

Unit 4 Geometry

Grade 7 Math

Building upon geometry concepts from prior grade-levels, students will solve real-world problems involving triangles, angles, scale drawings, area of composed figures, circles, volume, surface area, and plane sections of solid figures. Additionally, students will explore the conditions for drawing triangles.

Standards for Mathematical Practice

- MP.1 Make sense of problems and persevere in solving them.
- MP.2 Reason abstractly and quantitatively.
- MP.3 Construct viable arguments and critique the reasoning of others.
- MP.4 Model with mathematics.
- MP.5 Use appropriate tools strategically.
- MP.6 Attend to precision.
- MP.7 Look for and make use of structure.
- MP.8 Look for and express regularity in repeated reasoning.

Louisiana Student Standards for Mathematics (LSSM)

G: Geometry	
A. Draw, construct, and describe geometrical figures and describe the relationship between them.	
7.G.A.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale
7.G.A.2	Draw (freehand, with ruler and protractor, or with technology) geometric shapes with given conditions. (Focus is on triangles from three measures of angles or sides, noticing when the conditions determine one and only one triangle, more than one triangle, or no triangle.)
7.G.A.3	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.

B. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

7.G.B.4	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
7.G.B.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.
7.G.B.6	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. <i>(Pyramids limited to surface area only.)</i>

Enduring Understandings:

- *Geometry and spatial sense offer ways to interpret and reflect on our physical environment.
- *Writing and solving real-life and mathematical problems involving simple equations for an unknown angle in a figure helps students as they engage in upper level geometry concepts.
- *Mathematical problems involving area, surface area, and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes and right prisms can be solved by breaking the figure into its various parts.
- *Triangles have limits to the length of the sides as well as sum of interior angles.

Essential Questions:

- *What is the total number of degrees in supplementary and complementary angles?
- *What is the relationship between vertical and adjacent angles?
- *How do geometric models describe spatial relationships?
- *How are geometric shapes and objects classified?
- *How is the third side of a triangle determined?
- *What two-dimensional figures result from slicing prisms, pyramids, cubes, cylinders, and cones?