8 Perimeter, Area and Volume

Exercise-1

1. (a) Perimeter of the square $= 4 \times \text{side} = 4 \times 6\text{ cm} = 24\text{ cm}$
   (b) Perimeter of the square $= 4 \times 5\text{ cm} = 20\text{ cm}$
   (c) Perimeter of the square $= 4 \times 8.5\text{ cm} = 34\text{ cm}$
   (d) Perimeter of the square $= 4 \times 4.5\text{ cm} = 18\text{ cm}$

2. $\because$ Perimeter of the rectangle $= 2(l + b)$
   (a) Perimeter $= 2(6+4)\text{ cm} = 2 \times 10\text{ cm} = 20\text{ cm}$
   (b) Perimeter $= 2(5+2.5)\text{ cm} = 2 \times 7.5\text{ cm} = 15\text{ cm}$
   (c) Perimeter $= 2(3+1.2)\text{ cm} = 2 \times 4.2\text{ cm} = 8.4\text{ cm}$

3. We know that, perimeter of a square $= 4 \times \text{side}$
   - Perimeter $= 4 \times 4.5\text{ cm} = 18\text{ cm}$
   - Side $= \dfrac{\text{Perimeter}}{4} = \dfrac{624}{4}\text{ m} = 156\text{ m}$
   - Perimeter $= 4 \times 9.25\text{ cm} = 37\text{ cm}$
   - Side $= \dfrac{\text{Perimeter}}{4} = \dfrac{216}{4}\text{ m} = 54\text{ m}$

   Now, perimeter of the rectangle $= 2(\text{length} + \text{breadth})$
   - Perimeter $= 2(l + b)$
     $\Rightarrow \quad 400 = 2(140 + b)$
     $\Rightarrow \quad 400 = 280 + 2b$
     $\Rightarrow \quad 2b = 120 \Rightarrow b = 60\text{ cm}$
   - Perimeter $= 2(l + b) = 2(4.3 + 2.8)\text{ m} = 2 \times 7.1\text{ m} = 14.2\text{ m}$
   - Perimeter $= 2(l + b) \Rightarrow 90 = 2(l + 15)$
     $\Rightarrow 90 = 2l + 30$
     $\Rightarrow 2l = 60 \Rightarrow l = 30\text{ m}$
   - Perimeter $= 2(l + b) \Rightarrow 78 = 2(l + b)$
     $\Rightarrow 78 = 2(l + 19)$
     $\Rightarrow 78 = 2l + 38$
     $\Rightarrow 2l = 40 \Rightarrow l = 20\text{ m}$

Putting the values in table, we get

Side of the square	Perimeter
4.5 cm	18 cm
156 m	624 m
9.25 cm	37 cm
54 m	216 m

Length	Breadth	Perimeter of rectangle
140 cm	60 cm	400 cm
4.3 m	2.8 m	14.2 m
30 m	15 m	90 m
20 m	19 m	78 m

4. Perimeter of the square $= 4 \times$ side

$\Rightarrow \quad 84 = 4 \times$ side

$\Rightarrow \quad$ side $= \frac{84}{4}$ m $= 21$ m.

5. The length of the lace is equal to the perimeter of the rectangular table cloth.

So, perimeter $= 2(l + b) = 2(6 + 4)$ cm $= 2 \times 10$ cm $= 20$ cm.

6. The distance covered by Rahul to complete one round of the park is equal to the perimeter of the rectangular park.

Perimeter $= 2(l + b) = 2(30 + 22)$ m $= 2 \times 52$ m $= 104$ m

$\therefore$ Distance covered by Rahul to complete 3 rounds of the park

$= 3 \times 104$ m $= 312$ m

So, the distance covered by Rahul to complete 3 rounds of the park is 312 m.

7. The perimeter of square park $= 4 \times$ side

$= 4 \times 110$ m $= 440$ m

Thus, the total wire required to fence the square park is 440 m.

Cost of fencing 1 m $= ₹ 15$

$\therefore$ Cost of fencing 440 m $= ₹ 15 \times 440 = ₹ 6600$

So, the cost of fencing the square park is ₹ 6,600.

8. Perimeter of the triangle = sum of the lengths of its sides

$= (25 + 25 + 36)$ cm $= 86$ cm

So, the perimeter of the triangle is 86 cm.

