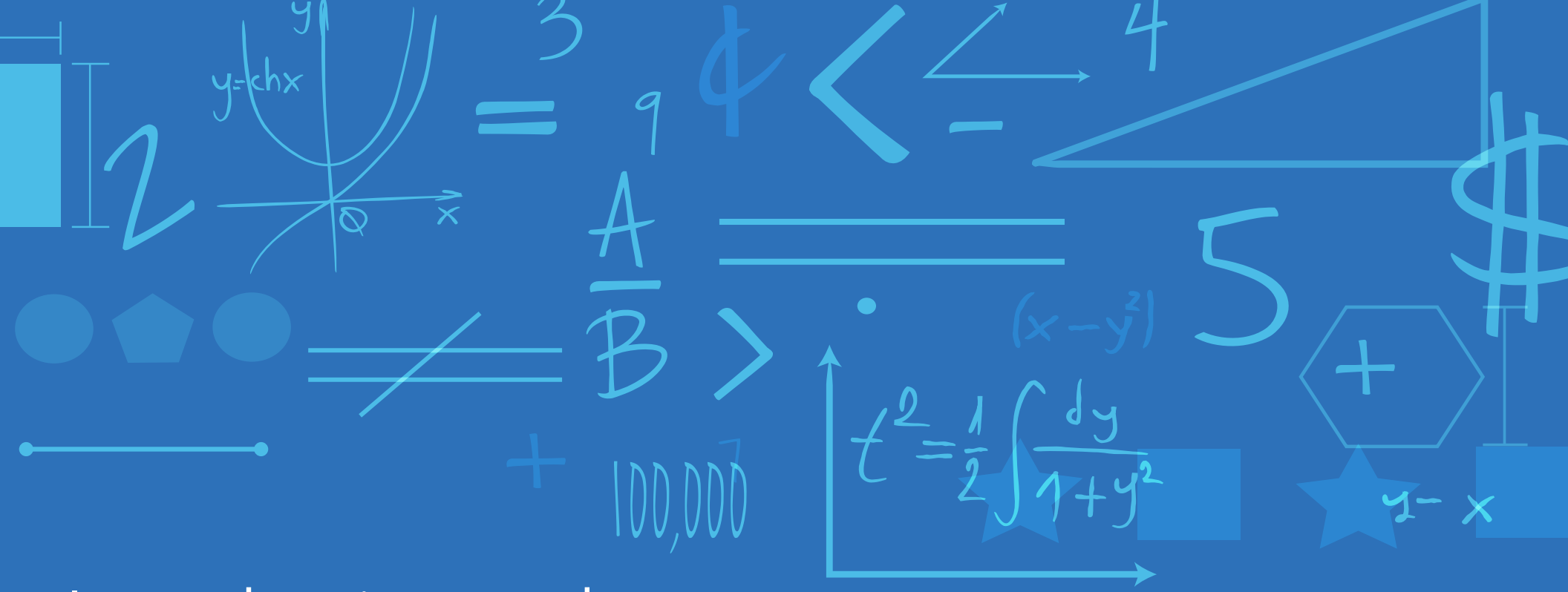

Introduction to the

Revised Mathematics TEKS

SIDE-BY-SIDE TEKS COMPARISON
GEOMETRY

TEA™
TEXAS EDUCATION AGENCY

Old TEKS	Current TEKS (2012)	Supporting Information	Notes
(a) Basic understandings. (1) Foundation concepts for high school mathematics. As presented in Grades K-8, the basic understandings of number, operation, and quantitative reasoning; patterns, relationships, and algebraic thinking; geometry; measurement; and probability and statistics are essential foundations for all work in high school mathematics. Students continue to build on this foundation as they expand their understanding through other mathematical experiences.	(b) Introduction. (1) The desire to achieve educational excellence is the driving force behind the Texas essential knowledge and skills for mathematics, guided by the college and career readiness standards. By embedding statistics, probability, and finance, while focusing on fluency and solid understanding, Texas will lead the way in mathematics education and prepare all Texas students for the challenges they will face in the 21st century.	The definition of a well-balanced mathematics curriculum has expanded to include the CCRS. A focus on mathematical fluency and solid understanding allows for rich exploration of the primary focal points.	
(a) Basic understandings. (2) Geometric thinking and spatial reasoning. Spatial reasoning plays a critical role in geometry; geometric figures provide powerful ways to represent mathematical situations and to express generalizations about space and spatial relationships. Students use geometric thinking to understand mathematical concepts and the relationships among them.	(b) Introduction. (3) In Geometry, students will build on the knowledge and skills for mathematics in Kindergarten-Grade 8 and Algebra I to strengthen their mathematical reasoning skills in geometric contexts. Within the course, students will begin to focus on more precise terminology, symbolic representations, and the development of proofs. Students will explore concepts covering coordinate and transformational geometry; logical argument and constructions; proof and congruence; similarity, proof, and trigonometry; two- and three- dimensional figures; circles; and probability. Students will connect previous knowledge from Algebra I to Geometry through the coordinate and transformational geometry strand. In the logical arguments and constructions strand, students are expected to create formal constructions using a straight edge and compass. Though this course is primarily Euclidean geometry, students should complete the course with an understanding that non-Euclidean geometries exist. In proof and congruence, students will use deductive reasoning to justify, prove and apply theorems about geometric figures. Throughout the standards, to "prove" means a formal proof to be shown in a paragraph, a flow chart, or two-column formats. Proportionality is the unifying component of the similarity, proof and	The 2012 paragraph that highlights more specifics about Geometry mathematics content follows the paragraph about the mathematical process standards. This supports the notion that the TEKS should be learned in a way that integrates the mathematical process standards in an effort to develop fluency. The 2012 paragraph has been updated to align to the 2012 Geometry mathematics TEKS. The 2012 paragraph summarizes the key concepts found in Geometry while making connections to prior content and the College and Career Readiness Standards.	
(a) Basic understandings. (3) Geometric figures and their properties. Geometry consists of the study of geometric figures of zero, one, two, and three dimensions and the relationships among them. Students study properties and relationships having to do with size, shape, location, direction, and orientation of these figures.			
(a) Basic understandings. (4) The relationship between geometry, other mathematics, and other disciplines. Geometry can be used to model and represent many mathematical and real-world situations. Students perceive the connection between geometry and the real and mathematical worlds and use geometric ideas, relationships, and properties to solve problems.			

