Geometry: Grade 7

Stage 1 Desired Results

ESTABLISHED GOALS:

Competencies:

- ***Students will demonstrate the ability to reason with definitions, theorems, and algebraic models to create conjectures and prove statements about two- and three- dimensional figures.***
- ***Students will demonstrate the ability to analyze and summarize text and integrate knowledge to make meaning of discipline-specific materials.***
- ***Students will demonstrate the ability to produce coherent and supported writing in order to communicate effectively for a range of discipline-specific tasks, purposes, and audiences.***
- ***Students will demonstrate the ability to speak purposefully and effectively by strategically making decisions about content, language use, and discourse style.***

Content Standards:

- 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, 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.
- 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.
- 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.
- MP1 Make sense of problems and persevere in solving them.
- MP2 Reason abstractly and quantitatively.
- MP3 Construct viable arguments and critique the reasoning of others.
- MP4 Model with mathematics.
- MP5 Use appropriate tools strategically.
- MP6 Attend to precision.
- MP7 Look for and make use of structure.
- MP8 Look for and express regularity in repeated reasoning.

Transfer

*Students will be able to independently use their learning to **reason with geometric principles to effectively and efficiently use resources.***

Meaning

ENDURING UNDERSTANDINGS

Students will understand that…

- algebraic formulas can be used to solve for unknown values in two- or three- dimensional figures.
- scale drawings can be used to create workable models.

ESSENTIAL QUESTIONS

- When dealing with a set of parameters, how would you determine if a unique solution is possible?

Acquisition

Students will know…

- *that theorems and properties can be used to describe angles, polygons, and three-dimensional figures.*
- *that the dimensions of a scaled model or a scaled drawing must be proportional to the original.*
- *that shapes are defined by their properties.*

vocabulary: plane sections, inscribed, protractor, pi, Π, Scale, Scale Factor, Scalene, Isosceles, Equilateral, Acute, Right, obtuse, equiangular, isosceles trapezoid, triangle inequality theorem, sum of angles theorem, intersecting lines, parallel, perpendicular, vertex, complement, supplement, vertical, adjacent, radius, diameter, circumference, surface area, cross-sections, right rectangular pyramid, triangular prisms

Students will be skilled at…

- *using proportional reasoning to solve problems that involve maps and scaled drawings.*
- *using freehand, ruler, protractor and technology to draw geometric shapes with given conditions.*
- *constructing triangles from measures of angles or sides.*
- *identifying and describing supplementary, complementary, vertical, and adjacent angles.*
- *using understandings of supplementary, complementary,vertical and adjacent angles to write and solve equations.*
- *using their knowledge of area and circumference of a circle to solve problems.*
- *calculating the area, surface area, and volume of two and three-dimensional figures.*
- *describing the resulting face shape made from cuts that are parallel or perpendicular to the base of right rectangular prisms and pyramids.*
- *using their knowledge of area, surface area and volume to solve problems involving two and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.*

Content Area Literacy Standards	***21st Century Skills***
• RST.6-8.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. • RST.6-8.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6-8 texts and topics*. • RST.6-8.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually.	• *reason effectively* • *use systems thinking* • *communicate clearly* • *solve problems* • *access and evaluate information*

Stage 2 - Evidence

Evaluative Criteria	***Assessment Evidence***
	PERFORMANCE TASK(S):
	OTHER EVIDENCE:

Stage 3 – Learning Plan

Summary of Key Learning Events and Instruction

Language Arts Integration	***Mathematics Integration***
• 1.OA.1 Use	• 1.OA.1 Use
Technology Integration	***District Materials***
• 1.OA.1 Use	
