Unit 3a-Relationships in Geometry

Content Area: **Math**
Course(s): **Math 6 Honors**
Time Period: **Marking Period 3**
Length: **Weeks 6-9 Into Math Advanced 1 Unit 4**
Status: **Published**

Essential Questions

- How can you find the area of an irregular polygon using area formula?
- What steps might you take to solve a polygon problem given the coordinates of its vertices?
- How can a model help you to solve surface area and volume problems?

Big Ideas

- Find the areas of parallelograms, rhombuses, trapezoids and triangles.
- Use equations to solve area problems.
- Absolute value can be used to find the distance between two points with the same x and y coordinates.
- Use nets to find surface area.
- Find the volume of rectangular prisms

Cross Curricular Integration

Integration Area: Language Arts

NJSLSA.W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

NJSLSA.W6 . Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

NJSLSA.W7. Conduct short as well as more sustained research projects, utilizing an inquiry-based research process, based on focused questions, demonstrating understanding of the subject under investigation.

NJSLSA.W8. Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.

NJSLSA.W9. Draw evidence from literary or informational texts to support analysis, reflection, and research.

Activity: Students will research and write a report explaining why Euclid is called the “Father of Geometry.” They will create a presentation that includes a description of how to use Euclid’s method to find the GCF of two numbers and a demonstration showing how to use the method.

CSDT Technology Integration

8.1.8.DA.1: Organize and transform data collected using computational tools to make it usable for a specific purpose.

8.1.8.NI.3: Explain how network security depends on a combination of hardware, software, and practices that control access to data and systems.

Activity:

Tech-Desmos polygraph for coordinate points. It works like the game "Guess Who" where you can only use yes/no questions while using the proper math vocabulary. For example: "Is your point located on the y-axis?", "Is your x-coordinate negative?". Students are randomly paired each round and the goal is to get the correct ordered pair in the least amount of questions. Students then complete a review together about *the coordinate plane through a series of questions.

Enduring Understandings

Geometry

6.G.A.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.A.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.A.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.A.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.

The Number System

6.NS.C.6b Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.

6.NS.C.6c Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

6.NS.C.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

Expressions and Equations

6.EE.A.2c Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those New Jersey Student Learning Standards for Mathematics 7 involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas V = s3 and A = 6s2 to find the volume and surface area of a cube with sides of length s = 1/2.

Mathematical Practices Focus

1. Make sense of problems and persevere in solving them. Lesson 12.3,

2. Reason abstractly and quantitatively. Lesson 11.1, 11.2, 11.3, 11.4, 12.1,12.4

3. Construct viable arguments and critique the reasoning of others. Lesson 11.1, 11.2, 11.3,11.4, 12.1, 12.2, 12.3,12.4

4. Model with mathematics. Lesson 11.1, 11.2, 11.3,11.4, 12.1, 12.2, 12.3, 12.4

5. Use appropriate tools strategically. Lesson 11.3,

6. Attend to precision. Lesson 11.2, 11.3, 12.1, 12.2, 12.3, 12.4

7. Look for and make use of structure. Lesson 11.1, 11.2, 11.3,11.4, 12.1, 12.2, 12.3,12.4

8. Look for and express regularity in repeated reasoning. Lesson 11.2, 12.1, 12.2, 12.3