Old TEKS	Current TEKS (2012)	Supporting Information	Notes
(a) Basic understandings. (5) Tools for geometric thinking. Techniques for working with spatial figures and their properties are essential in understanding underlying relationships. Students use a variety of representations (concrete, pictorial, numerical, symbolic, graphical, and verbal), tools, and technology (including, but not limited to, calculators with graphing capabilities, data collection devices, and computers) to solve meaningful problems by representing and transforming figures and analyzing relationships.	trigonometry strand. Students will use their proportional reasoning skills to prove and apply theorems and solve problems in this strand. The two- and three-dimensional figure strand focuses on the application of formulas in multi-step situations since students have developed background knowledge in two-and three-dimensional figures. Using patterns to identify geometric properties, students will apply theorems about circles to determine relationships between special segments and angles in circles. Due to the emphasis of probability and statistics in the college and career readiness standards, standards dealing with probability have been added to the geometry curriculum to ensure students have proper exposure to these topics before pursuing their post-secondary education.		
(a) Basic understandings. (6) Underlying mathematical processes. Many processes underlie all content areas in mathematics. As they do mathematics, students continually use problem-solving, language and communication, connections within and outside mathematics, and reasoning (justification and proof). Students also use multiple representations, technology, applications and modeling, and numerical fluency in problem solving contexts.	(b) Introduction. (2) The process standards describe ways in which students are expected to engage in the content. The placement of the process standards at the beginning of the knowledge and skills listed for each grade and course is intentional. The process standards weave the other knowledge and skills together so that students may be successful problem solvers and use mathematics efficiently and effectively in daily life. The process standards are integrated at every grade level and course. When possible, students will apply mathematics to problems arising in everyday life, society, and the workplace. Students will 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. Students will select appropriate tools such as real objects, manipulatives, paper and pencil, and technology and techniques such as mental math, estimation, and number sense to solve problems. Students will effectively communicate mathematical ideas, reasoning, and their implications using multiple representations such as symbols, diagrams, graphs, and language. Students will use mathematical relationships to generate solutions and make connections and predictions. Students will analyze mathematical relationships to connect and	This 2012 paragraph occurs second in the Revised TEKS (2012) instead of sixth as in the current TEKS. This highlights the continued emphasis on process skills that now continue from kindergarten through high school mathematics.	

Old TEKS	Current TEKS (2012)	Supporting Information	Notes
	communicate mathematical ideas. Students will display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication.		
	(b) Introduction. (4) These standards are meant to provide clarity and specificity in regards to the content covered in the high school geometry course. These standards are not meant to limit the methodologies used to convey this knowledge to students. Though the standards are written in a particular order, they are not necessarily meant to be taught in the given order. In the standards, the phrase "to solve problems" includes both contextual and non-contextual problems unless specifically stated. (5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.		

	Old TEKS: Geometric structure	Current TEKS (2012)	Supporting Information	Notes
●	G(1)(A) **Geometric structure.** The student understands the structure of, and relationships within, an axiomatic system. **The student is expected to develop an awareness of the structure of a mathematical system, connecting definitions, postulates, logical reasoning, and theorems.**	G(4)(A) **Logical argument and constructions.** 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.**	Specificity has been added with the clarification of changing "connecting" to "distinguish between." Specificity has been added to include the undefined terms. These terms are point, line, and plane. Logical reasoning is implicit within mathematical process standards G(1)(B), G(1)(D), G(1)(E), G(1)(F), and G(1)(G).	
–	G(1)(B) **Geometric structure.** The student understands the structure of, and relationships within, an axiomatic system. **The student is expected to recognize the historical development of geometric systems and know mathematics is developed for a variety of purposes.**		This skill is not included within the Revised TEKS (2012).	
●	G(1)(C) **Geometric structure.** The student understands the structure of, and relationships within, an axiomatic system. **The student is expected to compare and contrast the structures and implications of Euclidean and non-Euclidean geometries.**	G(4)(D) **Logical argument and constructions.** The student uses the process skills with deductive reasoning to understand geometric relationships. **The student is expected to compare geometric relationships between Euclidean and spherical geometries, including parallel lines and the sum of the angles in a triangle.**	Specificity has been added with the clarification of changing "non-Euclidean geometries" to "spherical geometries." Specificity has also been added through the inclusion of "parallel lines and the sum of the angles in a triangle" when comparing relationships between Euclidean and spherical geometries.	
●	G(2)(A) **Geometric structure.** The student analyzes geometric relationships in order to make and verify conjectures. **The student is expected to use constructions to explore attributes of geometric figures and to make conjectures about geometric relationships.**	G(5)(C) **Logical argument and constructions.** The student uses constructions to validate conjectures about geometric figures. **The student is expected to use the constructions of congruent segments, congruent angles, angle bisectors, and perpendicular bisectors to make conjectures about geometric relationships.**	Specificity has been added through the identification of constructions a student may be expected to use when making conjectures about geometric relationships. When paired with mathematical process standard G(1)(F), the expectation is that students use constructions to explore and validate conjectures about the attributes of geometric figures.	

