

1 st Cycle	29 Days	The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.
	Aug. 22 – Sept. 30, 2016	
Unit	# Class Periods	Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)
		<p>The bold face words in the TEKS SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course.</p> <p><i>The Mathematical Process Standards are integrated throughout the course in all activities and lessons. Teachers should refer to these standards for instructional strategies and depth of rigor. Specific process standards have been highlighted to each unit, but these process standards should not be the only process standards associated with the daily lessons.</i></p> <p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> Ⓟ GEOM.1A Apply mathematics to problems arising in everyday life, society, and the workplace. Ⓟ GEOM.1B Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Ⓟ GEOM.1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. Ⓟ GEOM.1D Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate. Ⓟ GEOM.1E Create and use representations to organize, record, and communicate mathematical ideas. Ⓟ GEOM.1F Analyze mathematical relationships to connect and communicate mathematical ideas. Ⓟ GEOM.1G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.
<p>Unit 1: Geometry Foundations with Algebraic Connections</p> <p>Students explore geometry topics in connections with algebraic expressions and equations.</p>	<p>3 class periods (90-minutes each) or 6 class periods (45-minutes each)</p>	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> Ⓟ GEOM.1E Create and use representations to organize, record, and communicate mathematical ideas. Ⓟ GEOM.1F Analyze mathematical relationships to connect and communicate mathematical ideas. <p>Coordinate and Transformational Geometry. The student uses the process skills to understand the connections between algebra and geometry and uses the one- and two-dimensional coordinate systems to verify geometric conjectures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.2A Determine the coordinates of a point that is a given fractional distance less than one from one end of a line segment to the other in one- and two-dimensional coordinate systems, including finding the midpoint.

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		<p>The bold face words in the TEKS SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course.</p> <ul style="list-style-type: none"> • GEOM.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. <p>Logical Argument and Constructions. The student uses the process skills with deductive reasoning to understand geometric relationships. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.4A Distinguish between undefined terms, definitions, postulates, conjectures, and theorems.
<p>Unit 2: Conditional Statements Students identify and determine the validity of conditional statements.</p>	<p>2 class period (90-minutes each) or 4 class periods (45-minutes each)</p>	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> • PS GEOM.1F Analyze mathematical relationships to connect and communicate mathematical ideas. <p>Logical Argument and Constructions. The student uses the process skills with deductive reasoning to understand geometric relationships. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.4A Distinguish between undefined terms, definitions, postulates, conjectures, and theorems. • GEOM.4B Identify and determine the validity of the converse, inverse, and contrapositive of a conditional statement and recognize the connection between a biconditional statement and a true conditional statement with a true converse. • GEOM.4C Verify that a conjecture is false using a counterexample.
<p>Unit 3: Parallel and Perpendicular Lines Students analyze relationships among lines that are parallel, perpendicular, or skew while comparing geometric relationships between Euclidean and spherical geometries.</p>	<p>3 class periods (90-minutes each) or 6 class periods (45-minutes each)</p>	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> • PS GEOM.1D Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate. • PS GEOM.1G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. <p>Logical Arguments and Constructions. The student uses constructions to validate conjectures about geometric figures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.4D Compare geometric relationships between Euclidean and spherical geometries, including parallel lines and the sum of the angles in a triangle. • GEOM.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.

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		<p>The bold face words in the TEKS SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course.</p> <ul style="list-style-type: none"> • GEOM.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. • GEOM.5C Use the constructions of congruent segments, congruent angles, angle bisectors, and perpendicular bisectors to make conjectures about geometric relationships. <p>Proof and Congruence. The student uses the process skills with deductive reasoning to prove and apply theorems by utilizing a variety of methods such as coordinate, transformational, axiomatic and formats such as two-column, paragraph, flow chart. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.6A 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.
<p>Unit 4: Equations of Parallel and Perpendicular Lines Students apply properties of linear equations to parallel and perpendicular lines.</p>	<p>2 class periods (90-minutes each) or 4 class periods (45-minutes each)</p>	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> • PS GEOM.1D Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate. • PS GEOM.1G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. <p>Coordinate and Transformational Geometry. The student uses the process skills to understand the connections between algebra and geometry and uses the one- and two-dimensional coordinate systems to verify geometric conjectures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.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. • GEOM.2C Determine an equation of a line parallel or perpendicular to a given line that passes through a given point.

