



Exercise 13D

Question 10:

Here, radius of sphere = $10.5 \text{ cm} = \left(\frac{21}{2}\right) \text{ cm}$

Radius of smaller cone = $3.5 \text{ cm} = \left(\frac{7}{2}\right) \text{ cm}$ and height = 3 cm

$$\begin{aligned} \text{Now number of cones} &= \frac{\text{Volume of the sphere}}{\text{Volume of 1 small cone}} \\ &= \frac{\left\{ \frac{4}{3} \pi \times \left(\frac{21}{2}\right)^3 \text{ cm}^3 \right\}}{\left\{ \frac{1}{3} \pi \times \left(\frac{7}{2}\right)^2 \times 3 \text{ cm}^3 \right\}} \\ &= \frac{\left(\frac{4}{3} \times \frac{9261}{8} \right)}{\left(\frac{1}{3} \times \frac{49}{4} \times 3 \right)} = \frac{\frac{9261}{6}}{\frac{49}{4}} \\ &= \frac{9261}{6} \times \frac{4}{49} = 126 \end{aligned}$$

\therefore Number of cones obtained = 126.

Question 11:

Diameter of a sphere = 12 cm

$$\begin{aligned} \text{radius} &= \frac{\text{Diameter}}{2} \\ &= \frac{12}{2} \\ &= 6 \text{ cm} \end{aligned}$$

$$\begin{aligned} \therefore \text{Volume of the sphere} &= \frac{4}{3} \pi r^3 \\ &= \frac{4}{3} \times \frac{22}{7} \times 6 \times 6 \times 6 \quad \text{(i)} \end{aligned}$$

Diameter of cylinder = 8 cm

$$\text{Radius of cylinder} = \frac{\text{Diameter}}{2}$$

$$\text{Radius of cylinder} = \frac{8}{2}$$

Radius of cylinder = 4 cm

Height of the cylinder = 90 cm

$$\begin{aligned} \therefore \text{Volume of the cylinder} &= \pi r^2 h \\ &= \frac{22}{7} \times 4 \times 4 \times 90 \quad \text{(ii)} \end{aligned}$$

$$\text{Number of spheres} = \frac{\text{Volume of cylinder}}{\text{Volume of sphere}}$$

$$\text{Number of spheres} = \frac{\frac{22}{7} \times 4 \times 4 \times 90 \text{ cm}^3}{\frac{4}{3} \times \frac{22}{7} \times 6 \times 6 \times 6 \text{ cm}^3} \quad \text{[(ii) } \div \text{ (i)]}$$

Number of spheres = 5.

***** END *****