	Old TEKS: Geometric structure	Current TEKS (2012)	Supporting Information	Notes
●	G(2)(B) **Geometric structure.** The student analyzes geometric relationships in order to make and verify conjectures. **The student is expected to make conjectures about angles, lines, polygons, circles, and three-dimensional figures and determine the validity of the conjectures, choosing from a variety of approaches such as coordinate, transformational, or axiomatic.**	G(5)(A) **Logical argument and constructions.** The student uses constructions to validate conjectures about geometric figures. **The student is expected to 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.**	Specificity regarding the use of constructions to investigate patterns and make conjectures has been added. When paired with mathematical process standards G(1)(D), G(1)(E), G(1)(F), and G(1)(G) the expectation is that students determine the validity of their conjectures. Specificity has been added regarding geometric relationships.	
●+	G(3)(A) **Geometric structure.** The student applies logical reasoning to justify and prove mathematical statements. **The student is expected to determine the validity of a conditional statement, its converse, inverse, and contrapositive.**	G(4)(B) **Logical argument and constructions.** The student uses the process skills with deductive reasoning to understand geometric relationships. **The student is expected to 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.**	In the current TEKS, it is implied that students would be given the converse, inverse, and contrapositive. The skill of identifying the converse, inverse, and contrapositive of a conditional statement was implicit in the current TEKS. The revised SE makes these skills explicit. The skill of connecting a biconditional statement and a true conditional statement with a true converse has been added.	
●+	G(3)(B) **Geometric structure.** The student applies logical reasoning to justify and prove mathematical statements. The student is expected to: **The student is expected to construct and justify statements about geometric figures and their properties.**	G(5)(B) **Logical argument and constructions.** The student uses constructions to validate conjectures about geometric figures. **The student is expected to 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.**	The use of constructions has been made explicit in the revised SE G(5)(B). Specificity has been added regarding the use of a compass and straightedge for constructions. Specificity has added regarding the figures a student is expected to construct.	

	Old TEKS: Geometric structure	Current TEKS (2012)	Supporting Information	Notes
		G(5)(C) **Logical argument and constructions.** The student uses constructions to validate conjectures about geometric figures. **The student is expected to use the constructions of congruent segments, congruent angles, angle bisectors, and perpendicular bisectors to make conjectures about geometric relationships.**	Specificity has been added to revised SE G(5)(C) regarding the geometric figures about which students are expected to make conjectures.	
		G(5)(D) **Logical argument and constructions.** The student uses constructions to validate conjectures about geometric figures. **The student is expected to verify the Triangle Inequality theorem using constructions and apply the theorem to solve problems.**	Revised SE G(5)(D) makes the verification of the Triangle Inequality theorem using constructions explicit. The foundation for the Triangle Inequality Theorem begins in grade 6, where students verify that a given set of lengths could form a triangle: *Expressions, equations, and relationships* 6(8)(A)	
●	G(3)(C) **Geometric structure.** The student applies logical reasoning to justify and prove mathematical statements. **The student is expected to use logical reasoning to prove statements are true and find counter examples to disprove statements that are false.**	G(4)(C) **Logical argument and constructions.** The student uses the process skills with deductive reasoning to understand geometric relationships. **The student is expected to verify that a conjecture is false using a counterexample.**	When paired with G(1)(D), G(1)(E), G(1)(F), or G(1)(G), the expectation is that students use logical reasoning to verify the truthfulness of any conjecture. The revised SE emphasizes that students are expected to use a counterexample to verify that a conjecture is false.	
–	G(3)(D) **Geometric structure.** The student applies logical reasoning to justify and prove mathematical statements. **The student is expected to use inductive reasoning to formulate a conjecture.**		Though the content of this SE is explicitly removed, it is implicitly addressed through G(1)(D), G(1)(E), G(1)(F), and G(1)(G). When instruction integrates these mathematical process standards with other content standards, students may be expected to use inductive reasoning to formulate a conjecture.	
–	G(3)(E) **Geometric structure.** The student applies logical reasoning to justify and prove mathematical statements. **The student is expected to use deductive reasoning to prove a statement.**		Though the content of this SE is explicitly removed, it is implicitly addressed through G(1)(D), G(1)(E), G(1)(F), and G(1)(G). When instruction integrates these mathematical process standards with other content standards, students may be expected to use deductive reasoning to formulate a conjecture.	
–	G(4) **Geometric structure.** The student uses a variety of representations to describe geometric relationships and solve problems. **The student is expected to select an appropriate representation (concrete, pictorial, graphical, verbal, or symbolic) in order to solve problems.**		The use of multiple representations has been included through the mathematical process standards, G(1)(C) and G(1)(D).	