9. The length and breadth of rectangular park are 20 m and 13 m respectively.

Perimeter $= 2(l + b) = 2(20 + 13)$ m $= 2 \times 33$ m $= 66$ m

Aman jogs and completes 4 rounds of the park everyday.

$\therefore$ Distance covered by Aman everyday $= 4 \times 66$ m $= 264$ m.

Thus, Aman jogs a distance of 264 m daily.

Puzzle

Number of squares = 22

Exercise-2

1. (a) Number of complete squares = 4

Number of half squares = 4

Number of more than half squares = 0

$\therefore$ Area = $\left(4 + 4 \times \frac{1}{2} + 0\right) = (4 + 2)$ sq. cm = 6 sq. cm

(b) Number of complete squares = 3

Number of half squares = 2

Number of more than half squares = 0

$\therefore$ Area = $\left(3 + 2 \times \frac{1}{2} + 0\right) = (3 + 1)$ sq. cm = 4 sq. cm

(c) Number of complete squares = 4

Number of half squares = 4

Number of more than half squares = 0

$\therefore$ Area = $\left(4 + 4 \times \frac{1}{2} + 0\right) = (4 + 2)$ sq. cm = 6 sq. cm

2. (a) Number of complete squares = 1

Number of half squares = 1

Number of more than half squares = 3

$\therefore$ Area = $\left(1 + 1 \times \frac{1}{2} + 3\right) = (1 + 0.5 + 3)$ sq. cm = 4.5 sq. cm

(b) Number of complete squares = 1

Number of half squares = 1

Number of more than half squares = 1

$\therefore$ Area = $\left(1 + 1 \times \frac{1}{2} + 1\right) = (1 + 0.5 + 1)$ sq. cm = 2.5 sq. cm

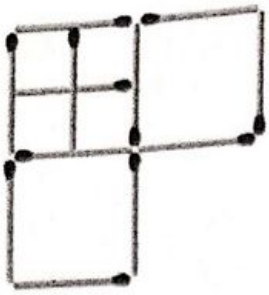
(c) Number of complete squares = 2

Number of half squares = 3

Number of more than half squares = 1

$\therefore$ Area = $\left(2 + 3 \times \frac{1}{2} + 1\right) = (2 + 1.5 + 1)$ sq. cm = 4.5 sq. cm

Puzzle



Exercise-3

1. Length of rectangular tile $= 24\text{ cm} = 240\text{ mm}$

   Breadth of rectangular tile $= 40\text{ mm}$

   $\therefore$ Area $= l \times b = 240 \times 40\text{ sq. mm} = 9600\text{ sq. mm}$

2. Length of the rectangle $= 116\text{ m}$

   Breadth of the rectangle $= \frac{1}{4} \times \text{length} = \frac{1}{4} \times 116\text{ m} = 29\text{ m}$

   $\therefore$ Area $= 116 \times 29\text{ sq. m} = 3364\text{ sq. m}$

3. Length of the square cloth $= 48\text{ cm}$

   $\therefore$ Perimeter $= 4 \times l = 4 \times 48\text{ cm} = 192\text{ cm}$

   Area $= l \times l = 48 \times 48\text{ sq. cm} = 2304\text{ sq. cm}$

   So, the perimeter of square cloth is 192 cm and area is 2304 sq. cm.

4. Length of the rectangle $= 6\text{ m}$

   Breadth of the rectangle $= 120\text{ cm} = 1.2\text{ m}$

   $\therefore$ Area $= 6 \times 1.2\text{ sq. m} = 7.2\text{ sq. m}$

5. The area of the rectangular floor $= 16 \times 11\text{ sq. m} = 176\text{ sq. m}$

   The length of each tile $= 40\text{ cm} = 0.4\text{ m}$

   $\therefore$ Area of each tile $= 0.4 \times 0.4\text{ sq. m} = 0.16\text{ sq. m}$

   Thus, number of tiles required $= \dfrac{\text{Area of floor}}{\text{Area of one tile}}$

   $= \dfrac{176}{0.16} = 1100$

   Thus, number of tiles required is 1100.

6. Perimeter of the square field $= 176\text{ m}$

   $\Rightarrow$ $4 \times l = 176\text{ m}$

   $\Rightarrow$ $l = \dfrac{176}{4}\text{ m} = 44\text{ m}$

$\therefore$ Area of the field $= l \times l = 44 \times 44$ sq. m $= 1936$ sq. m

Now, the cost of laying grass is ₹ 5.50 per sq. m.

