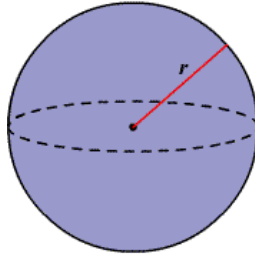



Volume of Spheres



Volume of Spheres



Key Concept	
Volume of a Sphere	
Words	The volume V of a sphere is four thirds the product of π and the cube of the radius r .
Symbols	$V = \frac{4}{3} \pi r^3$
Model	

Model Problems

- 1) Find the volume of the sphere. Round your answer to the nearest tenths place.

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

$$V = \frac{4}{3} \cdot \pi \cdot 6^3$$

$$V \approx 904.8 \text{ mm}^3$$



- 2) The National Museum of Costa Rica has a large spherical stone in the courtyard. The diameter of the stone is about 8 feet. Find the volume of the spherical stone and round your answer to the nearest tenths place.

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

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

$$V \approx 268.1 \text{ ft}^3$$



Radius
4 ft

Hemisphere – a circle separates a sphere into two congruent halves.

$$V = \frac{1}{2} \left(\frac{4}{3} \pi r^3 \right) \quad V = \frac{2}{3} \pi r^3$$



- 3) Find the volume of the hemisphere with a diameter of 15 km. Write your answer in terms of Pi.

$$V = \frac{1}{2} \left(\frac{4}{3} \pi r^3 \right)$$

$$15 \div 2 = 7.5$$

$$r = 7.5$$

$$V = \frac{1}{2} \cdot \frac{4}{3} \pi \cdot 7.5^3$$

$$V = 281.25 \pi \text{ km}^3$$

- 4) Find the volume of the following figure if the diameter is 4.5 in and the height of the cylinder is 2.5 in. Round to the nearest tenths place.

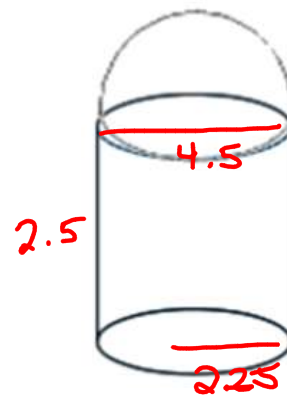
$$V_{\text{total}} = V_{\text{D}} + V_{\text{C}}$$

$$V = \frac{1}{2} \left(\frac{4}{3} \pi r^3 \right) + \pi r^2 h$$

$$V = \frac{1}{2} \cdot \frac{4}{3} \pi \cdot 2.25^3 + \pi \cdot 2.25^2 \cdot 2.5$$

$$V \approx 23.8564 + 39.7607$$

$$V \approx 63.6 \text{ in}^3$$



$$4.5 \div 2$$

$$r = 2.25$$

- 5) Find the remaining volume of the cylinder if the height of the cylinder is 6m, the radius of the cylinder is 3m, and the ball has a radius of 3m. Write your answer in terms of Pi.

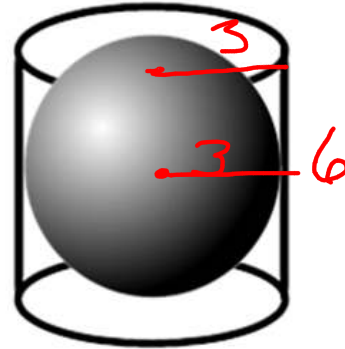
$$V = V_{\text{C}} - V_{\text{S}}$$

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

$$V = \pi \cdot 3^2 \cdot 6 - \frac{4}{3} \pi \cdot 3^3$$

$$V = 54\pi - 36\pi$$

$$V = 18\pi \text{ m}^3$$



Independent Practice: do the **8 practice problems** from the attached HW sheet on my website. Work on you own paper, **no need to print**.