	Old TEKS: Geometric patterns	Current TEKS (2012)	Supporting Information	Notes
●	G(5)(A) **Geometric patterns.** The student uses a variety of representations to describe geometric relationships and solve problems. **The student is expected to use numeric and geometric patterns to develop algebraic expressions representing geometric properties.**	G(5)(A) **Logical argument and constructions.** The student uses constructions to validate conjectures about geometric figures. **The student is expected to 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.**	The current SEs G(5)(A) and G(5)(B) were combined to form revised SE G(5)(A). "Patterns" include numeric and geometric properties. "Conjectures" is a better word choice than "generalizations" as it is consistent with the academic language of geometry. "Relationships" may or may not include algebraic expressions representing properties. Specificity is added to the revised SE regarding the geometric relationships that students may expected to investigate. Similar figures and solids are addressed in the "Similarity, proof and trigonometry" strand.	
●	G(5)(B) **Geometric patterns.** The student uses a variety of representations to describe geometric relationships and solve problems. **The student is expected to use numeric and geometric patterns to make generalizations about geometric properties, including properties of polygons, ratios in similar figures and solids, and angle relationships in polygons and circles.**			
●+	G(5)(C) **Geometric patterns.** The student uses a variety of representations to describe geometric relationships and solve problems. **The student is expected to use properties of transformations and their compositions to make connections between mathematics and the real world, such as tessellations.**	G(3)(A) **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). **The student is expected to describe and perform transformations of figures in a plane using coordinate notation,**	The revised SE G(3)(A) extends past rotations from in grade 8 and explicitly states coordinate notation: *Proportionality* 8(3)(A) *Two-dimensional shapes* 8(10)(A) 8(10)(B) 8(10)(C) Specificity has been added for students to be able to "describe" and "perform" transformations.	

	Old TEKS: Geometric patterns	Current TEKS (2012)	Supporting Information	Notes
		G(3)(B) **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). **The student is expected to 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.**	In grade 8, students graph and algebraically represent single transformations. For example, students are expected to describe a translation and a reflection algebraically such as $(x, y) \rightarrow (x + 3, -y - 2)$ to describe translations. The revised Geometry SEs extends to include graphing and describing a composition of transformations. Dilations are included with center of dilation other than origin. In grade 8, students gain experience with dilations with the origin as the center. Rotations may or may not be about the origin. In grade 8, students differentiate between transformations that preserve congruence and those that do not. Rigid and non-rigid transformations are explicitly included in the revised Geometry SEs. When paired with process standard G(1)(A), tessellations could be included.	
		G(3)(C) **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). **The student is expected to identify the sequence of transformations that will carry a given pre-image onto an image on and off the coordinate plane.**	Students are expected to identify the sequence of transformation performed for a given pre-image and image. The transformations may or may not be represented on a coordinate plane.	
●	G(5)(D) **Geometric patterns.** The student uses a variety of representations to describe geometric relationships and solve problems. **The student is expected to identify and apply patterns from right triangles to solve meaningful problems, including special right triangles (45-45-90 and 30-60-90) and triangles whose sides are Pythagorean triples.**	G(9)(B) **Similarity, proof, and trigonometry.** The student uses the process skills to understand and apply relationships in right triangles. **The student is expected to apply the relationships in special right triangles (30°–60°–90° and 45°–45°–90°) and the Pythagorean theorem, including Pythagorean triples, to solve problems.**	The revised SE focuses on applying relationships to solve problems involving right triangles. When paired with mathematical process standard G(1)(F), the expectation is that students analyze the relationships in special right triangles and Pythagorean triples.	

	Old TEKS: Dimensionality and the geometry of location	Current TEKS (2012)	Supporting Information	Notes
●+	G(6)(A) **Dimensionality and the geometry of location.** The student analyzes the relationship between three-dimensional geometric figures and related two-dimensional representations and uses these representations to solve problems. **The student is expected to describe and draw the intersection of a given plane with various three-dimensional geometric figures.**	G(10)(A) **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 identify the shapes of two-dimensional cross-sections of prisms, pyramids, cylinders, cones, and spheres**	The revised SE adds specificity through the identification of two-dimensional cross sections for specific geometric figures..	
		and identify three-dimensional objects generated by rotations of two-dimensional shapes.	The revised SE includes identifying 3-D objects generated by rotations of 2-D shapes.	
−	G(6)(B) **Dimensionality and the geometry of location.** The student analyzes the relationship between three-dimensional geometric figures and related two-dimensional representations and uses these representations to solve problems. **The student is expected to use nets to represent and construct three-dimensional geometric figures.**		This skill is not included explicitly within the Revised TEKS (2012). In grade 7, with 7(9)(D), students are expected to solve problems involving the lateral and total surface area of a rectangular prism, rectangular pyramid, triangular prism, and triangular pyramid by determining the area of the shape's net. Students may or may not be expected to make the net of a three-dimensional figure.	
−	G(6)(C) **Dimensionality and the geometry of location.** The student analyzes the relationship between three-dimensional geometric figures and related two-dimensional representations and uses these representations to solve problems. **The student is expected to use orthographic and isometric views of three-dimensional geometric figures to represent and construct three-dimensional geometric figures and solve problems.**		This skill is not included within the Revised TEKS (2012).	
●	G(7)(A) **Dimensionality and the geometry of location.** The student understands that coordinate systems provide convenient and efficient ways of representing geometric figures and uses them accordingly. **The student is expected to use one- and two-dimensional coordinate systems to represent points, lines, rays, line segments, and figures.**	G(4)(A) **Logical argument and constructions.** 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.**	When paired with G(1)(D), students are expected to use multiple representations of undefined terms to distinguish their attributes.	

