Texas High School Geometry

Curriculum Mapping, 2006 Standards

Geometry Performance Standard	Boardworks High School Geometry presentation
(5) Geometric patterns. The student uses a variety of representations to describe geometric relationships and solve problems. The student is expected to:	
(A) use numeric and geometric patterns to develop algebraic expressions representing geometric properties;	–
(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;	Polygons Interior and exterior angles in polygons Angles in a circle Congruence and similarity Using circle properties Quadrilaterals Triangles
(C) use properties of transformations and their compositions to make connections between mathematics and the real world, such as tessellations; and	Combining transformations Tessellation Dilation The center of dilation Reflection and rotational symmetry Reflection symmetry in 3-D shapes Reflection symmetry Rotation Rotational symmetry in 3-D shapes Rotational symmetry Translation
(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.	Right triangles Pythagorean triples Similar right triangles Identifying right triangles The Pythagorean Theorem Triangles Special right triangles

(6) 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:	
(A) describe and draw the intersection of a given plane with various three-dimensional geometric figures;	Reflection symmetry in 3-D shapes
(B) use nets to represent and construct three-dimensional geometric figures; and	Prisms Pyramids Cylinders, cones and spheres
(C) use orthographic and isometric views of three-dimensional geometric figures to represent and construct three-dimensional geometric figures and solve problems.	Reflection symmetry in 3-D shapes Rotational symmetry in 3-D shapes
(7) 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:	
(A) use one- and two-dimensional coordinate systems to represent points, lines, rays, line segments, and figures;	The equation of a straight line The equation of a circle
(B) use slopes and equations of lines to investigate geometric relationships, including parallel lines, perpendicular lines, and special segments of triangles and other polygons; and	The equation of a straight line Parallel and perpendicular lines Slopes and intercepts
(C) derive and use formulas involving length, slope, and midpoint.	The distance between two points Slopes and intercepts The midpoint of a line segment The equation of a straight line
(8) 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:	
(A) find areas of regular polygons, circles, and composite figures;	The area of a circle Polygons Area formulas and calculations Using area formulas
(B) find areas of sectors and arc lengths of circles using proportional reasoning;	The area of a sector The length of an arc

(C) derive, extend, and use the Pythagorean Theorem;	The Pythagorean Theorem Identifying right triangles Pythagorean triples Similar right triangles Calculating sides of a triangle Finding the length of diagonals using the Pythagorean Theorem Finding the diagonal in a rectangular prism Finding the distance between two points using the Pythagorean Theorem Using the Pythagorean Theorem to solve problems in context Finding the height of triangles using the Pythagorean Theorem
(D) find surface areas and volumes of prisms, pyramids, spheres, cones, cylinders, and composites of these figures in problem situations;	Using length, area and volume formulas Surface area of rectangular prisms Prisms Pyramids Cylinders, cones and spheres
(E) use area models to connect geometry to probability and statistics; and	–
(F) use conversions between measurement systems to solve problems in real-world situations.	Converting units Customary units
(9) Congruence and the geometry of size. The student analyzes properties and describes relationships in geometric figures. The student is expected to:	
(A) formulate and test conjectures about the properties of parallel and perpendicular lines based on explorations and concrete models;	Lines Parallel and perpendicular lines
(B) formulate and test conjectures about the properties and attributes of polygons and their component parts based on explorations and concrete models;	Polygons Interior and exterior angles in polygons Using polygons
(C) formulate and test conjectures about the properties and attributes of circles and the lines that intersect them based on explorations and concrete models; and	Parts of a circle Radius and circumference Angles in a circle The area of a circle The area of a sector The length of an arc The equation of a circle Using circle properties Tangents and normals

(D) analyze the characteristics of polyhedra and other three-dimensional figures and their component parts based on explorations and concrete models.	Reflection symmetry in 3-D shapes Rotation symmetry in 3-D shapes Prisms Pyramids Cylinders, cones and spheres
(10) 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:	
(A) use congruence transformations to make conjectures and justify properties of geometric figures including figures represented on a coordinate plane; and	Congruence and similarity Using congruence and similarity
(B) justify and apply triangle congruence relationships.	Similar right triangles Congruence and similarity Using congruence and similarity
(11) 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:	
(A) use and extend similarity properties and transformations to explore and justify conjectures about geometric figures;	Congruence and similarity Using congruence and similarity Combining transformations Reflection and rotational symmetry Reflection symmetry in 3-D shapes Reflection symmetry Rotation Rotational symmetry in 3-D shapes Rotational symmetry Translation Tessellation Dilation The center of dilation
(B) use ratios to solve problems involving similar figures;	Similar right triangles Congruence and similarity Using congruence and similarity Dilation

(C) develop, apply, and justify triangle similarity relationships, such as right triangle ratios, trigonometric ratios, and Pythagorean triples using a variety of methods; and	The Pythagorean Theorem Identifying right triangles Calculating sides of a triangle Trigonometry summary The sine ratio The cosine ratio The tangent ratio Pythagorean triples Right triangles Similar right triangles
(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.	The area of a circle Using length, area and volume formulas Area formulas and calculations Using area formulas Edges of rectangular prisms Surface area of rectangular prisms Volume of rectangular prisms