

Volume

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Chapter 7: Volume

I will be developing a lesson plan for my advanced 6th graders. The standard 6.SP.B4 is under the geometry domain in sixth grade which is solving real-world and mathematical problems including area, surface area, and volume.

Standard

This lesson will cohere to Common Core State Standard (CCSS) 6.G.A.2 which states that students will be able to “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 $V = l \times w \times h$ and $V = b \times h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.” (Core Standards).

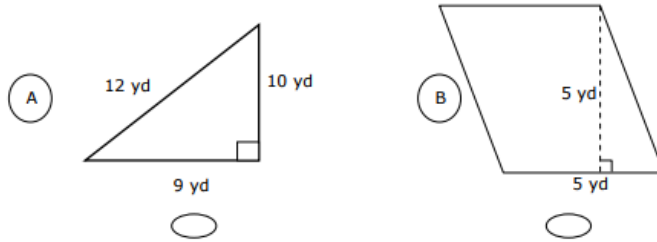
Goals

- Students can find the perimeter and area of regular 2-D shapes by giving formula.
- Students can distinguish a difference between surface area and volume formula of 3-D shapes.
- Students can analyze the relationship between real-world problems and mathematical terms to calculate the outcome accurately.
- Students can use variables to represent quantities in a real-world or mathematical problem, and construct necessary equations to solve problems by reasoning about the quantities.

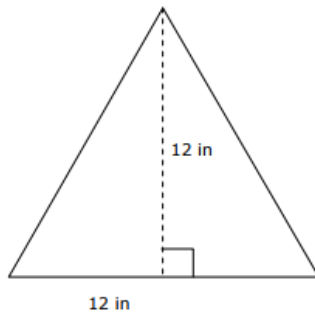
Before I begin to instruct the standard (6.G.A.2), I will prepare an informative pre-assessment from the previous lesson (6.G.A.1) as a bellwork because “students often forget or

confuse the formulas for area, surface area and volume. Exposing students to these concepts in a manner in which they understand the meaning of the terms as the standards suggest will be important in fostering their conceptual development” (Math Learning Targets website). My students need to demonstrate their math skills on this assessment which has three main questions.

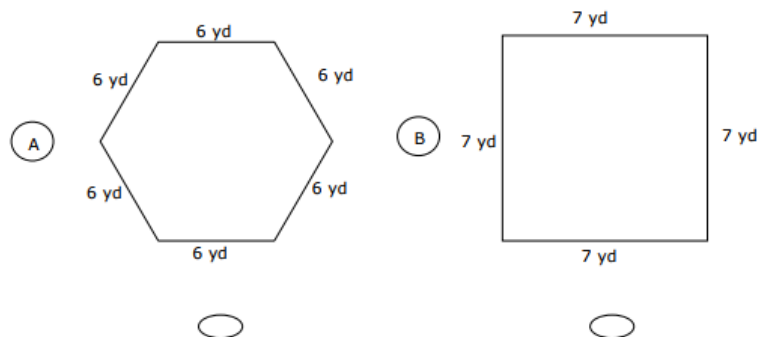
1. Which figure has a greater area?



2. What is the area of this triangle?



3. Which figure has a greater perimeter?



In this lesson, I will start to solve basic examples for my students to make the connections between the previous lesson and this one. Then, students will understand and memorize the area and volume formulas of the 3-D shapes. I will have extra questions on power point for my students to solve. After this activity, students will work in three different stations. The first group will practice on Khan Academy with their computers (SMP-5). The second group will match the cards which have questions and the answer (SMP-8). And the last group will have rulers to find out any geometric shapes in the classroom and find out their surface areas and volume (SMP- 4). Students will demonstrate mastery of this standard by participating these activities and turn in their work after they finish to solve the questions. They will work on each task for ten minutes and rotate until the end of the class.

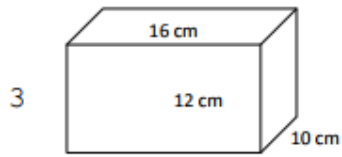
Moreover, students will continue to practice similar activities until they barely figure out how to approach to real-world problems and demonstrate their skills to get meaningful outcomes. Also, students will have a last formative assessment below before learning the next common core standards.

Complete all the problems.

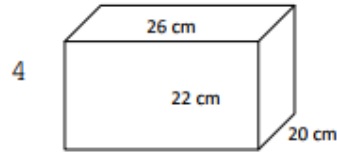
1. Sandy bought a rectangular recycling bin for her office. The recycling bin has the length of 7 centimeters, a width of 10 centimeters, and a height of 12 centimeters. What is the volume of the recycling bin?



2. A right triangle has a base of 6 centimeters and the height is 9 centimeters. What is the area of this triangle?



Surface
Area :
Perimeter:
Volume:



Surface
Area :
Perimeter:
Volume:

5. Jordon purchased a box that he filled with liquid candle wax. The box is 5 meters wide, 6 meters long and 4 meters deep. He wants to know the volume of the rectangular box?

Overall, students will have more than enough opportunity to see a different type of problems and questions in order to show their math skills. The most important part of the standard is confusing the formulas. Students will master the topic by understanding how to begin to the questions and find out what they have asked to solve.

References

About the Math Learning Targets, and Increasing Rigor

<https://hcpss.instructure.com/courses/735/pages/6-dot-g-1-about-the-math-learning-targets-and-increasing-rigor>

Core Standards, *Grade 6-Geometry*, Retrieved September 17, 2017 from

<http://www.corestandards.org/Math/Content/6/G/>