

Volume of Cylinders

Big Idea:

Cylinders are circles that have been "stacked" to become 3-dimensional.

Area of a circle: $A = \pi r^2$

To make a cylinder, multiply the circle (base) by the height of the cylinder.

* Volume of a Cylinder: $V = (\pi r^2)h$

circle height

* ONLY CARE ABOUT
CHANGE IN HEIGHT

A stone is submerged in a cylinder filled partially with water. The cylinder has a radius of 8cm and a height of 15cm, but is only filled to the 10cm mark. When the stone is placed in the water, the level raises 3cm. What is the volume of the stone?

Examples:

Find the volume:

$$d = 7m$$
$$r = 3.5m$$

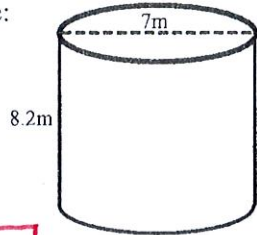
$$V = \pi r^2 h$$

$$V = \pi (3.5)^2 \cdot 8.2$$

$$V = \pi \cdot 12.25 \cdot 8.2$$

$$V = 100.45 \pi m^3 \text{ Exact}$$

$$V \approx 315.413 m^3 \text{ Approx}$$



$$V = \pi r^2 h$$

$$V = 8^2 \cdot 3 \cdot \pi$$

$$V = 64 \cdot 3 \cdot \pi \text{ STONE VOLUME}$$

$$V = 192 \pi cm^3 \text{ Exact}$$

$$V \approx 602.88 cm^3 \text{ Approx.}$$