GRADE 7 UNIT 5 – GEOMETRY

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<td>Established Goals:
Standards
7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.
7.EE.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. a. Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? b. Solve word problems leading to inequalities of the form px + q > r or px + q < r, where p, q, and r are specific rational numbers. Graph the solution set of</td>
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Students will be able to:

- *Use variables to represent quantities in a real-world or mathematical problem; write and fluently solve simple equations and inequalities, interpret the solutions in the context of the problem and graph the solution set on a number line.*

- *Use tools strategically to solve multi-step real-world and mathematical problems involving positive and negative rational numbers in any form (converting between forms as needed) and determine the reasonableness of the answers.*

- *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.*

- *Write and solve simple algebraic equations involving supplementary, complementary, vertical, and adjacent angles for multi-step problems and finding the unknown measure of an angle in a figure.*

- *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.*

- *Describe, using drawings or written descriptions, the 2-dimensional figures that result when 3-dimensional figures (right rectangular prisms and pyramids) are sliced from multiple angles given both concrete models and a written description of the 3-dimensional figure.*
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<td colspan="2"><div align="center">Meaning</div></td>
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<td><div align="center">ENDURING UNDERSTANDING</div></td>
<td><div align="center">ESSENTIAL QUESTIONS</div></td>
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<td>Two dimensional and three dimensional figures are different

Formulas for finding area, surface area, volume are related to algebra equations</td>
<td>How do you describe geometric shapes, such as triangles?
How do you find area of 2-d figures?
How do you find volume of 3-d figures?</td>
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<td colspan="2"><div align="center">Acquisition</div></td>
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<td><div align="center">KNOWLEDGE</div></td>
<td><div align="center">SKILLS</div></td>
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<td>*Students will know how to…*</td>
<td>*Students will be skilled at…*</td>
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| the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions
7.G.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.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.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.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. | Use equations and tools to solve geometric problems such as angle measurements and area and circumference/perimeter. | Using algebra skills and applying those skills to solve geometric problems. |

Vocabulary	Instruction and Pacing	
Area Volume Surface area Two dimensional Three dimensional Triangle Quadrilateral Polygon Cube Right prism Supplementary Complementary	**Pretest**	**1 day**
	Review equations & inequalities	**1 week**
	angles	**1 week**
	Two dimensional figures	**1 week**
	Three dimensional figures	**1 week**
	circles	**1 week**

Vertical Adjacent Circumference		

Resources
Prentice Hall Course 2 Mathematics Common Core Textbook, Study Island, Teacher created materials.

Differentiation and Accommodations
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   •

21st Century Skills	Critical Thinking, Creative Thinking, Collaborating, Communicating, and Technology Literacy

Instructional Strategies	Fairfield Township 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	ELA, Science and Technology

Common Misconceptions	Proper Conceptions
Area and volume are found the same way	Different formulas for different shapes
Pi = exactly 3.14	Pi is irrational

Huong covered the box to the right with sticky-backed decorating paper.

The paper costs 3¢ per square inch.

Part 1) Find the surface area of the box.

Part 2) How much money will Huong need to spend on decorating paper?

Part 3) If he Huong has $10, will he have enough money to pay for the paper, and if so, how much change will he get back?

Solution:

The surface area can be found by using the dimensions of each face to

find the area and multiplying by 2:

Front: 7 in. x 9 in. = 63 in2 x 2 = 126 in2

Top: 3 in. x 7 in. = 21 in2 x 2 = 42 in2

Side: 3 in. x 9 in. = 27 in2 x 2 = 54 in2

The surface area is the sum of these areas, or 222 in2. If each square inch of paper cost $0.03, the cost would be

$6.66.

Rubric: 1 point for each part.

ASSESSMENTS

Suggested Formative Assessment

Problem of the Day

Exit Ticket

Suggested Summative Assessment

topic quizzes

homework

Grade level developed Unit Tests

Ed-Connect Express Tests /State Unit Benchmark Assessment/Performance Task