Unit 4a Solve, Area, Surface Area, and Volume Problems

Content Area: **Math**
Course(s): **Math 6**
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Essential Questions

- How can the area of certain shapes be found?
- What are the meanings of surface area and volume and how can surface area and volume be found?

Big Ideas

- Use understanding of the area of rectangles to develop an understanding of the formulas for parallelograms, rhombuses, triangles, trapezoids and kites.
- Decompose polygons into rectangles and triangles to find the area of composite shapes.
- Classify prisms and pyramids, identify nets for solid figures and draw nets.
- Use nets to find the surface area of rectangular and triangular prisms and pyramids.
- Apply volume formulas to find the volume of rectangular prisms with fractional side lengths.

CSDT Technology Connection

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

Enduring Understandings

Geometry

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.

Expressions and Equations

6.EE.2a Write, read, and evaluate expressions in which letters stand for numbers. Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation "Subtract y from 5" as 5-y.

6.EE.2c Write, read, and evaluate expressions in which letters stand for numbers. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those 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=62 to find the volume and surface area of a cube with side lengths of s=½

6.EE.6 Use variables to represent numbers and write expressions when solving a real world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

The Number System

6.NS.6c Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. 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.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.

Mathematical Practices Focus

1. Make sense of problems and persevere in solving them. Lessons 3,4,5,6,8, and page 433

2. Reason abstractly and quantitatively. Lessons 1,2,5,7, and page 433

3. Construct viable arguments and critique the reasoning of others.Lessons 1,2,3,5,6,7,8, and page 433

4. Model with mathematics. Lesson 4, and page 433

5. Use appropriate tools strategically. Lessons 6,7, and page 433

6. Attend to precision. Lessons 1,2,3,4,5,6,8

7. Look for and make use of structure. Lessons 1,2,3,4,5,7,8, and page 433

8. Look for and express regularity in repeated reasoning. Lessons 1,2, and page 433