$\therefore$ The cost of laying grass on 1936 sq. m $=$ ₹ $5.50 \times 1936 =$ ₹ 10,648

7. Length of the mat $= 3.5$ m

Area of rectangular mat $= 5.6$ sq. m

$\therefore$ Breadth $= \dfrac{\text{Area}}{\text{Length}} = \dfrac{5.6}{3.5} = 1.6$ m

Thus, the breadth of rectangular mat is 1.6 m.

8. Length of the sheet $= 324$ cm

Breadth of the sheet $= 144$ cm

$\therefore$ Area of the sheet $= (324 \times 144)$ sq. cm

Now, length of a card $= 16$ cm

breadth of a card $= 12$ cm

$\therefore$ Area of a card $= (16 \times 12)$ sq. cm

Number of cards that can be made out of a sheet $= \dfrac{\text{Area of the sheet}}{\text{Area of a card}}$

$$= \frac{\overset{27}{\cancel{324}} \times \cancel{144}^{9}}{\underset{1}{\cancel{16}} \times \cancel{12}_{1}} = 27 \times 9 = 243.$$

Thus, 243 cards can be made.

9. The distance covered by a boy in going five times around the square park is 1025 m.

$\therefore$ Perimeter of the square park $= \dfrac{1025}{5}$ m $= 205$ m

Now, perimeter of square $= 4 \times l$

$\Rightarrow \quad 4l = 205$

$\Rightarrow \quad l = \dfrac{205}{4}$ m

$\therefore$ Area of the park $= l \times l$

$$= \frac{205}{4} \times \frac{205}{4} \text{ sq. m} = \frac{205 \times 205}{4 \times 4} \text{ sq. m}$$

$$= 2626.56 \text{ sq. m}$$

So, the area of the park is 2626.56 sq. m.

10. Length of the rectangle $= 50$ cm

Breadth of the rectangle $= 45$ cm

Area of the rectangle $= 50 \times 45$ sq. cm $= 2250$ sq. cm

Side of the square $= 48$ cm

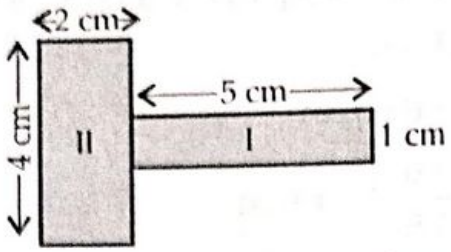
$\therefore$ Area of the square $= 48 \times 48$ sq. cm $= 2304$ sq. cm

So, square has more area.

Difference = (2304 – 2250) sq. cm = 54 sq. cm

Thus, square has 54 sq. cm more area.

11. (a)



Area of part I

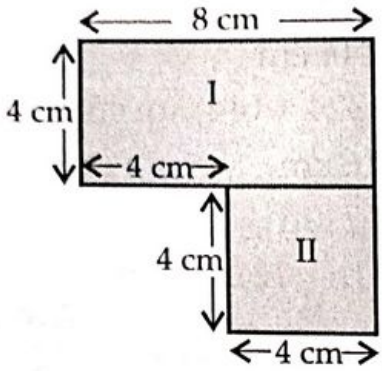
= (5 × 1) sq. cm = 5 sq. cm

Area of part II

= (4 × 2) sq. cm = 8 sq. cm

∴ Area of combined figure = (8 + 5) sq. cm = 13 sq. cm

(b)



Area of part I

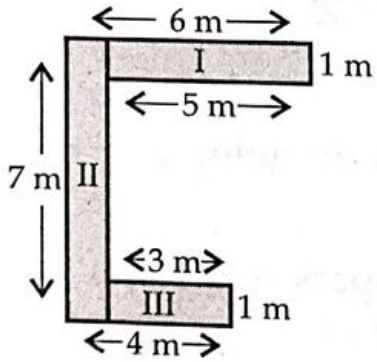
= (8 × 4) sq. cm = 32 sq. cm

Area of part II

= (4 × 4) sq. cm = 16 sq. cm

∴ Area of combined figure = (32 + 16) sq. cm = 48 sq. cm

(c)