	Old TEKS: Dimensionality and the geometry of location	Current TEKS (2012)	Supporting Information	Notes
●	G(7)(B) **Dimensionality and the geometry of location.** The student understands that coordinate systems provide convenient and efficient ways of representing geometric figures and uses them accordingly. **The student is expected to use slopes and equations of lines to investigate geometric relationships, including parallel lines, perpendicular lines, and special segments of triangles and other polygons.**	G(2)(B) **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 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) **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 determine an equation of a line parallel or perpendicular to a given line that passes through a given point.**	In grade 8, students are expected to use the Pythagorean Theorem to determine the distance between two points on a coordinate plane: *Expressions, equations, and relationships* 8(7)(D) The revised SE G(2)(B) extends the grade 8 SE from the Pythagorean Theorem to the applications of deriving the distance formula. Specificity has been added with the inclusion of congruence of segments. In Algebra I, students are expected to write the equation of a line that contains a given point and is parallel or perpendicular a given line. When paired with mathematical process standard G(1)(F), the expectation is that students determine equations of a line perpendicular to a given line in order to explore concepts such as heights of triangles on a coordinate plane.	

	Old TEKS: Dimensionality and the geometry of location	Current TEKS (2012)	Supporting Information	Notes
●+	G(7)(C) **Dimensionality and the geometry of location.** The student understands that coordinate systems provide convenient and efficient ways of representing geometric figures and uses them accordingly. **The student is expected to derive and use formulas involving length, slope, and midpoint.**	G(2)(A) **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 determine the coordinates of a point**	The revised SE adds specificity through measure of fractional distances and the use of 1-D and 2-D coordinate systems.	
		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,	The revised SE G(2)(A) extends the current SE to include determining the coordinates of the point a given fractional distances, in addition to the midpoint, from one endpoint of a line segment.	
		including finding the midpoint.	The revised SE extends determining fractional distances beyond midpoint through similar figures and proportional reasoning. Though fractional distances beyond midpoint can be calculated algebraically, students may not yet have experience with systems of equations containing two quadratic equations.	
		G(2)(B) **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 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.**	Specificity has been added with the inclusion of verifying geometric relationships to include congruent segments and parallel and perpendicular lines.	

	Old TEKS: Congruence and the geometry of size	Current TEKS (2012)	Supporting Information	Notes
●	G(8)(A) **Congruence and the geometry of size.** The student uses tools to determine measurements of geometric figures and extends measurement concepts to find perimeter, area, and volume in problem situations. **The student is expected to find areas of regular polygons, circles, and composite figures.**	G(11)(A) **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 apply the formula for the area of regular polygons to solve problems using appropriate units of measure.**	The current SE has been separated into two SEs. Revised G(11)(A) focuses on solving problems that include determining the area of regular polygons. Students determine composite area of figures composed of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles in grade 7: *Expressions, equations, and relationships* 7(9)(C) The revised SE G(11)(B) extends 7(9)(C) to include kites, regular polygons, and sectors as parts of composite figures.	
		G(11)(B) **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 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.**		
●	G(8)(B) **Congruence and the geometry of size.** The student uses tools to determine measurements of geometric figures and extends measurement concepts to find perimeter, area, and volume in problem situations. **The student is expected to find areas of sectors and arc lengths of circles using proportional reasoning.**	G(12)(B) **Circles.** The student uses the process skills to understand geometric relationships and apply theorems and equations about circles. **The student is expected to apply the proportional relationship between the measure of an arc length of a circle and the circumference of the circle to solve problems.**	The current SE has been separated into two SEs. Grades 6-8 have a strand founded on proportionality. Proportional reasoning represents a "capstone" skill for grades 6-8 mathematics. The revised SEs apply proportional reasoning to determine arc length and the area of a sector. The focus is on solving problems using the proportional relationships, length, and area of sector.	
		G(12)(C) **Circles.** The student uses the process skills to understand geometric relationships and apply theorems and equations about circles. **The student is expected to 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.**		

	Old TEKS: Congruence and the geometry of size	Current TEKS (2012)	Supporting Information	Notes
●	G(8)(C) **Congruence and the geometry of size.** The student uses tools to determine measurements of geometric figures and extends measurement concepts to find perimeter, area, and volume in problem situations. **The student is expected to derive, extend, and use the Pythagorean Theorem.**	G(2)(B) **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 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(6)(D) **Proof and congruence.** The student uses the process skills with deductive reasoning to prove and apply theorems by using a variety of methods such as coordinate, transformational, and axiomatic and formats such as two-column, paragraph, and flow chart. **The student is expected to verify theorems about the relationships in triangles, including proof of the Pythagorean Theorem, the sum of interior angles, base angles of isocsceles triangles, midsegments, and medians, and apply these relationships to solve problems.** G(9)(B) **Similarity, proof, and trigonometry.** The student uses the process skills to understand and apply relationships in right triangles. **The student is expected to apply the relationships in special right triangles 30°-60°-90° and 45°-45°-90° and the Pythagorean Theorem, including Pythagorean triples to solve problems.**	G(2)(B) adds specificity to extend the Pythagorean Theorem to derive the distance formula. G(6)(D) includes proof of the Pythagorean Theorem. Throughout the standards, to "prove" means to provide a formal proof to be shown in a paragraph, flow chart, or two-column format. G(9)(B) adds specificity to include special right triangles and Pythagorean triples. G(12)(E) extends the Pythagorean Theorem to the equation of a circle. In grade 8, students derive and apply the Pythagorean Theorem: *Expressions, equations, and relationships* 8(6)(A) 8(7)(C) 8(7)(D)	

