Exercise - 7.3

(1) Find the volume of a cuboid whose dimensions are
(i) length = 12 cm, breadth = 8 cm, height = 6 cm
(ii) length = 60 m, breadth = 25 m, height = 1.5 m

⇒ (i) given that the cuboid
length (l) = 12 cm, breadth (b) = 8 cm, height (h) = 6 cm
volume of the cuboid = lbh cubic units
$= 12 \times 8 \times 6$ cm^3
$= 576$ cm^3

(ii) given that the cuboid.
length (l) = 60 m, breadth (b) = 25 m, height = 1.5 m.
∴ volume of the cuboid = lbh cubic units
$= 60 \times 25 \times 1.5$ m^3
$= 2250$ m^3

(2) The dimensions of a match box are 6 cm × 3.5 cm × 2.5 cm. Find the volume of a packet containing 12 such match boxes.

⇒ given the match box.
length (l) = 6 cm, breadth (b) = 3.5 cm, height (h) = 2.5 cm.
∴ volume of the match box
$= lbh$ cubic units
$= 6 \times 3.5 \times 2.5$ cm^3
$= 52.5$ cm^3

volume of 12 such match box
$= 52.5 \times 12$ cm^3
$= 630$ cm^3

(3) The length, breadth and height of a chocolate box are in the ratio 5:4:3. If its volume is 7500 cm³, then find its dimensions.

⇒ Let the chocolate box length(l) = $5x$

" " " " breadth(b) = $4x$

" " " " height(h) = $3x$.

Then, volume of the chocolate box = lbh cubic units

$= 5x \times 4x \times 3x$ cm³

$= 60x^3$ cm³

now, volume of box = 7500 cm³

$60x^3 = 7500$

$x^3 = \frac{7500}{60}$

$x^3 = 125$

$x = 5$

The chocolate box length = $5x = 25$ cm

" " " breadth = $4x = 20$ cm

" " " height = $3x = 15$ cm.

Therefore, the chocolate box dimensions is 25 cm × 20 cm × 15 cm

(4) The length, breadth and depth of a pond are 20.5 m, 16 m, and 8 m respectively. Find the capacity of the pond in litres.

⇒ now, length(l) = 20.5 m, breadth = 16 m, height(h) = 8 m.

∴ volume of the pond = lbh cubic units

$= 20.5 \times 16 \times 8$ m³

$= 2624$ m³

$= 2624 \times 1000$ litres.

we know that volume of the pond = capacity of the pond.

Thus, the capacity of the pond is 2624000 litres.

(5) The dimensions of a brick are 24cm × 12cm × 8cm. How many such bricks will be required to build a wall of 20m length, 48 cm breadth and 6 m height?

⇒ given that the wall,

length(l_1) = 20m = 2000 cm

breadth(b_1) = 48 cm, height(h_1) = 6 m = 600 cm.

volume of the wall = $l_1 \times b_1 \times h_1$ cubic units

$= 2000 \times 48 \times 600$ cm3

$= 57600000$ cm3

now, the brick, length (l_2) = 24 cm,

breadth(b_2) = 12cm and height(h_2) = 8 cm

volume of the brick = $l_2 \times b_2 \times h_2$ cubic units.

$= 24 \times 12 \times 8$ cm3

$= 2304$ cm3.

The number of required bricks = $\frac{\text{volume of wall}}{\text{volume of bricks}}$

$= \frac{57600000}{2304} = 25000$

Therefore, the required bricks is 25000.

(6) The volume of a container is 1440 m3. The length and breadth of the container are 15m and 8m respectively, find its height.

⇒ Let the height of the container = h m.

height(l) = 15m and breadth(b) = 8m.

Then, the volume of container = $15 \times 8 \times h$ m3

now, $15 \times 8 \times h = 1440$

$h = \frac{1440}{15 \times 8}$ 96 12

$h = 12$ m.

Thus, the height of the container is 12 m.

(7) Find the volume of a cube each of whose side is (i) 5 cm (ii) 3.5 m (iii) 21 cm.

⇒ (i) given that the ~~cube~~ side of cube (a) = 5 cm.

then, the volume of cube = a^3 cubic units.

$= (5)^3$ cm3

$= 125$ cm3.

(ii) given that the side of cube (a) = 3.5 m

then, the volume of cube = a3 ~~cm3~~ cubic units.

$= (3.5)^3$ m3

$= 42.875$ ~~m3~~ m3

(iii) given the side of cube (a) = 21 cm

then, the volume of cube = a^3 cubic units

$= (21)^3$ cm3

$= 9261$ cm3

(8) A cubical milk tank can hold 125000 litres of milk. Find the length of its side in metres.

⇒ Let the ~~tank~~ length of side of tank = a m.

then, the volume of tank = a^3 m3.

$= 1000\, a^3$ litres.

~~to~~

now, $1000\, a^3 = 125000$

$a3 = 125 = (5)3$

$a = 5$

Thus, the side of tank is 5 m.