Area of part I

= (5 × 1) sq. m = 5 sq. m

Area of part II

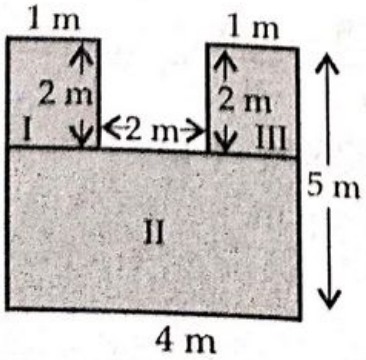
= (7 × 1) sq. m = 7 sq. m

Area of part III

= (3 × 1) sq. m = 3 sq. m

∴ Area of combined figure = (5 + 7 + 3) sq. m = 15 sq. m

(d)



Area of part I

= (2 × 1) sq. m = 2 sq. m

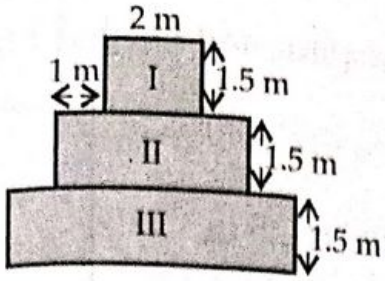
Area of part II

= (4 × 3) sq. m = 12 sq. m

Area of part III

= (2 × 1) sq. m = 2 sq. m

(e)



Area of part I
$= (2 \times 1.5)$ sq. m $= 3$ sq. m

Area of part II
$= (4 \times 1.5)$ sq. m $= 6$ sq. m

Area of part III
$= (6 \times 1.5)$ sq. m $= 9$ sq. m

$\therefore$ Area of the shaded region $= (3+6+9)$ sq. m $= 18$ sq. m

12. The total cost of whitewashing a wall at ₹ 25 per sq. m is ₹ 12150.

$$\text{Area of the wall} = \frac{\text{Total cost}}{\text{Rate}}\ \text{m}^2$$

$$\therefore \text{Area of the wall} = \frac{₹\ 12150}{₹\ 25} = 486 \text{ sq. m}$$

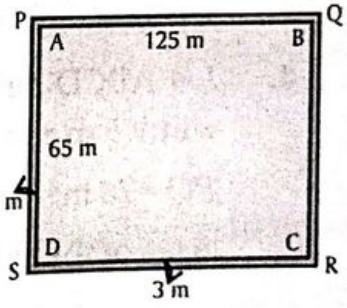
Also, length of the wall = 27 m

$$\therefore \text{Breadth of the wall} = \frac{\text{Area}}{\text{Length}} = \frac{486}{27} \text{ m} = 18 \text{ m}$$

So, the breadth of the wall is 18 m.

Exercise-4

1. Let ABCD represent the rectangular park and the shaded region represent the path 3 m wide.



PQ = (125 + 3 + 3) m = 131 m

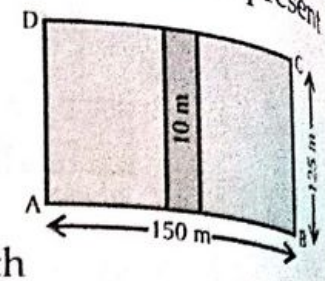
QR = (65 + 3 + 3) m = 71 m

Area of rectangle ABCD = AB × BC
$= 125 \times 65$ sq. m
$= 8125$ sq. m

Area of rectangle PQRS = PQ × QR
$= 131 \times 71$ sq. m
$= 9301$ sq. m

$\therefore$ Area of the path = Area of rectangle PQRS − Area of rectangle ABCD
$= 9301$ sq. m $- 8125$ sq. m
$= 1176$ sq. m

2. Let ABCD be the rectangular park and shaded region represent the path 10 m wide.



AB = 150 m, BC = 125 m

Length of the pathway = BC = 125 m

Breadth of the pathway = 10 m

Area of the pathway = length × breadth

= 125 × 10 sq. m = 1250 sq. m

3. Let ABCD be the square park of side 120 m.

The shaded region represents the path 5 m wide.

PQ = (120 – 5 – 5) m = 110 m

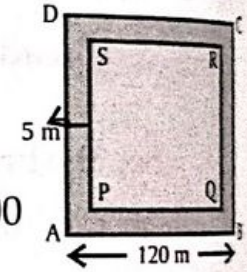
Area of square ABCD = 120 × 120 sq. m = 14400 sq. m

Area of square PQRS = 110 × 110 sq. m = 12100 sq. m

Area of the path = Area of square ABCD – Area of square PQRS

= 14400 sq. m – 12100 sq. m

= 2300 sq. m



Cost of cementing of 1 sq. m = ₹ 25

∴ Cost of cementing of 2300 sq. m = ₹ 25 × 2300

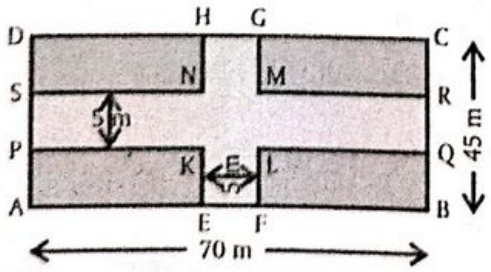
= ₹ 57500

Thus, the area of the path is 2300 sq. m and the cost of cementing is ₹ 57,500.

