Exercise 13A

Question 15:

(a) Each edge of a cube = 9m

$\therefore$ Volume of a cube $= a^3$

$= (9)^3\ m^3 = 729\ m^3$

$\therefore$ Lateral surface area of cube $= 4a^2$

$= 4 \times (9)^2$

$= (4 \times 81)\ m^2$

$= 324\ m^2$

$\therefore$ Total surface area of a cube $= 6a^2$

$= 6 \times (9)^2$

$= (6 \times 81)\ m^2$

$= 486\ m^2$

$\therefore$ Diagonal of cube $= \sqrt{3}\ a$

$= \sqrt{3} \times 9$

$= (1.73 \times 9)\ m = 15.57\ m$

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

Volume of a cube $= a^3 = (6.5)^3\ cm^3$

$= 274.625\ cm^3$

$\therefore$ Lateral surface area of a cube $= 4a^2$

$= 4 \times (6.5)^2\ cm^2$

$= (4 \times 42.25)\ cm^2$

$= 169\ cm^2$

Total surface area of a cube $= 6a^2$

$= 6 \times (6.5)^2 cm^2$

$= (6 \times 42.25)\ cm^2$

$= 253.5\ m^2$

$\therefore$ Diagonal of cube $= \sqrt{3}\ a$

$= \sqrt{3} \times 6.5$

$= (1.73 \times 6.5)$ cm

$= 11.245$ cm.

Question 16:

Let each side of the cube be a cm.

Then, the total surface area of the cube $= (6a^2)\ cm^2$

$\therefore \quad 6a^2 = 1176$

$\Rightarrow \quad a^2 = \frac{1176}{6} = 196$

$\Rightarrow \quad a = \sqrt{196} = 14$ cm

$\therefore$ Volume of the cube $= a^3$

$= (14)^3 = (14 \times 14 \times 14)\ cm^3$

$= 2744\ cm^3$.

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