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<p>Unit 5: Generalizations About Triangles Students apply and make conjectures about triangle properties and triangle congruence.</p>	<p>2 class periods (90-minutes each) or 4 class periods (45-minutes each)</p>	<p>The bold face words in the TEKS SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course.</p> <p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> Ⓡ GEOM.1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. Ⓡ GEOM.1D Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate. <p>Logical Arguments and Constructions. The student uses constructions to validate conjectures about geometric figures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.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. • GEOM.5C Use the constructions of congruent segments, congruent angles, angle bisectors, and perpendicular bisectors to make conjectures about geometric relationships. <p>Proof and Congruence. The student uses the process skills with deductive reasoning to prove and apply theorems by utilizing a variety of methods such as coordinate, transformational, axiomatic and formats such as two-column, paragraph, flow chart. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.6B 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. • GEOM.6D 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.

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	Oct. 3 – Nov. 4, 2016	
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Unit 6: Corresponding Parts of Congruent Triangles Students apply the definition of congruence to identify congruent figures and their corresponding sides and angles.	1.5 class periods (90-minutes each) or 3 class periods (45-minutes each)	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> Ⓡ GEOM.1F Analyze mathematical relationships to connect and communicate mathematical ideas. Ⓡ GEOM.1G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. <p>Proof and Congruence. The student uses the process skills with deductive reasoning to prove and apply theorems by utilizing a variety of methods such as coordinate, transformational, axiomatic and formats such as two-column, paragraph, flow chart. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.6B 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. • GEOM.6C Apply the definition of congruence, in terms of rigid transformations, to identify congruent figures and their corresponding sides and angles.
Unit 7: Triangle Proofs Students use reasoning and proofs in applying properties of triangles.	3.5 class periods (90-minutes each) or 7 class periods (45-minutes each)	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> Ⓡ GEOM.1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. Ⓡ GEOM.1D Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate. <p>Logical Arguments and Constructions. The student uses constructions to validate conjectures about geometric figures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.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. • GEOM.5C Use the constructions of congruent segments, congruent angles, angle bisectors, and perpendicular bisectors to make conjectures about geometric relationships. <p>Proof and Congruence. The student uses the process skills with deductive reasoning to prove and apply theorems by utilizing a variety of methods such as coordinate, transformational, axiomatic and formats such as two-column, paragraph, flow chart. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.6B 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.

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		<ul style="list-style-type: none"> • GEOM.6D 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.
Unit 8: Triangle Relationships Students perform triangle constructions in order to analyze their attributes.	2.5 class periods (90-minutes each) or 5 class periods (45-minutes each)	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> • PS GEOM.1F Analyze mathematical relationships to connect and communicate mathematical ideas. <p>Logical Arguments and Constructions. The student uses constructions to validate conjectures about geometric figures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.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. • GEOM.5C Use the constructions of congruent segments, congruent angles, angle bisectors, and perpendicular bisectors to make conjectures about geometric relationships. <p>Proof and Congruence. The student uses the process skills with deductive reasoning to prove and apply theorems by utilizing a variety of methods such as coordinate, transformational, axiomatic and formats such as two-column, paragraph, flow chart. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.6A 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. • GEOM.6D 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.

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Unit 9: Triangle Inequality Students verify the triangle inequality theorem and apply the theorem to solve problems.	2.5 class periods (90-minutes each) or 5 class periods (45-minutes each)	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> PS GEOM.1D Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate. PS GEOM.1F Analyze mathematical relationships to connect and communicate mathematical ideas. <p>Logical Arguments and Constructions. The student uses constructions to validate conjectures about geometric figures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.5D Verify the Triangle Inequality theorem using constructions and apply the theorem to solve problems. <p>Proof and Congruence. The student uses the process skills with deductive reasoning to prove and apply theorems by utilizing a variety of methods such as coordinate, transformational, axiomatic and formats such as two-column, paragraph, flow chart. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.6D 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.

