

Name: Key
Date: _____

Mr. Johnson
Math 8

Lesson 4.5 – Volume of a Right Rectangular Prism

Definition:

Volume: the amount of space occupied by an object.

Think it out:

How do you calculate the ^{volume} ~~area~~ of a right rectangular prism? How does your knowledge of surface area help you?

Calculate base area and multiply by height.

Surface area assists because you need to know the base area to calculate

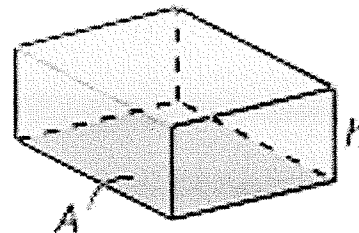
Notes:

To calculate the volume of a right rectangular prism we need to first calculate the base area and multiply it by the height.

We can use variables to write ourselves a formula. Let a represent the base area and h represent the height.

Then, the volume of a rectangular prism is:

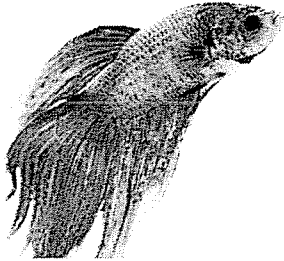
$$V = A \times h \quad \text{or} \quad V = Ah$$



Think of volume as how much space an object can occupy.

Examples:

1. Mr. Johnson has a Betta fish named Smeagol. Unfortunately poor Smeagol lives in a tiny tank all by himself. The tank has the following dimensions, 18 cm. wide, 30 cm. long, and 25 cm. high. What is the volume for Smeagol's tank?



$$\begin{aligned} V &= Ah \\ &= (18 \times 30)(25) \\ &= 13\,500 \text{ cm}^3 \end{aligned}$$

2. Smeagol is clearly being neglected and has asked to move into the neighbors swimming pool. The neighbors pool is in the shape of a rectangular prism (how convenient). The pool is 5 m wide and 8 m long. It holds 60 m^3 of water. What is the depth of the water?

$$\begin{aligned} V &= Ah \\ &= (lw)h \\ 60 &= (5 \times 8)h \\ \frac{60}{40} &= \frac{40h}{40} \\ \frac{3}{2} &= h \\ h &= 1.5 \text{ m.} \end{aligned}$$



Assignment:

Pg. 197-200
#s 2, 4-7, 10, 13, 16