4. Let ABCD be the rectangular park and two cross roads, each of width 5 m run at right angles through the centre of the park.

PQ = 70 m, PS = 5 m, EH = 45 m, EF = 5 m, KL = 5 m

Area of the cross roads = Area of rectangle PQRS + Area of rectangle EFGH – Area of square KLMN



= PQ × PS + EH × EF – KL × KL

= 70 × 5 sq. m + 45 × 5 sq. m – 5 × 5 sq. m

= 350 sq. m + 225 sq. m – 25 sq. m

= 575 sq. m – 25 sq. m = 550 sq. m

5. Length of the framed photograph = 32 cm

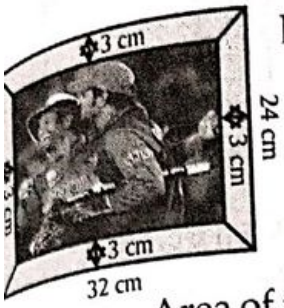
Breadth of the framed photograph = 24 cm

∴ Area of the framed photograph = length × breadth

$= 32\text{ cm} \times 24\text{ cm} = 768\text{ cm}^2$

Length of the photograph $= 32\text{ cm} - 3\text{ cm} - 3\text{ cm}$

$= 29\text{ cm} - 3\text{ cm} = 26\text{ cm}$



Breadth of the photograph $= 24\text{ cm} - 3\text{ cm} - 3\text{ cm}$

$= 21\text{ cm} - 3\text{ cm} = 18\text{ cm}$

Area of the photograph = length × breadth

$= 26\text{ cm} \times 18\text{ cm} = 468\text{ cm}^2$

$\therefore$ Area of the frame = Area of the framed photograph − Area of the photograph

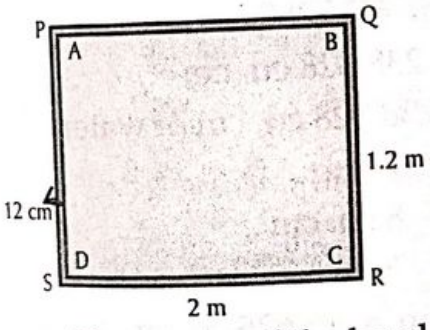
$= 768\text{ cm}^2 - 468\text{ cm}^2 = 300\text{ cm}^2$

Thus, the area of the frame is 300 cm^2.

6. Let ABCD be the table cloth and the shaded region represent the lace of uniform width.

$PQ = (2 + 0.12 + 0.12)\text{ m} = 2.24\text{ m}$

$QR = (1.2 + 0.12 + 0.12)\text{ m} = 1.44\text{ m}$



Area of shaded region = Area of PQRS − Area of ABCD

$= PQ \times QR - AB \times BC$

$= 2.24 \times 1.44\text{ sq. m} - 2 \times 1.2\text{ sq. m}$

$= 3.2256\text{ sq. m} - 2.4\text{ sq. m}$

$= 0.8256\text{ sq. m} = 0.8256 \times 10000\text{ sq. cm}$

$= 8256\text{ sq. cm}$

Thus, area of the border is 8256 sq. cm.

7. Let ABCD represent the carpet and PQRS be the floor of the room.

$PQ = RS = 15\text{ m}, \quad PS = QR = 9\text{ m}$

$AB = (15 - 2 - 2)\text{ m} = 11\text{ m}, BC = (9 - 2 - 2)\text{ m} = 5\text{ m}$

Area of the carpet = Area of ABCD

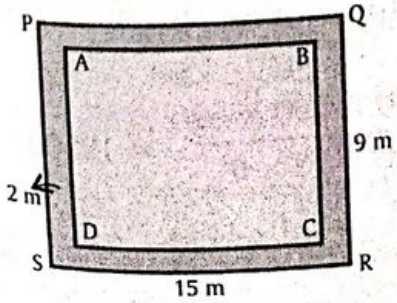
$= AB \times BC = 11 \times 5\text{ sq. m} = 55\text{ sq. m}$

