Exercise 20C

Q1.

Answer :

(b) 17

Length of the diagonal of a cuboid $= \sqrt{l^2 + b^2 + h^2}$

$\therefore \sqrt{l^2 + b^2 + h^2} = \sqrt{12^2 + 9^2 + 8^2} = \sqrt{144 + 81 + 64} = \sqrt{289} = 17\ cm$

Q2.

Answer :

(b) $125\ cm^3$

Total surface area $= 6a^2 = 150\ cm^2$, where a is the length of the edge of the cube.

$\Rightarrow 6a^2 = 150$

$\Rightarrow a = \sqrt{\frac{150}{6}} = \sqrt{25} = 5\ cm$

$\therefore$ Volume $= a^3 = 5^3 = 125\ cm^3$

Q3.

Answer :

(c) $294\ cm^2$

Volume$= a^3 = 343\ cm^3$
$\Rightarrow a = \sqrt[3]{343} = 7\ cm$
$\therefore$ Total surface area$= 6a^2 = 6 \times 7 \times 7 = 294\ cm^2$

Q4.

Answer :

(c) $294\ cm^2$

Volume$= a^3 = 343\ cm^3$
$\Rightarrow a = \sqrt[3]{343} = 7\ cm$
$\therefore$ Total surface area$= 6a^2 = 6 \times 7 \times 7 = 294\ cm^2$

Q5.

Answer :

(c) 6400

Volume of each brick$= 25 \times 11.25 \times 6 = 1687.5\ cm^3$
Volume of the wall$= 800 \times 600 \times 22.5 = 10800000\ cm^3$
$\therefore$ No. of bricks $= \frac{10800000}{1687.5} = 6400$

Q6.

Answer :

(c) 1000

Volume of the smaller cube$= (10\ cm)^3 = 1000\ cm^3$
Volume of box$= (100\ cm)^3 = 1000000\ cm^3$ [1 m = 100 cm]
$\therefore$ Total no. of cubes $= \frac{100 \times 100 \times 100}{10 \times 10 \times 10} = 1000$

Q7.

Answer :

(a) $48\ cm^3$

Let *a* be the length of the smallest edge.
Then the edges are in the proportion *a* : 2*a* : 3*a*.
Now, surface area$= 2(a \times 2a + a \times 3a + 2a \times 3a) = 2(2a^2 + 3a^2 + 6a^2) = 22a^2 = 88\ cm^2$

$\Rightarrow a = \sqrt{\frac{88}{22}} = \sqrt{4} = 2$

Also, $2a = 4$ and $3a = 6$

$\therefore$ Volume$= a \times 2a \times 3a = 2 \times 4 \times 6 = 48\ cm^3$

Q8.

Answer :

(b) 1: 9

$\frac{\text{Volume } 1}{\text{Volume } 2} = \frac{1}{27} = \frac{a^3}{b^3}$

$\Rightarrow a = \frac{b}{\sqrt[3]{27}} = \frac{b}{3}$ or $b = 3a$ or $\frac{b}{a} = 3$

Now, $\frac{\text{surface area } 1}{\text{surface area } 2} = \frac{6a^2}{6b^2} = \frac{a^2}{b^2} = \frac{(b/3)^2}{b^2} = \frac{1}{9}$

$\therefore$ Ratio of the surface areas $= 1 : 9$

Q9.

Answer :

(c) 164 sq cm

Surface area $= 2(10 \times 4 + 10 \times 3 + 4 \times 3) = 2(40 + 30 + 12) = 164\ cm^2$

Q10.

Answer :

(c) 36 kg

Volume of the iron beam $= 9 \times 0.4 \times 0.2 = 0.72\ m^3$

$\therefore$ Weight$= 0.72 \times 50 = 36\ kg$

Q11.

Answer :

(a) 2 m

42000 L = 42 m^3

Volume $= lbh$

$\therefore$ Height $(h) = \frac{\text{volume}}{lb} = \frac{42}{6 \times 3.5} = \frac{6}{6 \times 0.5} = 2\ m$

Q12.

Answer :

(b) 88

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