	Old TEKS: Congruence and the geometry of size	Current TEKS (2012)	Supporting Information	Notes
		G(12)(E) **Circles.** The student uses the process skills to understand geometric relationships and apply theorems and equations about circles. **The student is expected to 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), $(x - h)^2 + (y - k)^2 = r^2$.**		
●	G(8)(D) **Congruence and the geometry of size.** The student uses tools to determine measurements of geometric figures and extends measurement concepts to find perimeter, area, and volume in problem situations. **The student is expected to find surface areas and volumes of prisms, pyramids, spheres, cones, cylinders, and composites of these figures in problem situations.**	G(11)(C) **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 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.**	The current SE has been separated into two SEs. Specificity has been added through the application of formulas to total and lateral surface area. In grade 7, students determine the surface areas of pyramids and prisms using nets: *Expressions, equations, and relationships* 7(9)(C) 7(9)(D) In grade 8, they connect their previous knowledge of surface area and nets to the surface area formulas: *Expressions, equations, and relationships* 8(7)(B) The revised SE G(11)(C), extends the learning to include cones, cylinders spheres and composite figures.	
		G(11)(D) **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 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.**	In grade 7, students solve problems involving the volumes of pyramids and prisms (rectangular and triangular): *Expressions, equations, and relationships* 7(9)(A) In grade 8, they connect their experience to the volume formula $V=bh$: *Expressions, equations, and relationships* 8(6)(A) 8(7)(A) The revised SE G(11)(D) extends the learning to include cones, cylinders, spheres, and composite figures. Students are expected to use appropriate units of measure.	

	Old TEKS: Congruence and the geometry of size	Current TEKS (2012)	Supporting Information	Notes
●	G(8)(E) **Congruence and the geometry of size.** The student uses tools to determine measurements of geometric figures and extends measurement concepts to find perimeter, area, and volume in problem situations. **The student is expected to use area models to connect geometry to probability and statistics.**	G(13)(B) **Probability.** The student uses the process skills to understand probability in real-world situations and how to apply independence and dependence of events. **The student is expected to determine probabilities based on area to solve contextual problems.**	In grade 7, students determine probabilities. The revised SE extends to include probabilities based on area: *Proportionality* 7(6)(C) 7(6)(D) 7(6)(E) 7(6)(H) 7(6)(I)	
–	G(8)(F) **Congruence and the geometry of size.** The student uses tools to determine measurements of geometric figures and extends measurement concepts to find perimeter, area, and volume in problem situations. **The student is expected to use conversions between measurement systems to solve problems in real-world situations.**		Conversion within a measurement system begins in grade 6: *Proportionality* 6(4)(H) Conversions between measurement systems begins in grade 7: *Proportionality* 7(4)(E) When instruction integrates G(1)(A) with other content standards, students may need to use conversions in order to solve problems.	
●	G(9)(A) **Congruence and the geometry of size.** The student analyzes properties and describes relationships in geometric figures. **The student is expected to formulate and test conjectures about the properties of parallel and perpendicular lines based on explorations and concrete models.**	G(6)(A) **Proof and congruence.** The student uses the process skills with deductive reasoning to prove and apply theorems by using a variety of methods such as coordinate, transformational, and axiomatic and formats such as two-column, paragraph, and flow chart. **The student is expected to 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.**	The focus of this SE has shifted from "formulate and test conjectures" to "verify theorems." The revised SE has been expanded to include angles formed by the "intersection of lines and line segments." The revised SE provides specificity to the theorems to be verified. Throughout the standards, to "prove" means to provide a formal proof to be shown in a paragraph, flow chart, or two-column format.	
●	G(9)(B) **Congruence and the geometry of size.** The student analyzes properties and describes relationships in geometric figures. **The student is expected to formulate and test conjectures about the properties and attributes of polygons and their component parts based on explorations and concrete models.**	G(6)(D) **Proof and congruence.** The student uses the process skills with deductive reasoning to prove and apply theorems by using a variety of methods such as coordinate, transformational, and axiomatic and formats such as two-column, paragraph, and flow chart. **The student is expected to 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.**	The revised SE G(6)(D) asks students to "verify theorems about the relationships". The revised SE G(6)(D) focuses on the relationships in triangles and the application of those relationships to solve problems. In grade 8, students are expected to use models and diagrams to explain the Pythagorean Theorem, though they are not expected to prove it. The students are also expected to use the Pythagorean Theorem and its converse to solve problems. The revised SE G(6)(E) asks students to	

	Old TEKS: Congruence and the geometry of size	Current TEKS (2012)	Supporting Information	Notes
		G(6)(E) **Proof and congruence.** The student uses the process skills with deductive reasoning to prove and apply theorems by using a variety of methods such as coordinate, transformational, and axiomatic and formats such as two-column, paragraph, and flow chart. **The student is expected to prove a quadrilateral is a parallelogram, rectangle, square or rhombus using opposite sides, opposite angles, or diagonals and apply these relationships to solve problems.**	"prove." Methods for proving include coordinate, transformational, axiomatic, and formats such as two-column, paragraph, and flow chart. Throughout the standards, to "prove" means a formal proof to be shown in a paragraph, flow chart, or two-column format. Specificity has been added by narrowing "polygons" to "quadrilateral."	
●	G(9)(C) **Congruence and the geometry of size.** The student analyzes properties and describes relationships in geometric figures. **The student is expected to formulate and test conjectures about the properties and attributes of circles and the lines that intersect them based on explorations and concrete models.**	G(12)(A) **Circles.** The student uses the process skills to understand geometric relationships and apply theorems and equations about circles. **The student is expected to apply theorems about circles, including relationships among angles, radii, chords, tangents, and secants, to solve non-contextual problems.**	Revised SE G(12)(A) adds specificity to the current TEKS. Students are expected to apply theorems to include angles, radii, chords, tangents, and secants.	
–	G(9)(D) **Congruence and the geometry of size.** The student analyzes properties and describes relationships in geometric figures. **The student is expected to analyze the characteristics of polyhedra and other three-dimensional figures and their component parts based on explorations and concrete models.**		In grade 2, students are expected to classify and sort 3-D solids based on attributes: *Geometry and measurement* 2(8)(B)	
●	G(10)(A) **Congruence and the geometry of size.** The student applies the concept of congruence to justify properties of figures and solve problems. **The student is expected to use congruence transformations to make conjectures and justify properties of geometric figures including figures represented on a coordinate plane.**	G(3)(D) **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). **The student is expected to identify and distinguish between reflectional and rotational symmetry in a plane figure.**	The current SE has been separated into two SEs. Revised SE G(3)(D) adds specificity through symmetry in a plane figure. Revised SE G(6)(C) adds specificity with transformations.	

