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TEKS Curriculum Framework for STAAR Alternate

# Geometry

**STAAR Reporting Category 1 – Geometric Structure: The student will demonstrate an understanding of geometric structure.**

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations
<p><b>Geometry (1) Geometric structure.</b> The student understands the structure of, and relationships within, an axiomatic system. The student is expected to</p> <ul style="list-style-type: none"> <li>(B) recognize the historical development of geometric systems and know mathematics is developed for a variety of purposes; Supporting Standard</li> <li>(C) compare and contrast the structures and implications of Euclidean and non-Euclidean geometries. Supporting Standard</li> </ul>	<p>Recognizes the foundations of geometric concepts.</p>

**Geometry 1 Prerequisite Skills/Links to TEKS Vertical Alignment**

<p><i>Geometric Properties and Relationships</i></p> <ul style="list-style-type: none"> <li>• use pictures or models to demonstrate the Pythagorean Theorem</li> <li>• draw three-dimensional figures from different perspectives</li> <li>• graph dilations, reflections, and translations on a coordinate plane</li> <li>• generate similar figures using dilations including enlargements and reductions</li> <li>• use geometric concepts and properties to solve problems in fields such as art and architecture</li> <li>• make a net (two-dimensional model) of the surface area of a three-dimensional figure</li> <li>• sketch three-dimensional figures when given the top, side, and front views</li> </ul> <p><b>Measurement*</b></p> <p><i>Comparisons*</i></p> <ul style="list-style-type: none"> <li>• convert measures within the same measurement system (customary and metric) based on relationships between units</li> <li>• perform simple conversions within the same measurement system (SI (metric) or customary)</li> <li>• explain the difference between weight and mass</li> <li>• compare and order two or more objects according to weight/ mass (from heaviest to lightest)</li> <li>• compare and order two or more containers according to capacity (from holds the most to holds the least)</li> <li>• compare and order the area of two or more two-dimensional surfaces (from covers the most to covers the least)</li> <li>• describe the relationship between the size of the unit and the number of units needed to measure the length of an object</li> <li>• compare and order two or more concrete objects according to length (from longest to shortest)</li> <li>• compare two objects according to weight/ mass (heavier than, lighter than or equal to)</li> <li>• compare two containers according to capacity (holds more, holds less, or holds the same)</li> </ul>
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Geometry 1	Prerequisite Skills/Links to TEKS Vertical Alignment
	<ul style="list-style-type: none"> <li>• compare the areas of two flat surfaces of two-dimensional figures (covers more, covers less, or covers the same)</li> <li>• compare and order two or three concrete objects according to length (longer/ shorter than, or the same)</li> </ul> <p><i>Using Models*</i></p> <ul style="list-style-type: none"> <li>• describe the resulting effect on volume when dimensions of a solid are changed proportionally</li> <li>• describe the resulting effects on perimeter and area when dimensions of a shape are changed proportionally</li> <li>• use proportional relationships in similar two-dimensional figures or similar three-dimensional figures to find missing measurements</li> <li>• use the Pythagorean Theorem to solve real-life problems</li> <li>• estimate measurements and use formulas to solve application problems involving lateral and total surface area and volume</li> <li>• connect models of prisms, cylinders, pyramids, spheres, and cones to formulas for volume of these objects</li> <li>• find lateral and total surface area of prisms, pyramids, and cylinders using concrete models and nets (two-dimensional models)</li> <li>• estimate measurements and solve application problems involving volume of prisms (rectangular and triangular) and cylinders</li> <li>• connect models for volume of prisms (triangular and rectangular) and cylinders to formulas of prisms (triangular and rectangular) and cylinders</li> <li>• estimate measurements and solve application problems involving length (including perimeter and circumference) and area of polygons and other shapes</li> <li>• measure angles</li> <li>• select and use appropriate units, tools, or formulas to measure and to solve problems involving length (including perimeter), area, time, temperature, volume, and weight</li> <li>• estimate measurements (including circumference) and evaluate reasonableness of results</li> <li>• select and use appropriate units and formulas to measure length, perimeter, area, and volume</li> <li>• connect models for perimeter, area, and volume with their respective formulas</li> <li>• estimate volume in cubic units</li> <li>• use concrete models of standard cubic units to measure volume</li> <li>• perform simple conversions between different units of length, between different units of capacity, and between different units of weight within the customary measurement system</li> <li>• estimate and use measurement tools to determine length (including perimeter), area, capacity, and weight/ mass using standard units SI (metric) and customary</li> <li>• use concrete models that approximate cubic units to determine the volume of a given container or other three-dimensional geometric figure</li> <li>• identify concrete models that approximate standard units for capacity and use them to measure capacity</li> <li>• identify concrete models that approximate standard units of weight/ mass and use them to measure weight/ mass</li> <li>• use concrete and pictorial models of square units to determine the area of two-dimensional surfaces</li> <li>• use standard units to find the perimeter of a shape</li> <li>• use linear measurement tools to estimate and measure lengths using standard units</li> </ul>

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<b>Geometry 1</b>	<b>Prerequisite Skills/Links to TEKS Vertical Alignment</b>
	<ul style="list-style-type: none"><li>• select a non-standard unit of measure such as beans or marbles to determine the weight/ mass of a given object</li><li>• select a non-standard unit of measure such as a bathroom cup or a jar to determine the capacity of a given container</li><li>• select a non-standard unit of measure such as square tiles to determine the area of a two-dimensional surface</li><li>• identify concrete models that approximate standard units of length and use them to measure length</li><li>• estimate and measure length using nonstandard units such as paper clips or sides of color tiles</li></ul> <p><b>Measurement skills*</b></p> <ul style="list-style-type: none"><li>• informally recognize and compare weights of objects or people</li><li>• recognize how much can be placed within an object</li><li>• recognize and compare heights or lengths of people or objects</li></ul>

\*These prerequisite skills were borrowed from different knowledge and skills banks due to similar content.

