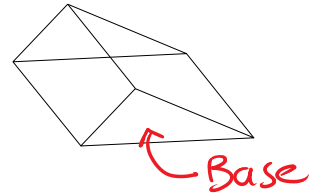
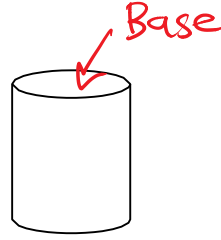
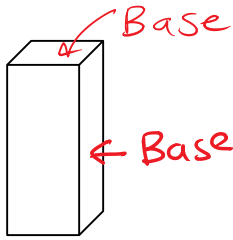


Date: _____

7.1 Notes: Understanding Volume

Review

Name each of the following shapes:



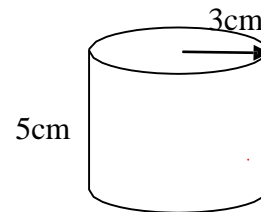
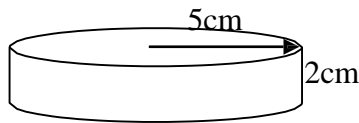
Rectangular Prism

Cylinder

Triangular prism

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?



Volume is the amount of space that object occupies.

Using cm cubes: cm^3 , m^3 , in^3

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

$$\begin{aligned} \text{volume} &= \text{area of base} \times \text{height} \\ &= l \times w \times h \\ &= 3 \times 4 \times 2 \\ &= 12 \times 2 = 24cm^3 \end{aligned}$$

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

$$\begin{aligned} \text{volume} &= \text{area of base} \times \text{height} \\ &= l \times w \times h \\ &= 2 \times 3 \times 4 = 6 \times 4 = 24cm^3 \end{aligned}$$

What is the difference between a $2 \times 3 \times 4$ rectangular prism and a $3 \times 4 \times 2$ rectangular prism?

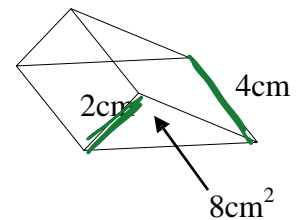
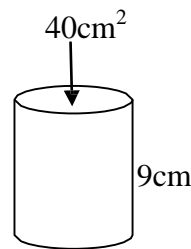
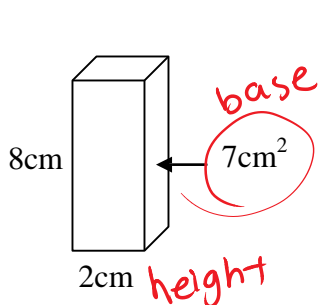
Change the base and height of a prism / change orientation of 3D object does not affect its volume.

Summary

The volume of a right cylinder or right prism can be determined by

area of base \times height.

What is the volume of the following shapes:



$$\text{Vol.} = \text{area of base} \times \text{height}$$

$$V = 7 \text{ cm}^2 \times 2 \text{ cm} \\ = 14 \text{ cm}^3$$

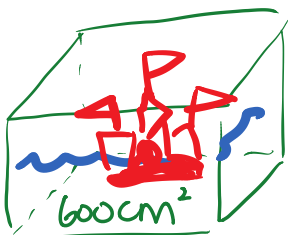
$$V = \text{area of base} \times \text{height}$$

$$V = 40 \text{ cm}^2 \times 9 \text{ cm} \\ = 360 \text{ cm}^3$$

$$V = 8 \text{ cm}^2 \times 4 \text{ cm} \\ = 32 \text{ cm}^3$$

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?



Before castle

$$V = 600 \text{ cm}^2 \times 16 \text{ cm} \\ = 9600 \text{ cm}^3$$

Castle in the water

$$V = 600 \text{ cm}^2 \times 16.6 \text{ cm} \\ = 9960 \text{ cm}^3$$

$$\text{Vol. of castle} \quad 9960 - 9600 = 360 \text{ cm}^3$$