

KEY CONCEPT OVERVIEW

In the final topic of Grade 7, students continue to build their knowledge of volume as they examine figures that do not have triangular or rectangular bases. Students decompose these three-dimensional figures to find the volume of an entire figure. As they did in Topic D, students work with some figures that have sections missing, requiring that they account for these missing pieces when calculating the volume. In the final lesson of this topic, students use knowledge they acquired during the course of the school year to solve real-world problems.

You can expect to see homework that asks your child to do the following:

- Find the volume of a figure.
- Find the unknown dimension of a figure when given the volume and the other dimensions.
- Determine the percent by which volume increases or decreases.
- Determine the length of time an object takes to fill or to empty.

SAMPLE PROBLEM (From Lesson 26)

The right trapezoidal prism is composed of a right rectangular prism joined with a right triangular prism. Find the volume of the right trapezoidal prism shown.

The volume of a right prism is equal to the area of its base times its height. The base consists of a rectangle and a triangle.

Area of the base:

$$B = \text{Area}_{\text{rectangle}} + \text{Area}_{\text{triangle}}$$

$$\text{Area}_{\text{rectangle}} = 3 \text{ cm} \cdot 2 \text{ cm} = 6 \text{ cm}^2$$

$$\text{Area}_{\text{triangle}} = \frac{1}{2} \cdot 3 \text{ cm} \cdot 2\frac{1}{4} \text{ cm} = 3\frac{3}{8} \text{ cm}^2$$

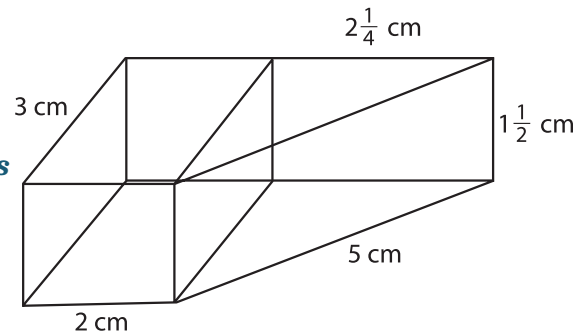
$$B = 6 \text{ cm}^2 + 3\frac{3}{8} \text{ cm}^2 = 9\frac{3}{8} \text{ cm}^2$$

Volume of the object:

$$\text{Volume}_{\text{object}} = Bh$$

$$\text{Volume}_{\text{object}} = \left(9\frac{3}{8} \text{ cm}^2\right) \left(1\frac{1}{2} \text{ cm}\right) = 14\frac{1}{16} \text{ cm}^3$$

The volume of the object is $14\frac{1}{16} \text{ cm}^3$.



Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

You can help at home in many ways. Here are some tips to help you get started.

- Gather various household items, such as cereal boxes, and have your child calculate the area of the base of each object by using a ruler to measure the dimensions. After calculating the area of the base, your child can measure the height of the object and then use the area of the base and the height to calculate the volume of the entire object. (See Sample Problem.)
- In the curriculum or online, find images of different three-dimensional figures like the one shown to the right. Ask your child to calculate the volume of the different parts and then find the total volume. (The total volume for the image shown is 288 cubic inches.)