**NOTE:** Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

**STAAR Reporting Category 1 – Geometric Structure: The student will demonstrate an understanding of geometric structure.**

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations
<p><b>Geometry (2) Geometric structure.</b> The student analyzes geometric relationships in order to make and verify conjectures. The student is expected to</p> <p>(A) use constructions to explore attributes of geometric figures and to make conjectures about geometric relationships; Supporting Standard</p> <p>(B) 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. Readiness Standard</p>	<p>Makes conclusions about geometric relationships.</p>

**Geometry 2 Prerequisite Skills/Links to TEKS Vertical Alignment**

<p><i>Attributes of Geometric Figures</i></p> <ul style="list-style-type: none"> <li>• use critical attributes to define similarity</li> <li>• use properties to classify three-dimensional figures, including pyramids, cones, prisms, and cylinders</li> <li>• use properties to classify triangles and quadrilaterals</li> <li>• use angle measurements to classify pairs of angles as complementary or supplementary</li> <li>• describe the relationship between radius, diameter, and circumference of a circle</li> <li>• identify relationships involving angles in triangles and quadrilaterals</li> <li>• use angle measurements to classify angles as acute, obtuse, or right</li> <li>• identify essential attributes including parallel, perpendicular, and congruent parts of two- and three-dimensional geometric figures</li> <li>• use essential attributes to define two- and three-dimensional geometric figures</li> <li>• identify and describe parallel and intersecting (including perpendicular) lines using concrete objects and pictorial models</li> <li>• identify and describe right, acute, and obtuse angles</li> <li>• compare two-dimensional figures, three-dimensional figures, or both by their attributes using formal geometry vocabulary</li> <li>• identify, classify, and describe two- and three-dimensional geometric figures by their attributes</li> <li>• cut two-dimensional geometric figures apart and identify the new geometric figures formed</li> <li>• use attributes to describe how 2 two-dimensional figures or 2 three-dimensional geometric figures are alike or different</li> <li>• describe attributes (the number of vertices, faces, edges, sides) of two- and three-dimensional geometric figures such as circles, polygons, spheres, cones, cylinders, prisms, and pyramids, etc.</li> <li>• use concrete models to combine two-dimensional geometric figures to make new geometric figures</li> </ul>
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<b>Geometry 2</b>	<b>Prerequisite Skills/Links to TEKS Vertical Alignment</b>
	<ul style="list-style-type: none"><li>• describe and identify two- and three-dimensional geometric figures in order to sort them according to a given attribute using informal and formal language</li><li>• describe and identify three-dimensional geometric figures, including spheres, rectangular prisms (including cubes), cylinders, and cones</li><li>• describe and identify two-dimensional geometric figures, including circles, triangles, rectangles, and squares (a special type of rectangle)</li><li>• describe, identify, and compare circles, triangles, rectangles, and squares (a special type of rectangle)</li><li>• recognize shapes in real-life three-dimensional geometric figures or models of three-dimensional geometric figures</li><li>• describe and compare the attributes of real-life objects such as balls, boxes, cans, and cones or models of three-dimensional geometric figures</li><li>• sort a variety of objects including two- and three-dimensional geometric figures according to their attributes and describe how the objects are sorted</li><li>• compare two objects based on their attributes</li><li>• describe and identify an object by its attributes using informal language</li></ul> <p><b>Geometry and spatial sense skills</b></p> <ul style="list-style-type: none"><li>• create shapes</li><li>• name common shapes</li></ul>

**NOTE:** Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

**STAAR Reporting Category 1 – Geometric Structure: The student will demonstrate an understanding of geometric structure.**

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations
<p><b>Geometry (3) Geometric structure.</b> The student applies logical reasoning to justify and prove mathematical statements. The student is expected to</p> <ul style="list-style-type: none"> <li>(A) determine the validity of a conditional statement, its converse, inverse, and contrapositive; Supporting Standard</li> <li>(B) construct and justify statements about geometric figures and their properties; Supporting Standard</li> <li>(C) use logical reasoning to prove statements are true and find counter examples to disprove statements that are false; Readiness Standard</li> <li>(D) use inductive reasoning to formulate a conjecture; Supporting Standard</li> <li>(E) use deductive reasoning to prove a statement. Supporting Standard</li> </ul>	<p>Uses reasoning to justify mathematical statements.</p>