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	Nov. 7 – Dec. 16, 2016	
Unit	# Class Periods	Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)
<p>Unit 10: Transformations Students apply transformations to various geometric figures and make conjectures about coordinate notation after a transformation.</p>	<p>4.5 class periods (90-minutes each) or 9 class periods (45-minutes each)</p>	<p>The bold face words in the TEKS SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course.</p> <p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> Ⓟ GEOM.1A Apply mathematics to problems arising in everyday life, society, and the workplace. Ⓟ GEOM.1D Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate. <p>Coordinate and Transformational Geometry The student uses the process skills to generate and describe rigid transformations (translation, reflection, and rotation) and non-rigid transformations (dilations that preserve similarity and reductions and enlargements that do not preserve similarity).</p> <ul style="list-style-type: none"> • GEOM.3A Describe and perform transformations of figures in a plane using coordinate notation. • GEOM.3B 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. • GEOM.3C Identify the sequence of transformations that will carry a given pre-image onto an image on and off the coordinate plane. • GEOM.3D Identify and distinguish between reflectional and rotational symmetry in a plane figure. <p>Proof and Congruence. The student uses the process skills with deductive reasoning to prove and apply theorems by utilizing a variety of methods such as coordinate, transformational, axiomatic and formats such as two-column, paragraph, flow chart. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.6C Apply the definition of congruence, in terms of rigid transformations, to identify congruent figures and their corresponding sides and angles.

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Unit 11: Polygon Angle Sum Theorems Students determine the sum of interior angle measures of polygons.	1 class periods (90-minutes each) or 2 class periods (45-minutes each)	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> Ⓡ GEOM.1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. <p>Logical Arguments and Constructions. The student uses constructions to validate conjectures about geometric figures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.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.
Unit 12: Properties of Quadrilaterals Students examine the properties of various quadrilaterals and polygons using algebraic, concrete, and geometric methods.	5 class periods (90-minutes each) or 10 class periods (45-minutes each)	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> Ⓡ GEOM.1G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. <p>Logical Arguments and Constructions. The student uses constructions to validate conjectures about geometric figures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.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. <p>Proof and Congruence. The student uses the process skills with deductive reasoning to prove and apply theorems by utilizing a variety of methods such as coordinate, transformational, axiomatic and formats such as two-column, paragraph, flow chart. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.6E Prove a quadrilateral is a parallelogram, rectangle, square or rhombus using opposite sides, opposite angles, or diagonals and apply these relationships to solve problems.

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	Jan. 4 – Feb. 10, 2017	
Unit	# Class Periods	Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs) The bold face words in the TEKS SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course.
Unit 13: Similarity Students solve geometric problems involving similarity.	4 class periods (90-minutes each) or 8 class periods (45-minutes each)	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> Ⓡ GEOM.1B Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. <p>Logical Arguments and Constructions. The student uses constructions to validate conjectures about geometric figures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.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. • GEOM.5C Use the constructions of congruent segments, congruent angles, angle bisectors, and perpendicular bisectors to make conjectures about geometric relationships. <p>Similarity, Proof, and Trigonometry. The student uses the process skills in applying similarity to solve problems. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.7A Apply the definition of similarity in terms of a dilation to identify similar figures and their proportional sides and the congruent corresponding angles. • GEOM.7B Apply the Angle-Angle criterion to verify similar triangles and apply the proportionality of the corresponding sides to solve problems. <p>Similarity, Proof, and Trigonometry. The student uses the process skills with deductive reasoning to prove and apply theorems by utilizing a variety of methods such as coordinate, transformational, axiomatic and formats such as two-column, paragraph, flow chart. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.8A Prove theorems about similar triangles, including the Triangle Proportionality theorem, and apply these theorems to solve problems. • GEOM.8B 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.

