C2.0 Geometry Unit 3 Instructional Focus: Extending to Three Dimensions

Topic	Instructional Foci
Topic 1: Three-Dimensional Measurement	Students' experience with two-dimensional and three-dimensional objects is extended to include informal explanations of circumference, area, volume, and density formulas. Additionally, students apply their knowledge of two-dimensional shapes to consider the shapes of cross-sections and the result of rotating a two-dimensional object about a line. ***Concepts:*** • What is area? • Informally prove and apply the formula for the circumference and area of a circle. • Identify the solid created by rotating a two-dimensional figure about a line. • Identify the shape of two-dimensional cross-sections (horizontal, vertical, and other) of a solid. • Identify the shape of two-dimensional cross-sections (horizontal, vertical, and other) of a solid. • Explore cross-sections of three-dimensional figures to develop understandings of Cavalieri's Principle. • Give an informal argument for, and apply the formula for the volume of a prism. • Give an informal argument for, and apply the formula for the volume of a cylinder. • Give an informal argument for, and apply the formula for the volume of a pyramid and cone. • Give an informal argument for, and apply the formula for the volume of a sphere. • Determine the effect on volume of doubling or tripling one or more dimension(s) of a solid. • Solve problems involving prisms, cylinders, pyramids, cones, and spheres by identifying and applying appropriate volume formulas. • Solve problems involving prisms, cylinders, pyramids, cones, and spheres by identifying and applying appropriate volume formulas. • Solve problems involving prisms, cylinders, pyramids, cones, and spheres by identifying and applying appropriate volume formulas. • Model and estimate measures (circumference, area, perimeter, volume) of real-world objects, including composite figures, using comparable geometric shapes or three-dimensional objects. • Create a visual representation of a design problem and solve given certain constraints using a geometric model (graph, equation, table, formula). • Apply concepts of density to solve problems involving area. • Apply concepts of density to solve problems involving volume. • Apply concepts of density to solve problems involving volume.