Pennsylvania Keystone Exams

Geometry: Assessment Anchors and Eligible Content

Geometric Properties and Reasoning G.1

1 **Properties of Circles, Spheres, and Cylinders** G.1.1

- 1 Identify and/or use parts of circles and segments associated with circles, spheres, and cylinders. G.1.1.1
  - 1 Identify, determine, and/or use the radius, diameter, segment, and/or tangent of a circle. G.1.1.1.1
  - 2 Identify, determine, and/or use the arcs, semicircles, sectors, and/or angles of a circle. G.1.1.1.2
  - 3 Use chords, tangents, and secants to find missing arc measures or missing segment measures. G.1.1.1.3
  - 4 Identify and/or use the properties of a sphere or cylinder. G.1.1.1.4

2 **Properties of Polygons and Polyhedra** G.1.2

- 1 Recognize and/or apply properties of angles, polygons, and polyhedra. G.1.2.1
  - 1 Identify and/or use properties of triangles. G.1.2.1.1
  - 2 Identify and/or use properties of quadrilaterals. G.1.2.1.2
  - 3 Identify and/or use properties of isosceles and equilateral triangles. G.1.2.1.3
  - 4 Identify and/or use properties of regular polygons. G.1.2.1.4
  - 5 Identify and/or use properties of pyramids and prisms. G.1.2.1.5

3 **Congruence, Similarity, and Proofs** G.1.3

- 1 Use properties of congruence, correspondence, and similarity in problem-solving settings involving two- and three- dimensional figures. G.1.3.1
  - 1 Identify and/or use properties of congruent and similar polygons or solids. G.1.3.1.1
  - 2 Identify and/or use proportional relationships in similar figures. G.1.3.1.2
- 2 Write formal proofs and/or use logic statements to construct or validate arguments. G.1.3.2
  - 1 Write, analyze, complete, or identify formal proofs (e.g., direct and/or indirect proofs/proofs by contradiction). G.1.3.2.1

Coordinate Geometry and Measurement G.2

1 **Coordinate Geometry and Right Triangles** G.2.1

1 Solve problems involving right triangles. G.2.1.1

1 Use the Pythagorean theorem to write and/or solve problems involving right triangles. G.2.1.1.1

2 Use trigonometric ratios to write and/or solve problems involving right triangles. G.2.1.1.2

2 Solve problems using analytic geometry. G.2.1.2

1 Calculate the distance and/or midpoint between two points on a number line or on a coordinate plane. G.2.1.2.1

2 Relate slope to perpendicularity and/or parallelism (limit to linear algebraic equations). G.2.1.2.2

3 Use slope, distance, and/or midpoint between two points on a coordinate plane to establish properties of a two-dimensional shape. G.2.1.2.3

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2 **Measurements of Two-Dimensional Shapes and Figures** G.2.2

1 Use and/or compare measurements of angles. G.2.2.1

1 Use properties of angles formed by intersecting lines to find the measures of missing angles. G.2.2.1.1

2 Use properties of angles formed when two parallel lines are cut by a transversal to find the measures of missing angles. G.2.2.1.2

2 Use and/or develop procedures to determine or describe measures of perimeter, circumference, and/or area. (May require conversions within the same system.) G.2.2.2

1 Estimate area, perimeter, or circumference of an irregular figure. G.2.2.2.1

2 Find the measurement of a missing length, given the perimeter, circumference, or area. G.2.2.2.2

3 Find the side lengths of a polygon with a given perimeter to maximize the area of the polygon. G.2.2.2.3

4 Develop and/or use strategies to estimate the area of a compound/composite figure. G.2.2.2.4

5 Find the area of a sector of a circle. G.2.2.2.5

3 Describe how a change in one dimension of a two- dimensional figure affects other measurements of that figure. G.2.2.3

1 Describe how a change in the linear dimension of a figure affects its perimeter, circumference, and area (e.g., How does changing the length of the radius of a circle affect the circumference of the circle?). G.2.2.3.1

4 Apply probability to practical situations. G.2.2.4

1 Use area models to find probabilities. G.2.2.4.1

3 **Measurements of Three-Dimensional Shapes and Figures** G.2.3

1. Use and/or develop procedures to determine or describe measures of surface area and/or volume. (May require conversions within the same system.) G.2.3.1
    1. Calculate the surface area of prisms, cylinders, cones, pyramids, and/or spheres. Formulas are provided on a reference sheet. G.2.3.1.1
    2. Calculate the volume of prisms, cylinders, cones, pyramids, and/or spheres. Formulas are provided on a reference sheet. G.2.3.1.2
    3. Find the measurement of a missing length given the surface area or volume. G.2.3.1.3
2. Describe how a change in one dimension of a three- dimensional figure affects other measurements of that figure. G.2.3.2
    1. Describe how a change in the linear dimension of a figure affects its surface area or volume (e.g., How does changing the length of the edge of a cube affect the volume of the cube?). G.2.3.2.1