**Geometry 3 Prerequisite Skills/Links to TEKS Vertical Alignment**

<p><i>Attributes of Geometric Figures</i></p> <ul style="list-style-type: none"> <li>• use critical attributes to define similarity</li> <li>• use properties to classify three-dimensional figures, including pyramids, cones, prisms, and cylinders</li> <li>• use properties to classify triangles and quadrilaterals</li> <li>• use angle measurements to classify pairs of angles as complementary or supplementary</li> <li>• describe the relationship between radius, diameter, and circumference of a circle</li> <li>• identify relationships involving angles in triangles and quadrilaterals</li> <li>• use angle measurements to classify angles as acute, obtuse, or right</li> <li>• identify essential attributes including parallel, perpendicular, and congruent parts of two- and three-dimensional geometric figures</li> <li>• use essential attributes to define two- and three-dimensional geometric figures</li> <li>• identify and describe parallel and intersecting (including perpendicular) lines using concrete objects and pictorial models</li> <li>• identify and describe right, acute, and obtuse angles</li> <li>• compare two-dimensional figures, three-dimensional figures, or both by their attributes using formal geometry vocabulary</li> <li>• identify, classify, and describe two- and three-dimensional geometric figures by their attributes</li> <li>• cut two-dimensional geometric figures apart and identify the new geometric figures formed</li> </ul>
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<b>Geometry 3</b>	<b>Prerequisite Skills/Links to TEKS Vertical Alignment</b>
	<ul style="list-style-type: none"> <li>• use attributes to describe how 2 two-dimensional figures or 2 three-dimensional geometric figures are alike or different</li> <li>• describe attributes (the number of vertices, faces, edges, sides) of two- and three-dimensional geometric figures such as circles, polygons, spheres, cones, cylinders, prisms, and pyramids, etc.</li> <li>• use concrete models to combine two-dimensional geometric figures to make new geometric figures</li> <li>• describe and identify two- and three-dimensional geometric figures in order to sort them according to a given attribute using informal and formal language</li> <li>• describe and identify three-dimensional geometric figures, including spheres, rectangular prisms (including cubes), cylinders, and cones</li> <li>• describe and identify two-dimensional geometric figures, including circles, triangles, rectangles, and squares (a special type of rectangle)</li> <li>• describe, identify, and compare circles, triangles, rectangles, and squares (a special type of rectangle)</li> <li>• recognize shapes in real-life three-dimensional geometric figures or models of three-dimensional geometric figures</li> <li>• describe and compare the attributes of real-life objects such as balls, boxes, cans, and cones or models of three-dimensional geometric figures</li> <li>• sort a variety of objects including two- and three-dimensional geometric figures according to their attributes and describe how the objects are sorted</li> <li>• compare two objects based on their attributes</li> <li>• describe and identify an object by its attributes using informal language</li> </ul> <p><b>Geometry and spatial sense skills</b></p> <ul style="list-style-type: none"> <li>• create shapes</li> <li>• name common shapes</li> </ul>

**NOTE:** Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.



**STAAR Reporting Category 2 – Geometric Patterns and Representations: The student will demonstrate an understanding of geometric patterns and representations.**

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectation	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectation
<p><b>Geometry (4) Geometric structure.</b> The student uses a variety of representations to describe geometric relationships and solve problems. The student is expected to</p> <p>(A) select an appropriate representation ([concrete,] pictorial, graphical, verbal, or symbolic) in order to solve problems.</p> <p>Supporting Standard</p>	<p>Uses different representations for geometric relationships and solves problems.</p>

**Geometry 4 Prerequisite Skills/Links to TEKS Vertical Alignment**

	<p><i>Attributes of Geometric Figures</i></p> <ul style="list-style-type: none"> <li>• use critical attributes to define similarity</li> <li>• use properties to classify three-dimensional figures, including pyramids, cones, prisms, and cylinders</li> <li>• use properties to classify triangles and quadrilaterals</li> <li>• use angle measurements to classify pairs of angles as complementary or supplementary</li> <li>• describe the relationship between radius, diameter, and circumference of a circle</li> <li>• identify relationships involving angles in triangles and quadrilaterals</li> <li>• use angle measurements to classify angles as acute, obtuse, or right</li> <li>• identify essential attributes including parallel, perpendicular, and congruent parts of two- and three-dimensional geometric figures</li> <li>• use essential attributes to define two- and three-dimensional geometric figures</li> <li>• identify and describe parallel and intersecting (including perpendicular) lines using concrete objects and pictorial models</li> <li>• identify and describe right, acute, and obtuse angles</li> <li>• compare two-dimensional figures, three-dimensional figures, or both by their attributes using formal geometry vocabulary</li> <li>• identify, classify, and describe two- and three-dimensional geometric figures by their attributes</li> <li>• cut two-dimensional geometric figures apart and identify the new geometric figures formed</li> <li>• use attributes to describe how 2 two-dimensional figures or 2 three-dimensional geometric figures are alike or different</li> <li>• describe attributes (the number of vertices, faces, edges, sides) of two- and three-dimensional geometric figures such as circles, polygons, spheres, cones, cylinders, prisms, and pyramids, etc.</li> <li>• use concrete models to combine two-dimensional geometric figures to make new geometric figures</li> <li>• describe and identify two- and three-dimensional geometric figures in order to sort them according to a given attribute using informal and formal language</li> </ul>
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<b>Geometry 4</b>	<b>Prerequisite Skills/Links to TEKS Vertical Alignment</b>
	<ul style="list-style-type: none"><li>• describe and identify three-dimensional geometric figures, including spheres, rectangular prisms (including cubes), cylinders, and cones</li><li>• describe and identify two-dimensional geometric figures, including circles, triangles, rectangles, and squares (a special type of rectangle)</li><li>• describe, identify, and compare circles, triangles, rectangles, and squares (a special type of rectangle)</li><li>• recognize shapes in real-life three-dimensional geometric figures or models of three-dimensional geometric figures</li><li>• describe and compare the attributes of real-life objects such as balls, boxes, cans, and cones or models of three-dimensional geometric figures</li><li>• sort a variety of objects including two- and three-dimensional geometric figures according to their attributes and describe how the objects are sorted</li><li>• compare two objects based on their attributes</li><li>• describe and identify an object by its attributes using informal language</li></ul> <p><b>Geometry and spatial sense skills</b></p> <ul style="list-style-type: none"><li>• create shapes</li><li>• name common shapes</li></ul>

