Exercise 13D

Question 7:

Here, diameter of the lead shot = 3mm

$\therefore$ radius $= \left(\frac{3}{2}\right)\text{mm} = \left(\frac{0.3}{2}\right)\text{cm}$

$[1\text{mm} = 10\text{cm}]$

Now, number of lead shots $= \frac{\text{Volume of the cuboid}}{\text{Volume of 1 lead shot}}$

$$= \left\{\frac{(12 \times 11 \times 9)}{\frac{4}{3} \times \frac{22}{7} \times \left(\frac{0.3}{2}\right)^3}\right\}$$

$$= \left\{\frac{(12 \times 11 \times 9)}{\frac{4}{3} \times \frac{22}{7} \times \frac{0.027}{8}}\right\}$$

$$= \left\{\frac{12 \times 11 \times 9 \times 3 \times 7 \times 8}{4 \times 22 \times 0.027}\right\} = 84000$$

$\therefore$ number of lead shots = 84000.

Question 8:

Here, radius of 1 lead ball = 1cm

and radius of sphere = 8cm

$\therefore$ Number of lead balls $= \frac{\text{Volume of the sphere}}{\text{Volume of 1 lead ball}}$

$$= \frac{\left(\frac{4}{3}\pi R^3\right)\text{cm}^3}{\left(\frac{4}{3}\pi r^3\right)\text{cm}^3}$$

$$= \left\{\frac{\frac{4}{3} \times \frac{22}{7} \times 8^3}{\frac{4}{3} \times \frac{22}{7} \times 1^3}\right\}$$

$$= \left\{\frac{\frac{4}{3} \times \frac{22}{7} \times 512}{\frac{4}{3} \times \frac{22}{7} \times 1}\right\} = 512$$

$\therefore$ number of lead balls = 512.

Question 9:

Here, radius of sphere = 3cm

Diameter of spherical ball = 0.6cm $\left[\because \text{radius} = \frac{D}{2}\right]$

Radius of spherical ball = 0.3cm

$$\therefore \text{Number of balls} = \frac{\text{Volume of the sphere}}{\text{Volume of 1 small ball}}$$

$$= \left\{\frac{\frac{4}{3}\times\frac{22}{7}\times 3^3 \ \text{cm}^3}{\frac{4}{3}\times\frac{22}{7}\times(0.3)^3 \ \text{cm}^3}\right\}$$

$$= \left\{\frac{\frac{4}{3}\times\frac{22}{7}\times 27}{\frac{4}{3}\times\frac{22}{7}\times 0.027}\right\} = 1000$$

$\therefore$ number of small balls obtained = 1000.

********** END **********