

C2.0 Investigations into Mathematics Unit 3 Course Outline

Expressing Geometric Relationships

Topic	Instructional Foci
Topic 1: Measurement in Two and Three Dimensions	<p>In this topic, students extend their understanding of perimeter and area beyond polygons to include circles. They develop an understanding of pi as a ratio and use this ratio to determine area and circumference. Students continue to apply their understanding of composition and decomposition of shapes to find the area of composite figures and surface area of 3D figures. Students utilize drawings and physical models to visualize 3D figures, determine their volume, and describe their attributes when sliced by a plane. They will solve real-world and mathematical problems involving area, volume, and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.</p> <p><u>Concepts:</u> Determine the relationship between circumference and diameter. Derive the relationship between the circumference and area of a circle. Draw circles and polygons and determine the area and perimeter. Determine the area of composite figures. Explore the relationship between surface area and volume. Describe the two-dimensional figures that result from slices of rectangular prisms. Describe the two-dimensional figures that result from slices of rectangular pyramids. Determine the volume of composite figures.</p>
Topic 2: Angle Relationships	<p>In this topic students investigate angle relationships and use these relationships to solve for unknown angle measures in a figure. They use their understanding of angles to draw triangles and extend this understanding to draw other geometric shapes. Students also explore the conditions necessary to determine whether a given set of measurements will create one unique triangle, multiple unique triangles, or cannot form a triangle.</p> <p><u>Concepts:</u> Reason about the relationship between two or more angles. Determine the angle relationship created by intersecting lines. Apply angle relationships to write and solve equations for missing angles. Draw triangles using angle measures. Draw geometric shapes with given conditions. Explore conditions necessary for a unique triangle. Synthesize the conditions necessary for a unique triangle.</p>