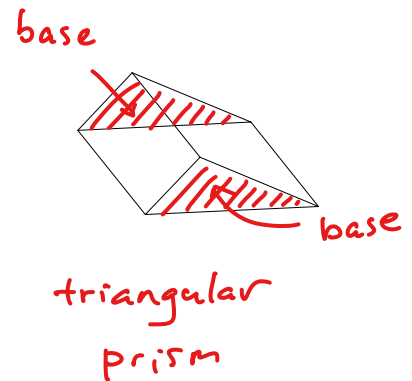
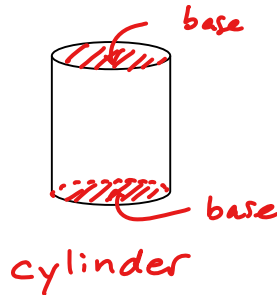
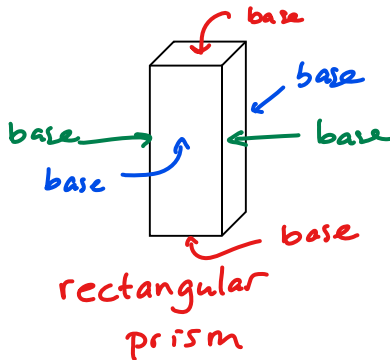


Date: KEY

7.1 Notes: Understanding Volume

Review

Name each of the following shapes:



Draw an arrow to the side of the shape that could be the base.

Sherman wants to package his Gourmet Spinach Paste in a cylindrical container. Which container do you think might hold more Sauce? I think the right one holds more.

$V = \pi r^2 h$
 $= (3.14)(5)^2(2)$
 $= 157 \text{ cm}^3$

$V = \pi r^2 h$
 $= (3.14)(3)^2(5)$
 $= 141.3 \text{ cm}^3$

The left holds more!

Volume is the amount of space an object occupies.

Using cm cubes: the number of cubes that would be needed to "fill" the object completely

If you make rectangular prism with a base that measures 3 x 4 cm, what is the volume if the height is 2cm?

$V = A_b h$
 $= lwh$
 $= (3)(4)(2)$
 $V = 24 \text{ cm}^3$

If you make a rectangular prism with a base that measures 2 x 3 cm, what is the volume if the height is 4cm?

$V = A_b h$
 $= lwh$
 $= (3)(2)(4)$
 $V = 24 \text{ cm}^3$

What is the difference between a 2 x 3 x 4 rectangular prism and a 3 x 4 x 2 rectangular prism?

They are the same prism, oriented differently in space. (They rest on different bases).

Summary

- ① Volume is the amount of space occupied by a solid object
- ② Volume does not change when the position or orientation of the object changes.
(Conservation of Volume)

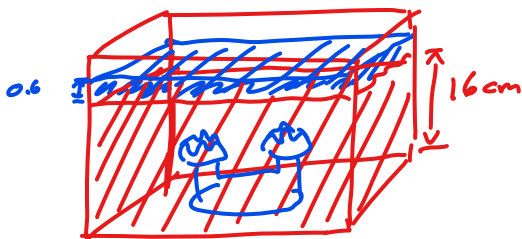
What ^{are} the volumes of the following shapes:

$V = A_b h$
 $= (7)(2)$
 $V = 14 \text{ cm}^3$

$V = A_b h$
 $= (40)(9)$
 $V = 360 \text{ cm}^3$

$V = A_b h$
 $= (8)(4)$
 $V = 32 \text{ cm}^3$

Velma has a rectangular fish tank that has a base of 600 cm^2 and contains a depth of 16 cm. She adds a decorative castle and finds that the water rises 0.6 cm. What is the new volume of water in the tank? What is the volume of the castle?



- ① THINK!
The volume of water did not change, because water was not added or lost.

So, find the initial volume:

$$V = A_b h$$

$$= (600)(16)$$

$$V = 9600 \text{ cm}^3$$

- ② The top (blue) layer of water is the displaced volume. It equals the volume of the castle.