Area uncovered by the carpet = Area of PQRS − Area of ABCD

$= PQ \times QR - 55\text{ sq. m}$

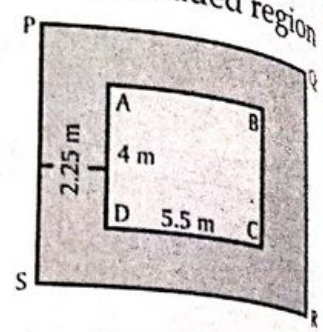
$= 15 \times 9\text{ sq. m} - 55\text{ sq. m}$

$= 135\text{ sq. m} - 55\text{ sq. m} = 80\text{ sq. m}$



Thus, area of the carpet is 55 sq. m and area uncovered by the carpet is 80 sq. m

8. Let ABCD be the floor of rectangular room and the shaded region represent the verandah.



$AB = CD = 5.5$ m, $AD = BC = 4$ m

$PQ = (5.5 + 2.25 + 2.25)$ m $= 10$ m

$QR = (4 + 2.25 + 2.25)$ m $= 8.5$ m

Area of the verandah = Area of PQRS – Area of ABCD

$= PQ \times QR - AB \times BC$

$= 10 \times 8.5$ sq. m $- 5.5 \times 4$ sq. m

$= 85$ sq. m $- 22$ sq. m $= 63$ sq. m

Cost of cementing the floor per sq. m = ₹ 200

∴ Cost of cementing the floor 63 sq. m = ₹ 200×63 = ₹ 12600

Thus, the area of the verandah is 63 sq. m and the cost of cementing is ₹ 12600.

Exercise-5

1. $l = 40$ cm, $b = 24$ cm, $h = 18$ cm

   ∴ $V = l \times b \times h = 40 \times 24 \times 18$ cu. cm $= 17280$ cu. cm

2. $V = l \times l \times l = 6.2 \times 6.2 \times 6.2$ cu. cm $= 238.328$ cu. cm

   ∴ The cubical container can hold 238.328 cu. cm of water.

3. **(a)** $l = 4$ cm, $b = 1$ cm, $h = 2$ cm

   $V = l \times b \times h = 4 \times 1 \times 2$ cu. cm $= 8$ cu. cm

   (b) $l = 2.5$ cm

   $V = l \times l \times l = 2.5 \times 2.5 \times 2.5$ cu. cm $= 15.625$ cu. cm

4. Volume of one brick $= (20 \times 16 \times 8)$ cu. cm

   Length of the wall = 10 m = 1000 cm

   Breadth of the wall = 5 m = 500 cm

   Height of the wall = 64 cm

   ∴ Volume of the wall $= 1000 \times 500 \times 64$ cu. cm

   $$\text{Number of bricks required} = \frac{\text{Volume of the wall}}{\text{Volume of one brick}}$$

   $$= \frac{\overset{50}{\cancel{1000}} \times \overset{250}{\cancel{500}} \times \overset{8^{1}}{\cancel{64}}}{\underset{1}{\cancel{20}} \times \underset{\cancel{2}\,1}{\cancel{16}} \times \underset{1}{\cancel{8}}} = 12500$$

   So, 12500 bricks will be required.

5. Volume of the water tank = 576 ℓ = 576000 cu. cm

Length of the water tank = 160 cm

Depth of the water tank = 45 cm

$\therefore$ Width of the water tank = $\frac{\text{Volume}}{\text{length} \times \text{depth}}$

$= \frac{\cancel{576000}^{\cancel{12800}^{80}}}{1\ \cancel{160} \times \cancel{45}\ 1}$ = 80 cm

So, width of the water tank is 80 cm.

6. Length of the cube = 60 cm

$\therefore$ Volume of the cube = 60 × 60 × 60 cu. cm

Volume of the metal rod = 180 × 120 × 100 cu. cm

$\therefore$ Number of cubes formed = $\frac{\text{Volume of the metal rod}}{\text{Volume of one cube}}$

$= \frac{\cancel{3}^{1}\ \cancel{2}^{1}}{\cancel{180} \times \cancel{120} \times 10\cancel{0}} = 10$

$\cancel{60} \times \cancel{60} \times \cancel{60}$
$1 \quad 1 \quad \cancel{3}_{1}$

So, 10 cubes are formed.

