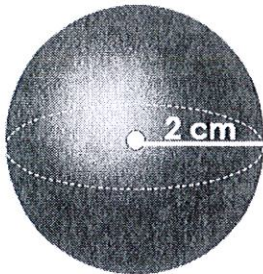


Volume of Spheres

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

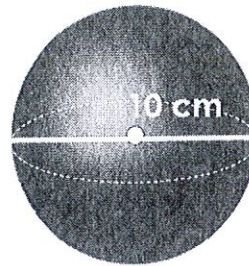
- If you cut a sphere right down the middle you would create two congruent halves called hemispheres.
- A great circle is the cross section that is formed when you cut a sphere in half.

13. $V = 33.5 \text{ cm}^3$



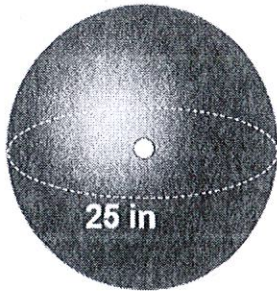
$$V = \frac{4}{3} \pi (2)^3$$

14. $V = 523.6 \text{ cm}^3$



$$V = \frac{4}{3} \pi (5)^3$$

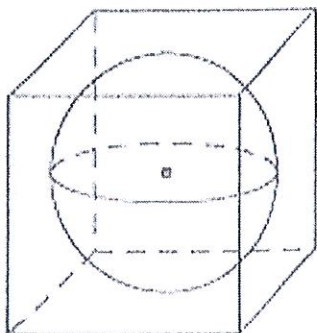
15. The circumference of a great circle is 25 inches. Find the volume. $V = 263.9 \text{ in}^3$



$$\begin{aligned} C &= 2\pi r \\ 25 &= 2\pi r \\ \frac{25}{2\pi} &= \frac{2\pi r}{2\pi} \\ r &= 3.979 \end{aligned}$$

$$\begin{aligned} V &= \frac{4}{3} \pi (3.979)^3 \\ &= \boxed{263.9 \text{ in}^3} \end{aligned}$$

16. A sphere is inscribed in a cube-shaped box as pictured below. To the nearest centimeter, what is the volume of the empty space in the box?



16 cm

$$V_{\text{box}} = 16 \cdot 16 \cdot 16 = 4096 \text{ cm}^3$$

$$V_{\text{sphere}} = \frac{4}{3} \pi 8^3 = 2144.7 \text{ cm}^3$$

$$\begin{aligned} V_{\text{empty space}} &= 4096 - 2144.7 \\ &= \boxed{1951 \text{ cm}^3} \end{aligned}$$