**NOTE:** Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

**STAAR Reporting Category 2 – Geometric Patterns and Representations: The student will demonstrate an understanding of geometric patterns and representations.**

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations
<p><b>Geometry (5) Geometric patterns.</b> The student uses a variety of representations to describe geometric relationships and solve problems. The student is expected to</p> <p>(A) use numeric and geometric patterns to develop algebraic expressions representing geometric properties; Readiness Standard</p> <p>(B) 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; Supporting Standard</p> <p>(C) use properties of transformations and their compositions to make connections between mathematics and the real world, such as tessellations; Supporting Standard</p> <p>(D) 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. Readiness Standard</p>	<p>Uses geometric relationships in a variety of ways.</p>

**Geometry 5 Prerequisite Skills/Links to TEKS Vertical Alignment**

<p><i>Geometric Properties and Relationships</i></p> <ul style="list-style-type: none"> <li>• use pictures or models to demonstrate the Pythagorean Theorem</li> <li>• draw three-dimensional figures from different perspectives</li> <li>• graph dilations, reflections, and translations on a coordinate plane</li> <li>• generate similar figures using dilations including enlargements and reductions</li> <li>• use geometric concepts and properties to solve problems in fields such as art and architecture</li> <li>• make a net (two-dimensional model) of the surface area of a three-dimensional figure</li> <li>• sketch three-dimensional figures when given the top, side, and front views</li> </ul> <p><i>Symmetry and Transformations</i></p> <ul style="list-style-type: none"> <li>• identify the transformation that generates one figure from the other when given two congruent figures on a Quadrant I coordinate grid</li> </ul>
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<b>Geometry 5</b>	<b>Prerequisite Skills/Links to TEKS Vertical Alignment</b>
	<ul style="list-style-type: none"><li>• sketch the results of translations, rotations, and reflections on a Quadrant I coordinate grid</li><li>• use reflections to verify that a shape has symmetry</li><li>• use translations, reflections, and rotations to verify that two shapes are congruent</li><li>• demonstrate translations, reflections, and rotations using concrete models</li><li>• identify lines of symmetry in two-dimensional geometric figures</li><li>• create two-dimensional figures with lines of symmetry using concrete models and technology</li><li>• identify congruent two-dimensional figures</li><li>• place an object in a specified position</li><li>• describe one object in relation to another using informal language such as over, under, above, and below</li></ul> <p><b>Geometry and spatial sense skills</b></p> <ul style="list-style-type: none"><li>• slide, flip, and turn shapes to demonstrate that the shapes remain the same</li><li>• demonstrate use of location words (such as “over,” “under,” “above,” “on,” “beside,” “next to,” “between,” “in front of,” “near,” “far,” etc.)</li></ul>

**NOTE:** Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

**STAAR Reporting Category 3 – Dimensionality and the Geometry of Location: The student will demonstrate an understanding of dimensionality and the geometry of location.**

<b>TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations</b>	<b>Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations</b>
<p><b>Geometry (6) Dimensionality and the geometry of location.</b> 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</p> <p>(A) describe and draw the intersection of a given plane with various three-dimensional geometric figures; Supporting Standard</p> <p>(B) use nets to represent and construct three-dimensional geometric figures; Supporting Standard</p> <p>(C) use orthographic and isometric views of three-dimensional geometric figures to represent and construct three-dimensional geometric figures and solve problems. Supporting Standard</p>	<p>Uses geometric representations to solve problems.</p>

