UNIT 5 – GEOMETRY AND GRAPHING

Established Goals: Standards	Transfer
6.G.1 - Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. **6.G.2** - Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas V = l w h and V = b h to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. **6.G.3** - Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real world and mathematical problems. **6.G.4** - Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems. **6.SP.4** - Display numerical data in plots on a number line, including dot plots,	*Students will be able to:* • Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. • Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems. Solve real-world and mathematical problems involving area, surface area, and volume of both two and three-dimensional figures.

	Meaning	
	ENDURING UNDERSTANDING	ESSENTIAL QUESTIONS
	- Understand area is the space within a polygon and perimeter is the distance around the polygon. - Properly using instruments of measurement is a skill for real world application. - Substitute corresponding measurements into the formula being used. - Use knowledge of the coordinate grid to explore and verify properties of polygons. - Three dimensional figures can be classified by their two-dimensional faces. - Volume and Surface area can be calculated by applying algebraic formulas. - Volume of three-dimensional objects is expressed in cubic units. Surface area of three-dimensional objects is expressed in square units. - Three dimensional figures have parts called	• How is area calculated? • What are the differences between perimeter and area? • How does the formula A=bh relate to the formula A=lw? • How do you find the length of the unknown side of a polygon constructed on the coordinate grid? • How are two-dimensional polygons used to form three-dimensional shapes? • How do I identify the vertices, edges and faces of a three-dimensional shape? • What characteristics can I use to classify three-dimensional shapes? • How do I use an algebraic formula to calculate volume and surface area of a prism? • What units do I use to express volume? Surface area?

histograms, and box plots. **6.SP.5** - Summarize numerical data sets in relation to their context, such as by: a. Reporting the number of observations.	vertices, faces, and edges. • Three dimensional figures can be constructed from cube nets.	

Acquisition		
	KNOWLEDGE	SKILLS
b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.	*Students will know how to…* • Reason about relationships among shapes to determine area. • Find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. • Discuss, develop, and justify formulas for areas of triangles and parallelograms. • Find areas of polygons by decomposing them into pieces whose area they can be determine. • Prepare for work on scale drawings and constructions in Grade 7 by drawing polygons in the coordinate plane.	*Students will be skilled at…* • Find areas of right triangles, other triangles, and special quadrilaterals by decomposing these shapes, rearranging or removing pieces, and relating the shapes to rectangles. • Find areas of polygons by decomposing them into pieces whose area they can be determine.

Vocabulary	Instruction and Pacing	
Area, Volume, Polygon, Triangle, Quadrilateral, Formula, compass, protractor, Histogram, Vertices, Faces, Edges	**6 G1 – area of polygons**	**2 weeks**
	6 G2 – volume of prisms	**2 weeks**
	6 G3 – draw polygons	**1 week**
	6 G4 – use nets	**1 week**

Resources
• **Envisions Topic 11: lessons 1, 2, 3, 4, 5, 6; Topic 17: lessons 1, 2, 3, 4, 5**
• **Fairfield Township T21 Math PBL Unit**
• **Manipulatives**
o **compass**
o **protractors**
o **rulers**
o **graph paper**
• **www.pearsonsuccessnet.com**
• **Games / Centers**
• **Study Island**
• **Guided / Independent Practice**

Provide graphic organizers
Provide additional examples and opportunities for additional problems for repetition
Provide tutoring opportunities
Provide retesting opportunities after remediation (up to teacher and district discretion)
Teach for mastery not test
Teaching concepts in different modalities
Adjust pace and homework assignments

ELL Modifications
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21st Century Skills	Critical Thinking, Creative Thinking, Collaborating, Communicating, and Technology Literacy
Instructional Strategies	Fairfield School recognizes the importance of the varying methodologies that may be successfully employed by teachers within the classroom and, as a result, identifies a wide variety of possible instructional strategies that may be used effectively to support student achievement. These may include, but not be limited to, strategies that fall into categories identified by the Framework for Teaching by Charlotte Danielson: • Communicating with students • Using questioning and discussion techniques • Engaging students in learning • Using assessment in instruction • Demonstrating Flexibility and Responsiveness
Interdisciplinary Connections	

Common Misconceptions	Proper Conceptions
When using the formula to find the area of a triangle, the incorrect height of the triangle is used	The height of a triangle must be perpendicular to its base; it cannot be "slanted"
The formula for area & volume are often mixed up	Area is multiplying 2 numbers, the base and height; volume is multiplying 3 numbers, length width and height
When graphing on the coordinate plane, students often mix up the x and y direction, going vertical first then horizontal	To graph an ordered pair correctly, students must move horizontal first, along the x-axis then vertically, along the y axis

Performance Task

Part 1) Given a rectangle with a width of "B" cm and a length of "C" cm, write and expression that could be used to find the area of the rectangle

Part 2) If "B" is 6 cm and "C" is 8.5 cm, find the area of the rectangle

Part 3) If the rectangle was changed into a 3-Dimensional figure with the Height of 2.5 cm, find the volume.

Rubric

1 point for each correct Part

ASSESSMENTS
Suggested Formative Assessment
Problem of the Day
Lesson Quizzes
Exit Ticket
Anecdotal Records (Topic Observation Checklist)
Suggested Summative Assessment
Grade level developed Unit/Envisions Topic Tests
Ed-Connect Express Tests /State Unit Benchmark Assessment/Performance Task