

Key Standards for Geometry

Kentucky High School Mathematics Diagnostic Assessments

1. Students will use **ANGLE RELATIONSHIPS** such as corresponding angle postulate and vertical angle theorem to find angle measures, to reason mathematically, and to solve real-world and mathematical problems.

Key skills: find angle measures of unknown angles using angle relationships

Key Concepts: linear pair; vertical angles; corresponding angles; parallel lines; perpendicular lines

Key Principles: corresponding angle postulate; vertical angles theorem; triangle sum theorem

2. Students will use **CONGRUENCE AND SIMILARITY** postulates to find the measures of polygon sides and angles, to reason mathematically, and to solve real-world and mathematical problems.

Key skills: find measures of sides and angles of polygons

Key Concepts: congruence; similarity; corresponding parts; dilations

Key Principles: congruence/similarity postulates and theorems

3. Students will use **RIGHT TRIANGLE RELATIONSHIPS** such as the Pythagorean Theorem, trigonometric ratios, and special right triangle theorems to find the measures of right triangle sides and angles, to reason mathematically, and to solve real-world and mathematical problems.

Key skills: find the measures of sides and angles in right triangles

Key Concepts: trigonometric relationships (sine, cosine, tangent); special right triangles (30-60-90, 45-45-90)

Key Principles: Pythagorean Theorem; trigonometric ratios; special right triangle theorems

4. Students will use parallelogram theorems, corollaries, and coordinate geometry to classify **QUADRILATERALS**, reason mathematically, and solve real-world and mathematical problems.

Key skills: determine whether lines are parallel, perpendicular, or neither; calculate slope of a line, distance, and midpoint

Key Concepts: coordinate geometry; distance; midpoint; slope; parallel lines; perpendicular line; properties of quadrilaterals

Key Principles: slope formula; distance formula; midpoint formula; parallelogram theorems and corollaries

5. Students will calculate **SURFACE AREA AND VOLUME**, determine the effects of dimension change on perimeter, area, surface areas, and volume, and use the Similar Solids Theorem to reason mathematically and solve real-world and mathematical problems.

Key skills: calculate surface area and volume in problem settings with or without formulas; determine the effects of dimension change on perimeter, area, surface area, volume; perform unit conversion

Key Concepts: surface area; volume; rectangular prism; pyramid; cylinder; sphere; cone; nets

Key Principles: Similar Solids Theorem; volume formulas; surface area formulas

6. Students will identify and perform rigid transformations such as translations, rotations, and reflections of figures in a plane.

Key skills: locate lines of symmetry; find pre-image and image; apply geometric transformations

Key Concepts: rigid transformation; translation; reflection; rotation; symmetry; pre-image; image

7. Students use chord and tangent theorems to find angle and arc measure of **CIRCLES**, reason mathematically, and solve real-world and mathematical problems.

Key skills: find angle and arc measures using properties of circles; apply distance and/or midpoint formula to circles

Key Concepts: inscribed angle; central angle; chord; tangent; arc; radius; diameter

Key Principles: chord and tangent line theorems