Unit 5 - *"Constructing and Deconstructing"*

Overview

In this unit students decompose shapes to familiar parts to find area and volume. Students extend their understanding of area to three dimensional objects to find surface area. The students will use all four quadrants of the coordinate plane to solve problems about polygons. This is the students' first formal work with negative numbers.

21st Century Capacities: Synthesizing , Presentation

Stage 1 - Desired Results

ESTABLISHED GOALS/ STANDARDS	
MP2 Reason abstractly and quantitatively MP4 Model with Mathematics MP5 Use appropriate tools strategically MP6 Attend to precision MP7 Look for and make use of structure CC.6.G Solve real-world and mathematical problems involving area, surface area and volume. CC.6.G.1 Find 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. CC.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	***Transfer:*** *Students will be able to independently use their learning in new situations to...* 1. Manipulate objects to create order and establish relationships. (Synthesizing) 2. apply familiar mathematical concepts to a new problem or apply a new concept to rework a familiar problem (Synthesizing) 3. clearly communicate mathematical ideas (Presentation) ***Meaning:*** UNDERSTANDINGS: *Students will understand that:* 1. Mathematicians use geometric models, and spatial sense to interpret and make sense of the physical environment. 2. Mathematicians analyze characteristics and properties of geometric shapes to develop mathematical arguments about geometric relationships. ESSENTIAL QUESTIONS: *Students will explore & address these recurring questions:* A. What shape(s) is this? B. What do I have and what do I need to know? C. What happens if I break this apart or put this back together?

| 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.

CC.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.

CC.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.

CC.6.NS.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.

CC.6.NS.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. | *Acquisition:* | |
| | *Students will know…*

1. That integers and other rational numbers can be plotted on the coordinate plane to form polygons.
2. That finding the area of triangles, quadrilaterals, and polygons can be solved by decomposing and composing complex polygons into basic polygons.
3. That nets are used to find the surface area of 3-D figures.
4. Finding the volume of right rectangular prisms by using cubes and the formula.
5. Vocabulary: area, perimeter, parallelogram, trapezoid, prism, surface area, net, volume, quadrilateral, vertex, vertices, edge, face, polygon, coordinate plane, ordered pair, *x*-axis, *y*-axis, quadrant | *Students will be skilled at…*

1. Calculating the area of triangles, quadrilaterals (squares, rectangles, parallelograms, and trapezoids), and compound shapes.
2. Plotting and naming points in all four quadrants
3. Finding the distance between two horizontal or vertical points on the coordinate plane
4. Drawing nets to represent 3-D figures.
5. Labeling nets to find the surface area of 3-D figures.
6. Calculating the volume of right rectangular prisms with fractional numbers. |