**Geometry 6 Prerequisite Skills/Links to TEKS Vertical Alignment**

<p><i>Geometric Properties and Relationships</i></p> <ul style="list-style-type: none"> <li>• use pictures or models to demonstrate the Pythagorean Theorem</li> <li>• draw three-dimensional figures from different perspectives</li> <li>• graph dilations, reflections, and translations on a coordinate plane</li> <li>• generate similar figures using dilations including enlargements and reductions</li> <li>• use geometric concepts and properties to solve problems in fields such as art and architecture</li> <li>• make a net (two-dimensional model) of the surface area of a three-dimensional figure</li> <li>• sketch three-dimensional figures when given the top, side, and front views</li> </ul> <p><i>Attributes of Geometric Figures</i></p> <ul style="list-style-type: none"> <li>• use critical attributes to define similarity</li> <li>• use properties to classify three-dimensional figures, including pyramids, cones, prisms, and cylinders</li> <li>• use properties to classify triangles and quadrilaterals</li> <li>• use angle measurements to classify pairs of angles as complementary or supplementary</li> <li>• describe the relationship between radius, diameter, and circumference of a circle</li> <li>• identify relationships involving angles in triangles and quadrilaterals</li> <li>• use angle measurements to classify angles as acute, obtuse, or right</li> <li>• identify essential attributes including parallel, perpendicular, and congruent parts of two- and three-dimensional geometric figures</li> </ul>
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Geometry 6	Prerequisite Skills/Links to TEKS Vertical Alignment
	<ul style="list-style-type: none"> <li>• use essential attributes to define two- and three-dimensional geometric figures</li> <li>• identify and describe parallel and intersecting (including perpendicular) lines using concrete objects and pictorial models</li> <li>• identify and describe right, acute, and obtuse angles</li> <li>• compare two-dimensional figures, three-dimensional figures, or both by their attributes using formal geometry vocabulary</li> <li>• identify, classify, and describe two- and three-dimensional geometric figures by their attributes</li> <li>• cut two-dimensional geometric figures apart and identify the new geometric figures formed</li> <li>• use attributes to describe how 2 two-dimensional figures or 2 three-dimensional geometric figures are alike or different</li> <li>• describe attributes (the number of vertices, faces, edges, sides) of two- and three-dimensional geometric figures such as circles, polygons, spheres, cones, cylinders, prisms, and pyramids, etc.</li> <li>• use concrete models to combine two-dimensional geometric figures to make new geometric figures</li> <li>• describe and identify two- and three-dimensional geometric figures in order to sort them according to a given attribute using informal and formal language</li> <li>• describe and identify three-dimensional geometric figures, including spheres, rectangular prisms (including cubes), cylinders, and cones</li> <li>• describe and identify two-dimensional geometric figures, including circles, triangles, rectangles, and squares (a special type of rectangle)</li> <li>• describe, identify, and compare circles, triangles, rectangles, and squares (a special type of rectangle)</li> <li>• recognize shapes in real-life three-dimensional geometric figures or models of three-dimensional geometric figures</li> <li>• describe and compare the attributes of real-life objects such as balls, boxes, cans, and cones or models of three-dimensional geometric figures</li> <li>• sort a variety of objects including two- and three-dimensional geometric figures according to their attributes and describe how the objects are sorted</li> <li>• compare two objects based on their attributes</li> <li>• describe and identify an object by its attributes using informal language</li> </ul> <p><b>Geometry and spatial sense skills</b></p> <ul style="list-style-type: none"> <li>• create shapes</li> <li>• name common shapes</li> </ul>

**NOTE:** Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

**STAAR Reporting Category 3 – Dimensionality and the Geometry of Location: The student will demonstrate an understanding of dimensionality and the geometry of location.**

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations
<p><b>Geometry (7) Dimensionality and the geometry of location.</b> The student understands that coordinate systems provide convenient and efficient ways of representing geometric figures and uses them accordingly. The student is expected to</p> <p>(A) use one- and two-dimensional coordinate systems to represent points, lines, rays, line segments, and figures; Supporting Standard</p> <p>(B) use slopes and equations of lines to investigate geometric relationships, including parallel lines, perpendicular lines, and special segments of triangles and other polygons; Readiness Standard</p> <p>(C) [derive and] use formulas involving length, slope, and midpoint. Readiness Standard</p>	<p>Represents geometric figures using the coordinate system.</p>

**Geometry 7 Prerequisite Skills/Links to TEKS Vertical Alignment**

<p><i>Working with Coordinate Planes</i></p> <ul style="list-style-type: none"> <li>• locate and name points on a coordinate plane using ordered pairs of rational numbers</li> <li>• graph reflections across the horizontal or vertical axis and graph translations on a coordinate plane</li> <li>• locate and name points on a coordinate plane using ordered pairs of integers</li> <li>• locate and name points on a coordinate plane using ordered pairs of non-negative rational numbers</li> <li>• locate and name points on a coordinate grid using ordered pairs of whole numbers</li> <li>• locate and name points on a number line using whole numbers, fractions such as halves and fourths, and decimals such as tenths</li> <li>• locate and name points on a number line using whole numbers and fractions, including halves and fourths</li> <li>• use whole numbers to locate and name points on a number line</li> </ul> <p><i>Symmetry and Transformations</i></p> <ul style="list-style-type: none"> <li>• identify the transformation that generates one figure from the other when given two congruent figures on a Quadrant I coordinate grid</li> <li>• sketch the results of translations, rotations, and reflections on a Quadrant I coordinate grid</li> <li>• use reflections to verify that a shape has symmetry</li> <li>• use translations, reflections, and rotations to verify that two shapes are congruent</li> <li>• demonstrate translations, reflections, and rotations using concrete models</li> </ul>
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<b>Geometry 7</b>	<b>Prerequisite Skills/Links to TEKS Vertical Alignment</b>
	<ul style="list-style-type: none"><li>• identify lines of symmetry in two-dimensional geometric figures</li><li>• create two-dimensional figures with lines of symmetry using concrete models and technology</li><li>• identify congruent two-dimensional figures</li><li>• place an object in a specified position</li><li>• describe one object in relation to another using informal language such as over, under, above, and below</li></ul> <p><b>Geometry and spatial sense skills</b></p> <ul style="list-style-type: none"><li>• slide, flip, and turn shapes to demonstrate that the shapes remain the same</li><li>• demonstrate use of location words (such as “over,” “under,” “above,” “on,” “beside,” “next to,” “between,” “in front of,” “near,” “far,” etc.)</li></ul>

**NOTE:** Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.



**STAAR Reporting Category 4 – Congruence and the Geometry of Size: The student will demonstrate an understanding of congruence and the geometry of size.**

<b>TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations</b>	<b>Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations</b>
<p><b>Geometry (8) Congruence and the geometry of size.</b> 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</p> <ul style="list-style-type: none"> <li>(A) find areas of regular polygons, circles, and composite figures; Readiness Standard</li> <li>(B) find areas of sectors and arc lengths of circles using proportional reasoning; Supporting Standard</li> <li>(C) [derive,] extend, and use the Pythagorean Theorem; Readiness Standard</li> <li>(D) find surface areas and volumes of prisms, pyramids, spheres, cones, cylinders, and composites of these figures in problem situations; Readiness Standard</li> <li>(E) use area models to connect geometry to probability and statistics; Supporting Standard</li> <li>(F) use conversions between measurement systems to solve problems in real-world situations. Supporting Standard</li> </ul>	<p>Uses tools to solve measurement problems.</p>

