



Exercise 13A

Question 15:

(a) Each edge of a cube = 9m

$$\begin{aligned} \therefore \text{Volume of a cube} &= a^3 \\ &= (9)^3 \text{ m}^3 = 729 \text{ m}^3 \\ \therefore \text{Lateral surface area of cube} &= 4a^2 \\ &= 4 \times (9)^2 \\ &= (4 \times 81) \text{ m}^2 \\ &= 324 \text{ m}^2 \\ \therefore \text{Total surface area of a cube} &= 6a^2 \\ &= 6 \times (9)^2 \\ &= (6 \times 81) \text{ m}^2 \\ &= 486 \text{ m}^2 \\ \therefore \text{Diagonal of cube} &= \sqrt{3} a \\ &= \sqrt{3} \times 9 \\ &= (1.73 \times 9) \text{ m} = 15.57 \text{ m} \end{aligned}$$

(b) \therefore Each edge of a cube = 6.5 cm

$$\begin{aligned} \text{Volume of a cube} &= a^3 = (6.5)^3 \text{ cm}^3 \\ &= 274.625 \text{ cm}^3 \\ \therefore \text{Lateral surface area of a cube} &= 4a^2 \\ &= 4 \times (6.5)^2 \text{ cm}^2 \\ &= (4 \times 42.25) \text{ cm}^2 \\ &= 169 \text{ cm}^2 \\ \text{Total surface area of a cube} &= 6a^2 \\ &= 6 \times (6.5)^2 \text{ cm}^2 \\ &= (6 \times 42.25) \text{ cm}^2 \\ &= 253.5 \text{ m}^2 \\ \therefore \text{Diagonal of cube} &= \sqrt{3} a \\ &= \sqrt{3} \times 6.5 \\ &= (1.73 \times 6.5) \text{ cm} \\ &= 11.245 \text{ cm}. \end{aligned}$$

Question 16:

Let each side of the cube be a cm.

$$\begin{aligned} \text{Then, the total surface area of the cube} &= (6a^2) \text{ cm}^2 \\ \therefore 6a^2 &= 1176 \\ \Rightarrow a^2 &= \frac{1176}{6} = 196 \\ \Rightarrow a &= \sqrt{196} = 14 \text{ cm} \\ \therefore \text{Volume of the cube} &= a^3 \\ &= (14)^3 = (14 \times 14 \times 14) \text{ cm}^3 \\ &= 2744 \text{ cm}^3. \end{aligned}$$

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