Mental Maths Corner

1. (a) (iv) Area of table top = 24 × (3 × 3) sq. cm = 216 sq. cm

(b) (iii) 1 sq. cm = 100 sq. mm

(c) (ii) Length of the park = l (say)

$\therefore l \times l = 225$ sq. m

$\Rightarrow l \times l = (15 \times 15)$ sq. m

$\Rightarrow l = 15$ m

(d) (iii) Area of rectangle = length × breadth

$540 = 36 \times \text{breadth}$

$\Rightarrow \text{breadth} = \frac{540}{36} = 15$ cm

(e) (iv) Volume of cube = 9 × 9 × 9 cu. cm = 729 cu. cm

(f) (ii) Perimeter of square = 4 × side $\Rightarrow$ 20 = 4 × side $\Rightarrow$ side = 5 cm

2. **(a)** 256 sq. m

$\because$ Perimeter of square $= 4 \times$ side

$64 = 4 \times$ side

$\Rightarrow$ side $= 64 \div 4 = 16$ m

$\therefore$ Area $=$ side $\times$ side $= 16 \times 16$ sq. m $= 256$ sq. m

(b) sq. cm

(c) 8 cu. cm $\quad \because$ Volume of cube $= 2 \times 2 \times 2$ cu. cm $= 8$ cu. cm

(d) 1000

Review Exercise

1. **(a)** Perimeter of square $= 4 \times l = 4 \times 13$ cm $= 52$ cm

(b) Perimeter of triangle $= (7 + 6 + 3)$ cm $= 16$ cm

(c) Perimeter of rectangle $= 2\,(l + b) = 2\,(10 + 4)$ m $= 2 \times 14$ m $= 28$ m

(d) Perimeter of square $= 4 \times l = 4 \times 17$ cm $= 68$ cm

2. **(a)** $l = 8.5$ cm, $b = 2.5$ cm

$\therefore$ Area of rectangle $= l \times b = 8.5 \times 2.5$ sq. cm $= 21.25$ sq. cm

(b) $l = 32$ m, $b = 0.5$ m

$\therefore$ Area of rectangle $= l \times b = 32 \times 0.5$ sq. m $= 16$ sq. m

3. The length of rectangular field $= 72$ m

$$\text{Its breadth} = \frac{1}{3} \times \text{length} = \frac{1}{3} \times 72 \text{ m} = 24 \text{ m}.$$

Area $= l \times b = 72 \times 24$ sq. m $= 1728$ sq. m

4. Side of the square tile $= 12$ cm

$\therefore$ Area of one tile $= 12 \times 12$ sq. cm $= 144$ sq. cm

Now, length of the floor $= 3.6$ m

Breadth of the floor $= 2$ m

$\therefore$ Area of the floor $= 3.6 \times 2$ sq. m $= 7.2$ sq. m

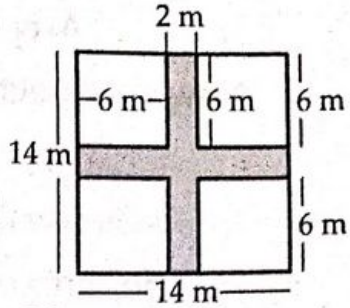
$= 72000$ sq. cm

$\therefore$ Number of tiles placed on the floor $= \dfrac{\text{Area of the floor}}{\text{Area of one tile}}$

$$= \frac{\cancel{72000}^{500}}{\cancel{144}_{1}} = 500$$

So, 500 tiles can be placed on the floor.

5. (a) Perimeter of the shaded portion
$= (2+6+6+2+6+6+2+6+6+2+6+6)$ m
$= 56$ m



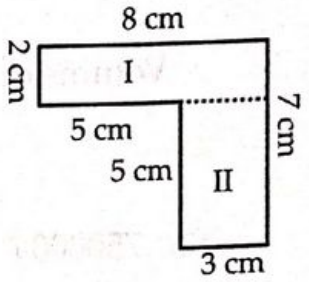
Now, area of complete figure $= 14 \times 14$ sq. m
$= 196$ sq. m

Area of each unshaded square $= 6 \times 6$ sq. m $= 36$ sq. m

$\therefore$ Area of 4 unshaded squares $= 4 \times 36$ sq. m $= 144$ sq. m

$\therefore$ Area of shaded figure $= (196 - 144)$ sq. m $= 52$ sq. m.

