or inside a circle. • Find measures of angles formed by lines intersecting outside the circle.	**G.12 A** Apply theorems about circles, including relationships among angles, radii, chords, tangents, and secants, to solve non-contextual problems. **G.5A** Investigate patterns to make conjectures about geometric relationships, including angles formed by parallel lines cut by a transversal, criteria required for triangle congruence, special segments of triangles,

3rd Quarter			
Resources:			
Week	**Unit/Lesson**	**Learning Objectives**	**Reporting Categories (TEKS SEs)**
		• Find measures of segments that intersect in the interior of a circle. • Find measures of segments that intersect in the exterior of a circle. • Write the equations of a circle. • Graph a circle on the coordinate plane.	diagonals of quadrilaterals, interior and exterior angles of polygons, and special segments and angles of circles choosing from a variety of tools. **G.2 B** Prove two triangles are congruent by applying the Side-Angle-Side, Angle-Side-Angle, Side-Side-Side, Angle-Angle-Side, and Hypotenuse-Leg congruence conditions. **G.12 E** Show that the equation of a circle with center at the origin and radius r is $x^2 + y^2 = r^2$ and determine the equation for the graph of a circle with radius r and center (h, k), $(x - h)^2 + (y - k)^2 = r^2$
8th :	**Ch.: 10 Review & Test** **Ch.: 11** **Lesson 11-1, 11-2**	• Find perimeters and areas of parallelograms. • Find perimeters and areas of triangles. • Find areas of trapezoids. • Find areas of rhombi and kites.	**G.10 B** Determine and describe how changes in the linear dimensions of a shape affect its perimeter, area, surface area, or volume, including proportional and non-proportional dimensional change.
9th:)	**11-3, 11-4, 11-5** **Ch. 11 Review & Test**	• Find areas of circles. • Find areas of sectors of circles. • Find areas of regular polygons. • Find areas of composite figures.	**G.11A** Apply the formula for the area of regular polygons to solve problems using appropriate units of measure. **G.11 B** Determine the area of composite two-dimensional figures comprised of a

3rd Quarter			
Resources:			
Week	**Unit/Lesson**	**Learning Objectives**	**Reporting Categories (TEKS SEs)**
		• Find areas of similar figures by using scale factors. • Determine how changes in dimensions affect the areas of figures.	combination of triangles, parallelograms, trapezoids, kites, regular polygons, or sectors of circles to solve problems using appropriate units of measure. **G.10 B** Determine and describe how changes in the linear dimensions of a shape affect its perimeter, area, surface area, or volume, including proportional and non-proportional dimensional change.

4th Quarter			
Resources:			
Week	**Unit/Lesson**	**Learning Objectives**	**Reporting Categories (TEKS SEs)**
1st:)	**Ch.: 12** **Lessons 12-1, 12-2, 12-3**	• Draw isometric views of three-dimensional figures. • Investigate cross sections of three-dimensional figures. • Find lateral areas and surface areas of prisms. • Find lateral areas and surface areas of cylinders. • Find lateral areas and surface areas of pyramids. • Find lateral areas and surface areas of cones.	**G.10 A** Identify the shapes of two-dimensional cross-sections of prisms, pyramids, cylinders, cones, and spheres and identify three-dimensional objects generated by rotations of two-dimensional shapes. **G.11 C** Apply the formulas for the total and lateral surface area of three-dimensional figures, including prisms, pyramids, cones, cylinders, spheres, and composite figures, to solve problems using appropriate units of measure.
2nd :	**12-4, 12-5, 12-6**		

4th Quarter			
Resources:			
Week	**Unit/Lesson**	**Learning Objectives**	**Reporting Categories (TEKS SEs)**
		• Find volumes of prisms. • Find volumes of cylinders. • Find volumes of pyramids. • Find volumes of cones. • Find surface areas of spheres. • Find volumes of spheres.	**G.10 B** Determine and describe how changes in the linear dimensions of a shape affect its perimeter, area, surface area, or volume, including proportional and non-proportional dimensional change. **G.11 D** Apply the formulas for the volume of three-dimensional figures, including prisms, pyramids, cones, cylinders, spheres, and composite figures, to solve problems using appropriate units of measure. **G.10 B** Determine and describe how changes in the linear dimensions of a shape affect its perimeter, area, surface area, or volume, including proportional and non-proportional dimensional change. **G.11 C** Apply the formulas for the total and lateral surface area of three-dimensional figures, including prisms, pyramids, cones, cylinders, spheres, and composite figures, to solve problems using appropriate units of measure.
3rd)	**12-7, 12-8, Ch.: 12 Review & Test**	• Describe sets of points on a sphere.	**G.4 D** Compare geometric relationships between Euclidean and spherical geometries,

4th Quarter			
Resources:			
Week	**Unit/Lesson**	**Learning Objectives**	**Reporting Categories (TEKS SEs)**
		• Compare and contrast Euclidean and spherical geometries. • Identify congruent and similar solids. • Use properties of similar solids.	including parallel lines and the sum of the angles in a triangle. **G.11 D** Apply the formulas for the volume of three-dimensional figures, including prisms, pyramids, cones, cylinders, spheres, and composite figures, to solve problems using appropriate units of measure.
4th :	**Ch. 13** **Lessons 13-1, 13-2, 13-3**	• Use lists, tables, and tree diagrams to represent sample spaces. • Use the fundamental Counting Principle to count outcomes. • Use permutations with probability. • Use combinations with probability. • Find probability using length. • Find probability using area.	**G.13 A** Develop strategies to use permutations and combinations to solve contextual problems. **G.13 B** Determine probabilities based on area to solve contextual problems.
5th :	**13-4, 13-5, 13-6** **Ch. 13 Review & Test**	• Design simulations to estimate probability. • Summarize data from simulations.	**G.13C** Identify whether two events are independent and compute the probability of the two events occurring together with or without replacement **G.13 D** Apply conditional probability in contextual problems. **G.13 E** Apply independence in contextual problems.
6th:	**Ch.: 13 Review & Test**		
7th :			

4th Quarter			
Resources:			
Week	**Unit/Lesson**	**Learning Objectives**	**Reporting Categories (TEKS SEs)**
	Catch up / Make Up Days		
8th:	**Final Exam Review**		
9th:	**Final Exams**		
10th:			.