Warm Up

Think About a Plan A cone with radius 1 fits snugly inside a square pyramid, which fits snugly inside a cube. What are the volumes of the three figures?

Cone:

$r = 1$

$d = 2$

$H = 2$

$V = \frac{1}{3}\pi r^2 H$

$V = \frac{1}{3}\pi 1^2 \cdot 2$

$V = 2.1$

Pyramid:

sides = 2

$V = \frac{1}{3}BH$

$V = \frac{1}{3}bhH$

$V = \frac{1}{3} \cdot 2 \cdot 2 \cdot 2$

$V = 2.7$

Prism:

$V = BH$

$V = bhH$

$V = 2 \cdot 2 \cdot 2$

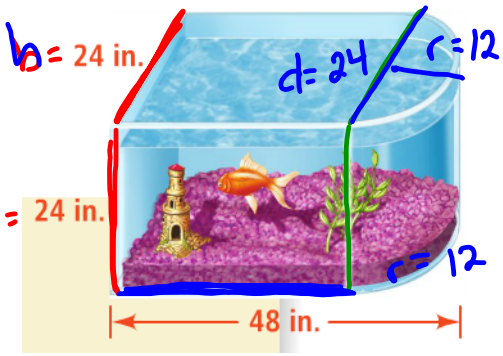
$V = 8$

Learning Goal: Today I will learn how to find the volume of composite shapes.

Volume of Composite Shapes

Success Criteria: I am able to break composite shapes into smaller, recognizable shapes to find volume.

What is the approximate volume of the bullnose aquarium to the nearest cubic inch?



Prism + ½ Cylinder

$V = BH$

$V = bhH$

$V = 36 \cdot 24 \cdot 24$

$V = 20{,}736$

$V = BH$

$V = \pi r^2 H$

$V = \pi 12^2 \cdot 24$

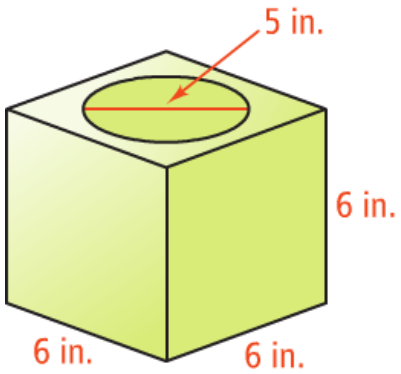
$V = 10{,}857.3$

$b = 48 - 12 = 36$

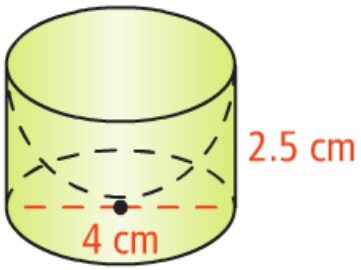
$b = 36$

$\frac{10{,}857.3}{2} + 5{,}428.7 = 26{,}164.7 \text{ in}^3$

If a cylinder is cut out of the solid, find the remaining volume:



Find the volume.



Cylinder − ½ Sphere

$V = \pi r^2 H$

$V = \pi (2)^2 (2.5)$

$V = 31.4 cm^3$

$V = \frac{4}{3}\pi r^3$

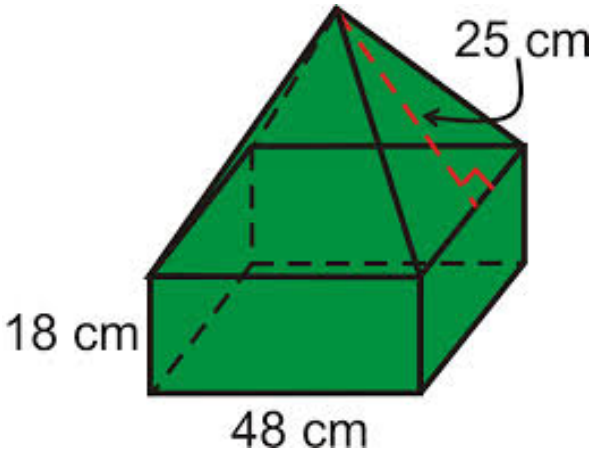
$V = \frac{4}{3}\pi 2^3$

$V = \frac{33.5}{2} =$

$= 16.75$

$31.4 - 16.75 = 14.65 m^3$

Find the volume of the shape:

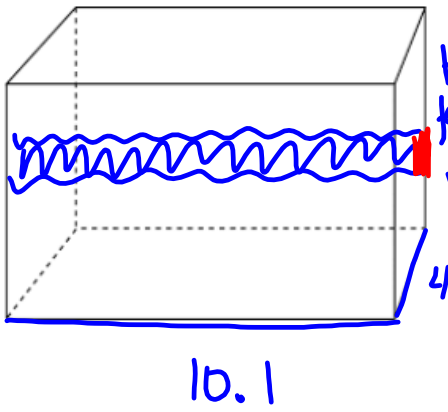


Volume Using Displacement

(How to find the volume of irregular shaped objects.... like a rock!)

When you place an object in a container of water, the water level... would rise!

The change in volume is... the volume of the object!



4.4 - 3.9 = .5

$V_{rock} = (10.1)(4.9)(.5)$

$24.7 cm^3$

When you put a rock into a container of water, it raises the water level 4cm. The container is a rectangular prism whose base measures 10cm by 10cm

a. Compare the volume of the container with just the water in it to the volume of the container with the water and the rock in it.

The volume with the rock will be more

b. What is the volume of just the rock?

$V = BH$

$V = bhH$

$V = 10 \cdot 10 \cdot 4$

$400 cm^3$

Closure: Today I learned how to put shapes together to find a composite shape.