(b) Perimeter of shaded portion $= (8+7+3+5+5+2)$ cm
$= 30$ cm



Now, area of figure I $= (8 \times 2)$ sq. cm
$= 16$ sq. cm

and area of figure II $= (5 \times 3)$ sq. cm
$= 15$ sq. cm

$\therefore$ Area of shaded portion $= (16+15)$ sq. cm $= 31$ sq. cm.

6. The total cost of flooring a room at ₹ 80.50 per sq. m is ₹ 4830.

$\therefore$ Area of the floor $= \dfrac{4830}{80.50} = 60$ sq. m

Also, length of the floor $= 8$ m

$\therefore$ Breadth $= \dfrac{\text{Area}}{\text{Length}} = \dfrac{60}{8}$ m $= 7.5$ m

7. Length of rectangle $= 144$ cm

Breadth of rectangle $= 80$ cm

$\therefore$ Area $= 144 \times 80$ sq. cm
$= 11520$ sq. cm $= 1.152$ sq. m

So, area of the rectangle is 1.152 sq. m.

8. Length of the rectangle $= 70$ m

Breadth of the rectangle $= 56$ m

$\therefore$ Perimeter $= 2(l+b) = 2(70+56)$ m
$= 2 \times 126$ m $= 252$ m

$\therefore$ Area of rectangle $= l \times b = 70 \times 56$ sq. m $= 3920$ sq. m

Now, perimeter of square = perimeter of rectangle

$$4 \times \text{side} = 252 \Rightarrow \text{side} = \frac{252}{4} \text{ m} = 63 \text{ m}$$

So, area of the square $= 63 \times 63$ sq. m $= 3969$ sq. m

Difference in areas $= (3969 - 3920)$ sq. m $= 49$ sq. m

So, square has 49 sq. m more area than the rectangle.

9. Length of the swimming pool $= 25$ m

Its breadth $= 10$ m

Depth $= 3$ m

$\therefore$ Volume of water in the swimming pool $= (25 \times 10 \times 3)$ cu. m

$= 750$ cu. m

$= 750000\ \ell$ [$\because$ 1 cu. m $= 1000\ \ell$]

So, 750000 ℓ of water is required to fill the swimming pool.

10. Length of rectangular tank $= 3.5$ m

Depth $= 0.75$ m

Volume $= 4.2$ cu. m

$$\therefore \text{Width of the tank} = \frac{\text{Volume}}{\text{length} \times \text{depth}}$$

$$= \frac{4.2}{3.5 \times 0.75}$$

$$= \frac{\cancel{6}^{2} \quad \cancel{4}^{4}}{\cancel{42} \times \cancel{100}} = \frac{8}{5} \text{ m} = 1.6 \text{ m}$$
$$\cancel{35}_{5} \times \cancel{75}^{\cancel{3}_{1}}$$

So, width of the tank is 1.6 m.

11. Length of resulting cuboid $= 5 \times 4$ cm $= 20$ cm

Breadth $= 4$ cm

Height $= 4$ cm

$\therefore$ Volume of resulting cuboid $= l \times b \times h$

$= 20 \times 4 \times 4$ cu. cm

$= 320$ cu. cm

12. Length of cubical box = 120 cm

$\therefore$ Volume of cubical box = $(120 \times 120 \times 120)$ cu. cm

Also, volume of one cuboidal book = $(20 \times 12 \times 6)$ cu. cm

$\therefore$ Number of books that can be filled in the cubical box

$$= \frac{\text{volume of cubical box}}{\text{volume of one cuboidal book}}$$

$$= \frac{{}^{1}\cancel{6} \quad {}^{10}}{{}_{1}\cancel{20} \times {}_{1}\cancel{12} \times {}_{1}\cancel{6}} \times \cancel{120} \times 120 = 1200$$

So, 1200 books can be filled in the cubical box.

13. Length of painting = 2.5 m

Breadth of painting = 1.8 m

Perimeter of painting = 2 (length + breadth)

= 2 (2.5 + 1.8) m

= 2 × 4.3 m

= 8.6 m

Thus, Meenu should bring 8.6 m of ribbon.

HOTS

The only possible dimensions of the rectangular board are

length = 6 units,

breadth = 3 units

Perimeter = $2(l + b) = 2\ (6+3) = 18$ units,

Area = $l \times b = 6 \times 3 = 18$ sq. units

In this way, the numerical values of perimeter and area of the rectangular board are equal.