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Unit 14: Right Triangles and Trigonometry Students apply the Pythagorean Theorem to various real-world situations, develop a pattern for special right triangles, and apply properties of triangles to the study of right-triangle trigonometry.	3 class periods (90-minutes each) or 6 class periods (45-minutes each)	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> Ⓟ GEOM.1A Apply mathematics to problems arising in everyday life, society, and the workplace. Ⓟ GEOM.1F Analyze mathematical relationships to connect and communicate mathematical ideas. Ⓟ GEOM.1G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. <p>Coordinate and Transformational Geometry. The student uses the process skills to understand the connections between algebra and geometry and uses the one- and two-dimensional coordinate systems to verify geometric conjectures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.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. <p>Proof and Congruence. The student uses the process skills with deductive reasoning to prove and apply theorems by utilizing a variety of methods such as coordinate, transformational, axiomatic and formats such as two-column, paragraph, flow chart. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.6D 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. <p>Similarity, Proof, and Trigonometry. The student uses the process skills to understand and apply relationships in right triangles. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.9A 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. • GEOM.9B Apply the relationships in special right triangles (30°-60°-90° and 45°-45°-90°) and the Pythagorean Theorem, including Pythagorean triples, to solve problems.

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Unit	# Class Periods	Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)
<p>Unit 15: Circle Measurement Students apply properties of circles to determine the area of a sector and the length of an arc.</p>	<p>3 class periods (90-minutes each) or 6 class periods (45-minutes each)</p>	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> PS GEOM.1B Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. PS GEOM.1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. <p>Circles. The student uses the process skills to understand geometric relationships and apply theorems and equations about circles. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.12B Apply the proportional relationship between the measure of an arc length of a circle and the circumference of the circle to solve problems. • GEOM.12C Apply the proportional relationship between the measure of the area of a sector of a circle and the area of the circle to solve problems. • GEOM.12D 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.
<p>Unit 16: Circles in the Coordinate Plane Students write the equation of a circle and graph the circle in the coordinate plane.</p>	<p>2 class periods (90-minutes each) or 4 class periods (45-minutes each)</p>	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> PS GEOM.1G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. <p>Coordinate and Transformational Geometry. The student uses the process skills to understand the connections between algebra and geometry and uses the one- and two-dimensional coordinate systems to verify geometric conjectures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.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. <p>Circles. The student uses the process skills to understand geometric relationships and apply theorems and equations about circles. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.12E 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), $(x - h)^2 + (y - k)^2 = r^2$.

5 th Cycle	30 Days	The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.
	Feb. 13 – Mar. 31, 2017	
Unit	# Class Periods	Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)
<p>Unit 17: Theorems about Circles They also analyze and apply properties of tangents to a circle and the angles and polygons formed within.</p>	<p>3 class periods (90-minutes each) or 6 class periods (45-minutes each)</p>	<p>The bold face words in the TEKS SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course.</p> <p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: PS GEOM.1G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.</p> <p>Logical Arguments and Constructions. The student uses constructions to validate conjectures about geometric figures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.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. • GEOM.5C Use the constructions of congruent segments, congruent angles, angle bisectors, and perpendicular bisectors to make conjectures about geometric relationships. <p>Proof and Congruence. The student uses the process skills with deductive reasoning to prove and apply theorems by utilizing a variety of methods such as coordinate, transformational, axiomatic and formats such as two-column, paragraph, flow chart. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.6A Verify theorems about angles formed by the intersection of lines and line segments, including vertical angles, 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. <p>Circles. The student uses the process skills to understand geometric relationships and apply theorems and equations about circles. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.12A Apply theorems about circles, including relationships among angles, radii, chords, tangents, and secants, to solve non- contextual problems.