	Old TEKS: Congruence and the geometry of size	Current TEKS (2012)	Supporting Information	Notes
		G(6)(C) **Proof and congruence.** The student uses the process skills with deductive reasoning to prove and apply theorems by using a variety of methods such as coordinate, transformational, and axiomatic and formats such as two-column, paragraph, and flow chart. **The student is expected to apply the definition of congruence, in terms of rigid transformations, to identify congruent figures and their corresponding sides and angles.**		
●	G(10)(B) **Congruence and the geometry of size.** The student applies the concept of congruence to justify properties of figures and solve problems. **The student is expected to justify and apply triangle congruence relationships.**	G(6)(B) **Proof and Congruence.** The student uses the process skills with deductive reasoning to prove and apply theorems by using a variety of methods such as coordinate, transformational, and axiomatic and formats such as two-column, paragraph, and flow chart. **The student is expected to 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.**	The revised SE specifies that students are expected to prove that two triangles are congruent. Specificity has been added with the "congruence conditions" that are to be used to prove two triangles are congruent.	

	Old TEKS: Similarity and the geometry of shape	Current TEKS (2012)	Supporting Information	Notes
●	G(11)(A) **Similarity and the geometry of shape.** The student applies the concepts of similarity to justify properties of figures and solve problems. **The student is expected to use and extend similarity properties and transformations to explore and justify conjectures about geometric figures;**	G(7)(A) **Similarity, proof, and trigonometry.** The student uses the process skills in applying similarity to solve problems. **The student is expected to apply the definition of similarity in terms of a dilation to identify similar figures and their proportional sides and the congruent corresponding angles.**	Students begin solving problems involving similar figures in grade 7 and grade 8: *Proportionality* 7(5)(A) 8(3)(A) 8(3)(B) 8(4)(A) The current SE has been separated into four SEs. Specificity has been added with regard to the application of the definition of similarity in terms of dilations. Clarification has been added with the change from "explore and justify conjectures" to "prove theorems" and "apply theorems." Specificity has been added to include geometric mean.	
		G(7)(B) **Similarity, proof, and trigonometry.** The student uses the process skills in applying similarity to solve problems. **The student is expected to apply the Angle-Angle criterion to verify similar triangles and apply the proportionality of the corresponding sides to solve problems.**		
		G(8)(A) **Similarity, proof, and trigonometry.** The student uses the process skills with deductive reasoning to prove and apply theorems by using a variety of methods such as coordinate, transformational, and axiomatic and formats such as two-column, paragraph, and flow chart. **The student is expected to prove theorems about similar triangles, including the Triangle Proportionality theorem, and apply these theorems to solve problems.**		
		G(8)(B) **Similarity, proof, and trigonometry.** The student uses the process skills with deductive reasoning to prove and apply theorems by using a variety of methods such as coordinate, transformational, and axiomatic and formats such as two-column, paragraph, and flow chart. **The student is expected to 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(11)(B) **Similarity and the geometry of shape.** The student applies the concepts of similarity to justify properties of figures and solve problems. **The student is expected to use ratios to solve problems involving similar figures.**		The content of this SE is addressed in grade 7 and grade 8: *Proportionality* 7(5)(A) 8(3)(A) 8(3)(B) 8(4)(A)	

Content that is deleted by 2012 TEKS – Content that remains or is clarified in 2012 TEKS (● Stay) (●+Addition) (⊙ Deletion) Content that is new in 2012 TEKS **+**