**Geometry 8 Prerequisite Skills/Links to TEKS Vertical Alignment**

<p><i>Geometric Properties and Relationships</i></p> <ul style="list-style-type: none"> <li>• use pictures or models to demonstrate the Pythagorean Theorem</li> <li>• draw three-dimensional figures from different perspectives</li> <li>• graph dilations, reflections, and translations on a coordinate plane</li> <li>• generate similar figures using dilations including enlargements and reductions</li> <li>• use geometric concepts and properties to solve problems in fields such as art and architecture</li> <li>• make a net (two-dimensional model) of the surface area of a three-dimensional figure</li> <li>• sketch three-dimensional figures when given the top, side, and front views</li> </ul> <p><b>Measurement</b></p> <p><i>Comparisons</i></p> <ul style="list-style-type: none"> <li>• convert measures within the same measurement system (customary and metric) based on relationships between units</li> </ul>
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**Geometry 8****Prerequisite Skills/Links to TEKS Vertical Alignment**

- perform simple conversions within the same measurement system (SI (metric) or customary)
- explain the difference between weight and mass
- compare and order two or more objects according to weight/ mass (from heaviest to lightest)
- compare and order two or more containers according to capacity (from holds the most to holds the least)
- compare and order the area of two or more two-dimensional surfaces (from covers the most to covers the least)
- describe the relationship between the size of the unit and the number of units needed to measure the length of an object
- compare and order two or more concrete objects according to length (from longest to shortest)
- compare two objects according to weight/ mass (heavier than, lighter than or equal to)
- compare two containers according to capacity (holds more, holds less, or holds the same)
- compare the areas of two flat surfaces of two-dimensional figures (covers more, covers less, or covers the same)
- compare and order two or three concrete objects according to length (longer/ shorter than, or the same)

*Using Models*

- describe the resulting effect on volume when dimensions of a solid are changed proportionally
- describe the resulting effects on perimeter and area when dimensions of a shape are changed proportionally
- use proportional relationships in similar two-dimensional figures or similar three-dimensional figures to find missing measurements
- use the Pythagorean Theorem to solve real-life problems
- estimate measurements and use formulas to solve application problems involving lateral and total surface area and volume
- connect models of prisms, cylinders, pyramids, spheres, and cones to formulas for volume of these objects
- find lateral and total surface area of prisms, pyramids, and cylinders using concrete models and nets (two-dimensional models)
- estimate measurements and solve application problems involving volume of prisms (rectangular and triangular) and cylinders
- connect models for volume of prisms (triangular and rectangular) and cylinders to formulas of prisms (triangular and rectangular) and cylinders
- estimate measurements and solve application problems involving length (including perimeter and circumference) and area of polygons and other shapes
- measure angles
- select and use appropriate units, tools, or formulas to measure and to solve problems involving length (including perimeter), area, time, temperature, volume, and weight
- estimate measurements (including circumference) and evaluate reasonableness of results
- select and use appropriate units and formulas to measure length, perimeter, area, and volume
- connect models for perimeter, area, and volume with their respective formulas
- estimate volume in cubic units
- use concrete models of standard cubic units to measure volume
- perform simple conversions between different units of length, between different units of capacity, and between different units of weight within the customary measurement system

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<b>Geometry 8</b>	<b>Prerequisite Skills/Links to TEKS Vertical Alignment</b>
	<ul style="list-style-type: none"> <li>• estimate and use measurement tools to determine length (including perimeter), area, capacity, and weight/ mass using standard units SI (metric) and customary</li> <li>• use concrete models that approximate cubic units to determine the volume of a given container or other three-dimensional geometric figure</li> <li>• identify concrete models that approximate standard units for capacity and use them to measure capacity</li> <li>• identify concrete models that approximate standard units of weight/ mass and use them to measure weight/ mass</li> <li>• use concrete and pictorial models of square units to determine the area of two-dimensional surfaces</li> <li>• use standard units to find the perimeter of a shape</li> <li>• use linear measurement tools to estimate and measure lengths using standard units</li> <li>• select a non-standard unit of measure such as beans or marbles to determine the weight/ mass of a given object</li> <li>• select a non-standard unit of measure such as a bathroom cup or a jar to determine the capacity of a given container</li> <li>• select a non-standard unit of measure such as square tiles to determine the area of a two-dimensional surface</li> <li>• identify concrete models that approximate standard units of length and use them to measure length</li> <li>• estimate and measure length using nonstandard units such as paper clips or sides of color tiles</li> </ul> <p><b>Measurement skills</b></p> <ul style="list-style-type: none"> <li>• informally recognize and compare weights of objects or people</li> <li>• recognize how much can be placed within an object</li> <li>• recognize and compare heights or lengths of people or objects</li> </ul>

**NOTE:** Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

**STAAR Reporting Category 4 – Congruence and the Geometry of Size: The student will demonstrate an understanding of congruence and the geometry of size.**