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	Feb. 13 – Mar. 31, 2017	
Unit	# Class Periods	Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)
<p>Unit 18: Area of Circles and Polygons Students determine the area of circles and various polygons.</p>	<p>3 class periods (90-minutes each) or 6 class periods (45-minutes each)</p>	<p>The bold face words in the TEKS SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course.</p> <p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> Ⓡ GEOM.1B Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Ⓡ GEOM.1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. <p>Proof and Congruence. The student uses the process skills with deductive reasoning to prove and apply theorems by utilizing a variety of methods such as coordinate, transformational, axiomatic and formats such as two-column, paragraph, flow chart. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.6D 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. <p>Similarity, Proof, and Trigonometry. The student uses the process skills to understand and apply relationships in right triangles. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.9B Apply the relationships in special right triangles (30°-60°-90° and 45°-45°-90°) and the Pythagorean Theorem, including Pythagorean triples, to solve problems. <p>Two-dimensional and three-dimensional figures. The student uses the process skills to recognize characteristics and dimensional changes of two- and three-dimensional figures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.10B 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. <p>Two-dimensional and Three-dimensional Figures. The student uses the process skills in the application of formulas to determine measures of two- and three-dimensional figures. The student is expected to</p> <ul style="list-style-type: none"> • GEOM.11A Apply the formula for the area of regular polygons to solve problems using appropriate units of measure. • GEOM.11B Determine the area of composite two- dimensional figures comprised of a combination of triangles, parallelograms, trapezoids, kites, regular polygons, or sectors of circles to solve problems using appropriate units of measure.

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	Feb. 13 – Mar. 31, 2017	
Unit	# Class Periods	Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)
<p>Unit 19: Area and Perimeter of Similar Figures Students analyze and describe how changes in the linear dimensions of a shape affect its perimeter and area.</p>	<p>1 class periods (90-minutes each) or 2 class periods (45-minutes each)</p>	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> PS GEOM.1B Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. PS GEOM.1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. <p>Two-dimensional and Three-dimensional Figures. The student uses the process skills to recognize characteristics and dimensional changes of two- and three-dimensional figures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.10B 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. <p>Two-dimensional and Three-dimensional Figures. The student uses the process skills in the application of formulas to determine measures of two- and three-dimensional figures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.11A Apply the formula for the area of regular polygons to solve problems using appropriate units of measure.
<p>Unit 20: Trigonometry and Area Students use trigonometry to determine the area of regular polygons.</p>	<p>2 class periods (90-minutes each) or 4 class periods (45-minutes each)</p>	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> PS GEOM.1B Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. PS GEOM.1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. <p>Similarity, Proof, and Trigonometry The student uses the process skills to understand and apply relationships in right triangles.</p> <ul style="list-style-type: none"> • GEOM.9A 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. <p>Two-dimensional and Three-dimensional Figures. The student uses the process skills in the application of formulas to determine measures of two- and three-dimensional figures. The student is expected to:</p> <ul style="list-style-type: none"> • GEOM.11A Apply the formula for the area of regular polygons to solve problems using appropriate units of measure.

5 th Cycle	30 Days	<i>The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.</i>
	Feb. 13 – Mar. 31, 2017	
Unit	# Class Periods	Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs) The bold face words in the TEKS SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course.
Unit 21: Surface Area Students build and draw three-dimensional figures, deconstruct them to draw a net, and calculate the total and lateral surface areas.	3 class periods (90-minutes each) or 6 class periods (45-minutes each)	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> PS GEOM.1E Create and use representations to organize, record, and communicate mathematical ideas. PS GEOM.1F Analyze mathematical relationships to connect and communicate mathematical ideas. <p>Similarity, Proof, and Trigonometry. The student uses the process skills to understand and apply relationships in right triangles. The student is expected to:</p> <ul style="list-style-type: none"> GEOM.9B Apply the relationships in special right triangles (30°-60°-90° and 45°-45°-90°) and the Pythagorean Theorem, including Pythagorean triples, to solve problems. <p>Two-dimensional and Three-dimensional Figures. The student uses the process skills to recognize characteristics and dimensional changes of two- and three-dimensional figures. The student is expected to:</p> <ul style="list-style-type: none"> GEOM.10A 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. GEOM.10B 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. <p>Two-dimensional and Three-dimensional Figures. The student uses the process skills in the application of formulas to determine measures of two- and three-dimensional figures. The student is expected to:</p> <ul style="list-style-type: none"> GEOM.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.

