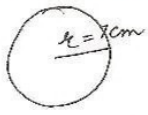
Ex 13.8

1 (i)



$$\text{volume} = \frac{4}{3}\pi r^3$$
$$= \frac{4}{3} \times \frac{22}{7} \times 7 \times 7 \times 7$$
$$= \frac{4312}{3}$$
$$= 1437.33 \text{ cm}^3$$

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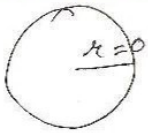
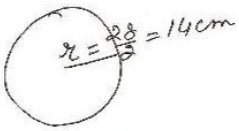
(ii)



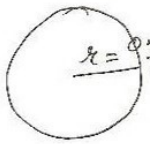
$$\text{volume} = \frac{4}{3}\pi r^3$$
$$= \frac{4}{3} \times \frac{22}{7} \times .63 \times .63 \times .63$$
$$= \frac{22.004136}{21}$$
$$= 1.047 \text{ m}^3$$

2 (i)



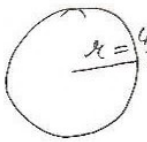
$$\text{vol. of water displaced} = \frac{4}{3}\pi r^3$$
$$= \frac{4}{3} \times \frac{22}{7} \times 14 \times 14 \times 14$$
$$= \frac{34496}{3}$$
$$= 11498.67 \text{ cm}^3$$
$$= 11.49 \ell$$

2 (ii)



$$\text{vol. of water displaced} = \frac{4}{3}\pi r^3$$
$$= \frac{4}{3} \times \frac{22}{7} \times \frac{0.21}{2} \times \frac{0.21}{2} \times \frac{0.21}{2}$$
$$= \frac{0.4851}{100}$$
$$= 0.004851 \text{ m}^3$$
$$= 4.851 \ell$$

3

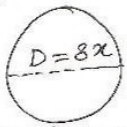


$$\text{vol.} = \frac{4}{3}\pi r^3$$
$$= \frac{4}{3} \times \frac{22}{7} \times 2.1 \times 2.1 \times 2.1$$
$$= 38.808 \text{ cm}^3$$

$$\text{density} = 8.9 \text{ g/cm}^3$$

$$\text{Mass} = V \times D$$
$$= 38.808 \times 8.9$$
$$= 345.391 \text{ g}$$
$$= 345.39 \text{ g}$$

4



let $D = 8x$ units

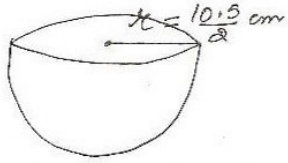
$R = \frac{8x}{2} = 4x$ units

$d = \frac{8x}{4} = 2x$ units

$r = \frac{2x}{2} = x$ units

$$\frac{V_M}{V_E} = \frac{\frac{4}{3}\pi r^3}{\frac{4}{3}\pi R^3}$$
$$= \frac{x \times x \times x}{4x \times 4x \times 4x}$$
$$= \frac{1}{16}$$
$$V_M = \frac{1}{16} V_E$$

5



$$\text{Capacity} = \frac{2}{3}\pi r^3$$
$$= \frac{2}{3} \times \frac{22}{7} \times \frac{10.5}{2} \times \frac{10.5}{2} \times \frac{10.5}{2}$$
$$= \frac{1212.75}{4}$$
$$= 303.1875 \text{ cm}^3$$
$$= 0.303 \ell$$