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations
<p><b>Geometry (9) Congruence and the geometry of size.</b> The student analyzes properties and describes relationships in geometric figures. The student is expected to</p> <p>(A) formulate and test conjectures about the properties of parallel and perpendicular lines based on explorations and [concrete] models; Supporting Standard</p> <p>(B) formulate and test conjectures about the properties and attributes of polygons and their component parts based on explorations and [concrete] models; Supporting Standard</p> <p>(C) formulate and test conjectures about the properties and attributes of circles and the lines that intersect them based on explorations and [concrete] models; Supporting Standard</p> <p>(D) analyze the characteristics of polyhedra and other three-dimensional figures and their component parts based on explorations and [concrete] models. Supporting Standard</p>	<p>Analyzes geometric relationships in figures.</p>

**Geometry 9 Prerequisite Skills/Links to TEKS Vertical Alignment**

<p><i>Attributes of Geometric Figures</i></p> <ul style="list-style-type: none"> <li>• use critical attributes to define similarity</li> <li>• use properties to classify three-dimensional figures, including pyramids, cones, prisms, and cylinders</li> <li>• use properties to classify triangles and quadrilaterals</li> <li>• use angle measurements to classify pairs of angles as complementary or supplementary</li> <li>• describe the relationship between radius, diameter, and circumference of a circle</li> <li>• identify relationships involving angles in triangles and quadrilaterals</li> <li>• use angle measurements to classify angles as acute, obtuse, or right</li> <li>• identify essential attributes including parallel, perpendicular, and congruent parts of two- and three-dimensional geometric figures</li> <li>• use essential attributes to define two- and three-dimensional geometric figures</li> <li>• identify and describe parallel and intersecting (including perpendicular) lines using concrete objects and pictorial models</li> <li>• identify and describe right, acute, and obtuse angles</li> <li>• compare two-dimensional figures, three-dimensional figures, or both by their attributes using formal geometry vocabulary</li> </ul>
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<b>Geometry 9</b>	<b>Prerequisite Skills/Links to TEKS Vertical Alignment</b>
	<ul style="list-style-type: none"> <li>• identify, classify, and describe two- and three-dimensional geometric figures by their attributes</li> <li>• cut two-dimensional geometric figures apart and identify the new geometric figures formed</li> <li>• use attributes to describe how 2 two-dimensional figures or 2 three-dimensional geometric figures are alike or different</li> <li>• describe attributes (the number of vertices, faces, edges, sides) of two- and three-dimensional geometric figures such as circles, polygons, spheres, cones, cylinders, prisms, and pyramids, etc.</li> <li>• use concrete models to combine two-dimensional geometric figures to make new geometric figures</li> <li>• describe and identify two- and three-dimensional geometric figures in order to sort them according to a given attribute using informal and formal language</li> <li>• describe and identify three-dimensional geometric figures, including spheres, rectangular prisms (including cubes), cylinders, and cones</li> <li>• describe and identify two-dimensional geometric figures, including circles, triangles, rectangles, and squares (a special type of rectangle)</li> <li>• describe, identify, and compare circles, triangles, rectangles, and squares (a special type of rectangle)</li> <li>• recognize shapes in real-life three-dimensional geometric figures or models of three-dimensional geometric figures</li> <li>• describe and compare the attributes of real-life objects such as balls, boxes, cans, and cones or models of three-dimensional geometric figures</li> <li>• sort a variety of objects including two- and three-dimensional geometric figures according to their attributes and describe how the objects are sorted</li> <li>• compare two objects based on their attributes</li> <li>• describe and identify an object by its attributes using informal language</li> </ul> <p><b>Geometry and spatial sense skills</b></p> <ul style="list-style-type: none"> <li>• create shapes</li> <li>• name common shapes</li> </ul>

**NOTE:** Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

**STAAR Reporting Category 4 – Congruence and the Geometry of Size: The student will demonstrate an understanding of congruence and the geometry of size.**

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations
<p><b>Geometry (10) Congruence and the geometry of size.</b> The student applies the concept of congruence to justify properties of figures and solve problems. The student is expected to</p> <p>(A) use congruence transformations to make conjectures and justify properties of geometric figures including figures represented on a coordinate plane; Supporting Standard (B) justify and apply triangle congruence relationships.</p> <p>Readiness Standard</p>	<p>Uses the concept of congruence in geometric figures.</p>

**Geometry 10 Prerequisite Skills/Links to TEKS Vertical Alignment**

<p><i>Symmetry and Transformations</i></p> <ul style="list-style-type: none"> <li>• identify the transformation that generates one figure from the other when given two congruent figures on a Quadrant I coordinate grid</li> <li>• sketch the results of translations, rotations, and reflections on a Quadrant I coordinate grid</li> <li>• use reflections to verify that a shape has symmetry</li> <li>• use translations, reflections, and rotations to verify that two shapes are congruent</li> <li>• demonstrate translations, reflections, and rotations using concrete models</li> <li>• identify lines of symmetry in two-dimensional geometric figures</li> <li>• create two-dimensional figures with lines of symmetry using concrete models and technology</li> <li>• identify congruent two-dimensional figures</li> <li>• place an object in a specified position</li> <li>• describe one object in relation to another using informal language such as over, under, above, and below</li> </ul> <p><b>Geometry and spatial sense skills</b></p> <ul style="list-style-type: none"> <li>• slide, flip, and turn shapes to demonstrate that the shapes remain the same</li> <li>• demonstrate use of location words (such as “over,” “under,” “above,” “on,” “beside,” “next to,” “between,” “in front of,” “near,” “far,” etc.)</li> </ul> <p><i>Working with Coordinate Planes</i></p> <ul style="list-style-type: none"> <li>• locate and name points on a coordinate plane using ordered pairs of rational numbers</li> <li>• graph reflections across the horizontal or vertical axis and graph translations on a coordinate plane</li> <li>• locate and name points on a coordinate plane using ordered pairs of integers</li> </ul>
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<b>Geometry 10</b>	<b>Prerequisite Skills/Links to TEKS Vertical Alignment</b>
	<ul style="list-style-type: none"><li>• locate and name points on a coordinate plane using ordered pairs of non-negative rational numbers</li><li>• locate and name points on a coordinate grid using ordered pairs of whole numbers</li><li>• locate and name points on a number line using whole numbers, fractions such as halves and fourths, and decimals such as tenths</li><li>• locate and name points on a number line using whole numbers and fractions, including halves and fourths</li><li>• use whole numbers to locate and name points on a number line</li></ul>