6 th Cycle	38 Days	The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.
	Apr. 3 – May 25, 2017	
Unit	# Class Periods	Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)
<p>Unit 22: Volume Students calculate the volume of a figure and determine how changes in the linear dimensions of a shape affect its volume.</p>	<p>3 class periods (90-minutes each) or 6 class periods (45-minutes each)</p>	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> PS GEOM.1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. PS GEOM.1E Create and use representations to organize, record, and communicate mathematical ideas. <p>Similarity, Proof, and Trigonometry. The student uses the process skills to understand and apply relationships in right triangles. The student is expected to:</p> <ul style="list-style-type: none"> GEOM.9B Apply the relationships in special right triangles (30°-60°-90° and 45°-45°-90°) and the Pythagorean Theorem, including Pythagorean triples, to solve problems. <p>Two-dimensional and Three-dimensional Figures. The student uses the process skills to recognize characteristics and dimensional changes of two- and three-dimensional figures. The student is expected to:</p> <ul style="list-style-type: none"> GEOM.10B 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. <p>Two-dimensional and Three-dimensional Figures. The student uses the process skills in the application of formulas to determine measures of two- and three-dimensional figures. The student is expected to:</p> <ul style="list-style-type: none"> GEOM.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.
<p>Unit 23: Experimental and Theoretical Probability Students determine probabilities based on area to solve contextual problems.</p>	<p>2 class periods (90-minutes each) or 4 class periods (45-minutes each)</p>	<p>Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:</p> <ul style="list-style-type: none"> PS GEOM.1A Apply mathematics to problems arising in everyday life, society, and the workplace. PS GEOM.1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. PS GEOM.1E Create and use representations to organize, record, and communicate mathematical ideas. <p>Probability The student uses the process skills to understand probability in real-world situations and how to apply independence and dependence of events.</p> <ul style="list-style-type: none"> GEOM.13B Determine probabilities based on area to solve contextual problems.

6 th Cycle	38 Days	<i>The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.</i>
	Apr. 3 – May 25, 2017	
Unit	# Class Periods	Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs) The bold face words in the TEKS SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course.
Unit 24: Permutations and Combinations Students solve contextual problems using permutations and combinations.	2 class periods (90-minutes each) or 4 class periods (45-minutes each)	Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓡ GEOM.1B Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Ⓡ GEOM.1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. Probability The student uses the process skills to understand probability in real-world situations and how to apply independence and dependence of events. <ul style="list-style-type: none"> • GEOM.13A Develop strategies to use permutations and combinations to solve contextual problems.
Unit 25: Compound Probability Students compute the probability of two events occurring together with or without replacement and apply independence in contextual problems.	1 class periods (90-minutes each) or 2 class periods (45-minutes each)	Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓡ GEOM.1F Analyze mathematical relationships to connect and communicate mathematical ideas. Ⓡ GEOM.1G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. Probability The student uses the process skills to understand probability in real-world situations and how to apply independence and dependence of events. <ul style="list-style-type: none"> • GEOM.13C Identify whether two events are independent and compute the probability of the two events occurring together with or without replacement. • GEOM.13E Apply independence in contextual problems.
Unit 26: Conditional Probability Students solve contextual problems involving conditional probability.	1 class periods (90-minutes each) or 2 class periods (45-minutes each)	Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓡ GEOM.1F Analyze mathematical relationships to connect and communicate mathematical ideas. Ⓡ GEOM.1G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. Probability The student uses the process skills to understand probability in real-world situations and how to apply independence and dependence of events. <ul style="list-style-type: none"> • GEOM.13C Identify whether two events are independent and compute the probability of the two events occurring together with or without replacement. • GEOM.13D Apply conditional probability in contextual problems.