

Core Content

Cluster Title: Draw, construct, and describe geometrical figures and describe the relationships between them.
Standard 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.
Concepts and Skills to Master
<ul style="list-style-type: none"> • Use a scale or scale factor to find a measurement. • Find actual lengths and areas from a scale drawing, using a scale factor. • Create multiple scale drawings from the original model or drawing, using different scales.

Supports for Teachers

Critical Background Knowledge	
<ul style="list-style-type: none"> • Find areas of geometric figures. (6.G.1) 	
Academic Vocabulary	
Scale, scale factor, scale drawing, enlarge, reduce	
Suggested Instructional Strategies	Resources
<ul style="list-style-type: none"> • Use blueprints to explore consumer questions such as “how much carpet or tile should I buy?” • Use Google Earth to determine the area of the school property. 	<ul style="list-style-type: none"> • Maps/Atlases • Rulers/Measuring tapes • Scale models/drawings • <i>If You Hopped Like a Frog</i> book • <i>Gulliver’s Travels</i> book/movie
Sample Formative Assessment Tasks	
Skill-based Task	Problem Task
Given a map with the scale 1 inch = 9 miles, two cities are 3.75 inches apart, how many miles are they from one another?	Cut an 8 ½ X 11” sheet of paper so that it represents a scale model of your desk. Place three items on the desk and using the appropriate scale factor create a scale drawing of the desk and the items on the desk. Justify your results.

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Standard 2: Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
Concepts and Skills to Master
<ul style="list-style-type: none"> • Draw precise geometric figures based on given conditions. • Discover the conditions necessary for a given set of angles or sides to make a triangle. • Explore conditions that determine unique triangles, multiple triangles, or no triangles.

Supports for Teachers

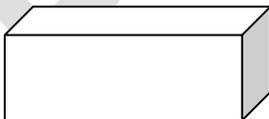
Critical Background Knowledge	
<ul style="list-style-type: none"> • Drawing precise angles using a protractor and ruler. 	
Academic Vocabulary	
Angle (\angle), angle measure ($m\angle$), acute, obtuse, right, degrees ($^\circ$), polygon, vertex, line segment (side AB of $\triangle ABC$)	
Suggested Instructional Strategies	Resources
<ul style="list-style-type: none"> • Give students the same three angle measures, have them draw triangles on their own, compare their triangles, and discuss how the triangles are similar and different from one another. Do the same activity given three side lengths. Could use Patty Paper also. • Have students create triangles and other geometric figures using dynamic geometry software to determine conditions necessary to create polygons. 	<ul style="list-style-type: none"> • Dynamic geometry software • Patty Paper • Protractor • Ruler
Sample Formative Assessment Tasks	
Skill-based Task Given the two side lengths, 6 and 7, what is the shortest possible length of the third side? What is the longest possible length of the third side?	Problem Task Draw a triangle where one angle is twice as large as another. Measure the third angle. What is the relationship between the three angles? Given the following angles, 0° , 10° , 15° , 30° , 35° , 65° , 70° , 75° , 80° , and 100° , find all the possible angle combinations that will form a triangle. Precisely draw all possible triangles using a protractor and ruler.

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Standard 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.
Concepts and Skills to Master
<ul style="list-style-type: none"> Describe the different ways to slice a 3D figure (i.e. vertical slice, horizontal slice, and angled slice). Describe the different 2D cross-sections that will result depending on how you slice the 3D figure.

Supports for Teachers

Critical Background Knowledge	
<ul style="list-style-type: none"> Identify polygons. 	
Academic Vocabulary	
Cube, Right rectangular prism, Right rectangular pyramid, Cross-sections, Two-dimensional figure (2D), Three-dimensional figure (3D), Plane sections	
Suggested Instructional Strategies	Resources
<ul style="list-style-type: none"> Slice a variety of objects (e.g. Styrofoam shapes, molding clay, or potatoes), using fishing line, dental floss, or string, and describe the two-dimensional figures that result from the slices. Explore topographical maps as a two-dimensional representation of a three dimensional landscape. Take potatoes and cut into right rectangular prisms or any other type of right prism. Cut potato prisms at different angles, color the cross-section using a marker or stamp pad, and stamp it onto a piece of paper to help students see that the cross-section is 2D. 	<ul style="list-style-type: none"> National Library of Virtual Manipulatives - Platonic Solids – Slicing Google Sketchup

Sample Formative Assessment Tasks	
<p>Skill-based Task Explain how a single slice through the right rectangular prism can create a triangle, a rectangle, a trapezoid, or a square?</p> 	<p>Problem Task Create three-dimensional models based on topographical maps. What are all the possible 2-D figures you can create by slicing an ice-cream cone? an umbrella? a 3-D object of your choice?</p>