**NOTE:** Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.

**STAAR Reporting Category 5 – Similarity and the Geometry of Shape: The student will demonstrate an understanding of similarity and the geometry of shape.**

TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations	Essence of TEKS Knowledge and Skills Statement/ STAAR-Tested Student Expectations
<p><b>Geometry (11) Similarity and the geometry of shape.</b> The student applies the concepts of similarity to justify properties of figures and solve problems. The student is expected to</p> <p>(A) use and extend similarity properties and transformations to explore and justify conjectures about geometric figures; Supporting Standard</p> <p>(B) use ratios to solve problems involving similar figures; Supporting Standard</p> <p>(C) develop, apply, and justify triangle similarity relationships, such as right triangle ratios, trigonometric ratios, and Pythagorean triples using a variety of methods; Readiness Standard</p> <p>(D) 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. Readiness Standard</p>	<p>Uses the concept of similarity in geometric figures.</p>

**Geometry 11 Prerequisite Skills/Links to TEKS Vertical Alignment**

<p><i>Geometric Properties and Relationships</i></p> <ul style="list-style-type: none"> <li>• use pictures or models to demonstrate the Pythagorean Theorem</li> <li>• draw three-dimensional figures from different perspectives</li> <li>• graph dilations, reflections, and translations on a coordinate plane</li> <li>• generate similar figures using dilations including enlargements and reductions</li> <li>• use geometric concepts and properties to solve problems in fields such as art and architecture</li> <li>• make a net (two-dimensional model) of the surface area of a three-dimensional figure</li> <li>• sketch three-dimensional figures when given the top, side, and front views</li> </ul> <p><i>Attributes of Geometric Figures</i></p> <ul style="list-style-type: none"> <li>• use critical attributes to define similarity</li> <li>• use properties to classify three-dimensional figures, including pyramids, cones, prisms, and cylinders</li> <li>• use properties to classify triangles and quadrilaterals</li> <li>• use angle measurements to classify pairs of angles as complementary or supplementary</li> <li>• describe the relationship between radius, diameter, and circumference of a circle</li> </ul>
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<b>Geometry 11</b>	<b>Prerequisite Skills/Links to TEKS Vertical Alignment</b>
	<ul style="list-style-type: none"> <li>• identify relationships involving angles in triangles and quadrilaterals</li> <li>• use angle measurements to classify angles as acute, obtuse, or right</li> <li>• identify essential attributes including parallel, perpendicular, and congruent parts of two- and three-dimensional geometric figures</li> <li>• use essential attributes to define two- and three-dimensional geometric figures</li> <li>• identify and describe parallel and intersecting (including perpendicular) lines using concrete objects and pictorial models</li> <li>• identify and describe right, acute, and obtuse angles</li> <li>• compare two-dimensional figures, three-dimensional figures, or both by their attributes using formal geometry vocabulary</li> <li>• identify, classify, and describe two- and three-dimensional geometric figures by their attributes</li> <li>• cut two-dimensional geometric figures apart and identify the new geometric figures formed</li> <li>• use attributes to describe how 2 two-dimensional figures or 2 three-dimensional geometric figures are alike or different</li> <li>• describe attributes (the number of vertices, faces, edges, sides) of two- and three-dimensional geometric figures such as circles, polygons, spheres, cones, cylinders, prisms, and pyramids, etc.</li> <li>• use concrete models to combine two-dimensional geometric figures to make new geometric figures</li> <li>• describe and identify two- and three-dimensional geometric figures in order to sort them according to a given attribute using informal and formal language</li> <li>• describe and identify three-dimensional geometric figures, including spheres, rectangular prisms (including cubes), cylinders, and cones</li> <li>• describe and identify two-dimensional geometric figures, including circles, triangles, rectangles, and squares (a special type of rectangle)</li> <li>• describe, identify, and compare circles, triangles, rectangles, and squares (a special type of rectangle)</li> <li>• recognize shapes in real-life three-dimensional geometric figures or models of three-dimensional geometric figures</li> <li>• describe and compare the attributes of real-life objects such as balls, boxes, cans, and cones or models of three-dimensional geometric figures</li> <li>• sort a variety of objects including two- and three-dimensional geometric figures according to their attributes and describe how the objects are sorted</li> <li>• compare two objects based on their attributes</li> <li>• describe and identify an object by its attributes using informal language</li> </ul> <p><b>Geometry and spatial sense skills</b></p> <ul style="list-style-type: none"> <li>• create shapes</li> <li>• name common shapes</li> </ul>

**NOTE:** Under each heading the prerequisite skills are arranged from the highest grade level to the lowest grade level.