	Old TEKS: Similarity and the geometry of shape	Current TEKS (2012)	Supporting Information	Notes
●	G(11)(C) **Similarity and the geometry of shape.** The student applies the concepts of similarity to justify properties of figures and solve problems. **The student is expected to develop, apply, and justify triangle similarity relationships, such as right triangle ratios, trigonometric ratios, and Pythagorean triples using a variety of methods.**	G(9)(A) **Similarity, proof, and trigonometry.** The student uses the process skills to understand and apply relationships in right triangles. **The student is expected to 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.**	The revised SE makes explicit the application of special right triangle relationships, Pythagorean Theorem, and Pythagorean triples to solve problems involving right triangles. In grade 8, students are expected to use the Pythagorean Theorem and its converse to solve problems. Students are expected to solve problems requiring the use of two or more right triangle relationships.	
		G(9)(B) **Similarity, proof, and trigonometry.** The student uses the process skills to understand and apply relationships in right triangles. **The student is expected to apply the relationships in special right triangles 30°–60°–90° and 45°–45°–90° and the Pythagorean theorem, including Pythagorean triples, to solve problems.**		
●	G(11)(D) **Similarity and the geometry of shape.** The student applies the concepts of similarity to justify properties of figures and solve problems. **The student is expected to describe the effect on perimeter, area, and volume when one or more dimensions of a figure are changed and apply this idea in solving problems.**	G(10)(B) **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 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.**	The revised SE is an extension of G(11)(D) to include proportional and non-proportional dimensional change. The effects of dimensional changes on the perimeter, area, and volume of a figure is no longer in grade 8.	
+		G(12)(D) **Circles.** The student uses the process skills to understand geometric relationships and apply theorems and equations about circles. **The student is expected to 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.**	When paired with G(1)(D) and G(1)(F), the expectation is that students make connections between familiar angles such as 90°, 180°, 270°, and 360° and their corresponding radian measures.	
+		G(12)(E) **Circles.** The student uses the process skills to understand geometric relationships and apply theorems and equations about circles. **The student is expected to 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), $(x - h)^2 + (y - k)^2 = r^2$.**	The revised SE extends previous work with the Pythagorean theorem.	

Content that is deleted by 2012 TEKS – Content that remains or is clarified in 2012 TEKS (● Stay) (●+Addition) (⊙ Deletion) Content that is new in 2012 TEKS **+**

Old TEKS	Current TEKS (2012): Mathematical process standards	Supporting Information	Notes
+	G(1)(A) **Mathematical process standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. **The student is expected to apply mathematics to problems arising in everyday life, society, and the workplace.**	The focus is on application in three areas: everyday life, society, and the workplace. This SE, when paired with a revised content SE, allows for increased rigor through connections within and outside mathematics. Example: When paired with revised content SE G(9)(B), students are expected to apply special right triangle relationships in real-world problems.	
+	G(1)(B) **Mathematical process standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. **The student is expected to 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.**	This process standard provides continuity with the same problem-solving model used by students in grades K-8.	
+	G(1)(C) **Mathematical process standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. **The student is expected to 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.**	The phrase "as appropriate" indicates that students are assessing which tool to apply rather than trying only one or all of those listed. Example: When paired with revised content SE G(5)(B), students are expected to choose an appropriate tool and technique when making conjectures about geometric relationships.	
+	G(1)(D) **Mathematical process standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. **The student is expected to communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate.**	Communication addresses three areas: mathematical ideas, reasoning, and implications. Specificity is added to the means of communication. Communication can be through the use of symbols, diagrams, graphs, or language. The phrase "as appropriate" implies that students are assessing which communication tool to apply rather than trying only one or all of those listed. Example: When paired with revised content SE G(4)(C), students are expected to communicate the counterexample for a conjecture using symbols, graphs, diagrams, and language.	

Old TEKS	Current TEKS (2012): Mathematical process standards	Supporting Information	Notes
+	G(1)(E) **Mathematical process standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. **The student is expected to create and use representations to organize, record, and communicate mathematical ideas.**	Students may be expected to be able to use representations for three purposes: to organize, record, and communicate mathematical ideas. Representations may include verbal, graphical, tabular, and algebraic. As students use and create representations they will evaluate the effectiveness of their representations to ensure that they are communicating mathematical ideas clearly. Example: When paired with revised content SE G(2)(C), students may be expected to create and use a variety of representations as they write equations for parallel and perpendicular lines.	
+	G(1)(F) **Mathematical process standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. **The student is expected to analyze mathematical relationships to connect and communicate mathematical ideas.**	Students are expected to analyze relationships and to form connections with mathematical ideas. Students may form conjectures about mathematical representations based on patterns or sets of examples and non-examples. Forming connections with mathematical ideas extends past conjecturing to verification through a deductive process. Example: When paired with revised content SE G(4)(D), students may be expected to compare geometric relationships.	
+	G(1)(G) **Mathematical process standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. **The student is expected to display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.**	Students are expected to speak and write with precise mathematical language to explain and justify their thinking. Example: When paired with revised content SE G(4)(B), students may be expected to use precise mathematical language to determine the validity of logical arguments.	

Old TEKS	Current TEKS (2012): Probability	Supporting Information	Notes
+	G(13)(A) **Probability.** The student uses the process skills to understand probability in real-world situations and how to apply independence and dependence of events. **The student is expected to develop strategies to use permutations and combinations to solve contextual problems.**	Students are not expected to use formulas to calculate permutations and combinations. Students may be given data as an organized list or diagram.	
+	G(13)(C) **Probability.** The student uses the process skills to understand probability in real-world situations and how to apply independence and dependence of events. **The student is expected to identify whether two events are independent and compute the probability of the two events occurring together with or without replacement.**	The revised SE builds on grade 7 efforts with probability: *Proportionality* 7(6)(C) 7(6)(D) 7(6)(E) 7(6)(I) Academic vocabulary includes compound events, independent events, and dependent events.	
+	G(13)(D) **Probability.** The student uses the process skills to understand probability in real-world situations and how to apply independence and dependence of events. **The student is expected to apply conditional probability in contextual problems.**	Students are expected to connect the concept of conditional probability to dependent events and to determine the conditional probability of a compound event in a problem situation.	
+	G(13)(E) **Probability.** The student uses the process skills to understand probability in real-world situations and how to apply independence and dependence of events. **The student is expected to apply independence in contextual problems.**	Students are expected to determine the probability of independent events in problem situations.	