

Exercise 10.3

1. Find the areas of the rectangles whose sides are:
- (a) 3 cm and 4 cm (b) 12 m and 21 m
(c) 2 km and 3 km (d) 2 m and 70 cm

Ans. (a) Length of the rectangle = 3 cm
Breadth of the rectangle = 4 cm
 \therefore Area of the rectangle = length \times breadth = 3 cm \times 4 cm
= 12 cm² or 12 sq cm
(b) Length of the rectangle = 12 m and breadth = 21 m
 \therefore Area of the rectangle = length \times breadth = 12 m \times 21 m
= 252 m² or 252 sq m
(c) Length of the rectangle = 2 km and breadth 3 km
 \therefore Area of the rectangle = length \times breadth = 2 km \times 3 km
= 6 km² or 6 sq km
(d) Length of the rectangle = 2 m
and breadth = 70 cm or 0.70 m
 \therefore Area of the rectangle = length \times breadth = 2m \times 0.70 m
= 1.40 m² or 1.40 sq m

2. Find the areas of the squares whose sides are:

- (a) 10 cm
(b) 14 cm
(c) 5 m

Ans. (a) Side of the square = 10 cm
 \therefore Area of the square = Side \times Side = 10 cm \times 10 cm = 100 cm² or 100 sq cm
(b) Side of the square = 14 cm
 \therefore Area of the square = Side \times Side = 14 cm \times 14 cm = 196 cm² or 196 sq cm
(c) Side of the square = 5 m
 \therefore Area of the square = Side \times Side = 5m \times 5 m = 25 m² or 25 sq m

3. The length and breadth of three rectangles are as given below:

- (a) 9 m and 6 m (b) 17 m and 3 m
(c) 4 m and 14 m

Which one has the largest area and which one has the smallest?

Ans. (a) Length of the rectangle = 9 m

and breadth = 6 m

\therefore Area of the rectangle = length \times breadth

$$= 9 \text{ m} \times 6 \text{ m}$$

$$= 54 \text{ m}^2 \text{ or } 54 \text{ sq m}$$

(b) Length of the rectangle = 17 m

and breadth = 3m

\therefore Area of the rectangle

$$= \text{length} \times \text{breadth} = 17 \text{ m} \times 3 \text{ m} = 51 \text{ m}^2 \text{ or } 51 \text{ sq m}$$

(c) Length of the rectangle = 4 m

and breadth = 14 m

Area of the rectangle = length \times breadth

$$= 4 \text{ m} \times 14 \text{ m}$$

$$= 56 \text{ m}^2 \text{ or } 56 \text{ sq m}$$

Rectangle (c) has the largest area, i.e., 56 sq m and Rectangle (b) has the smallest area, i.e., 51 sq m.

4. The area of a rectangular garden 50 m long is 300 sq m. Find the width of the garden.

Ans. Length of the rectangular garden = 50 m

Area of the rectangular garden = 300 sq m

\therefore Width = Area \div Length

$$= 300 \text{ sq m} \div 50 \text{ m} = 6 \text{ m}$$

Hence width of the garden = 6 m.

5. What is the cost of tiling a rectangular plot of land 500 m long and 200 m wide at the rate of \square 8 per hundred sq m?

Ans. Length of the rectangular plot = 500 m

and the breadth = 200 m

\therefore Area of the plot = length \times breadth = 500 m \times 200 m = 100000 sq m

Now rate of tiling the plot = \square 8 per 100 sq m

$$\text{Cost of tiling the garden} = \square \left(\frac{8}{100} \times 100000 \right) = \square 8000$$

Hence the required cost = \square 8000

6. A tabletop measures 2 m by 1 m 50 cm. What is its area in square meters?

Ans. Length of the table-top = 2 m
and its breadth = 1 m 50 cm or 1.50 m
 \therefore Area of the table-top = length \times breadth
 $= 2 \text{ m} \times 1.50 \text{ m}$
 $= 3 \text{ m}^2$ or 3 sq m
Hence, the area of table-top = 3 sq m.

7. A room is 4 m long and 3 m 50 cm wide. How many square meters of carpet is needed to cover the floor of the room?

Ans. Length of the room = 4 m
and its breadth = 3 m 50 cm = 3.5 m
Area of the room = length \times breadth
 $= 4 \text{ m} \times 3.5 \text{ m} = 14 \text{ sq m}$
Hence, the area of the carpet needed = 14 sq m

8. A floor is 5 m long and 4 m wide. A square carpet of sides 3 m is laid on the floor. Find the area of the floor that is not carpeted.

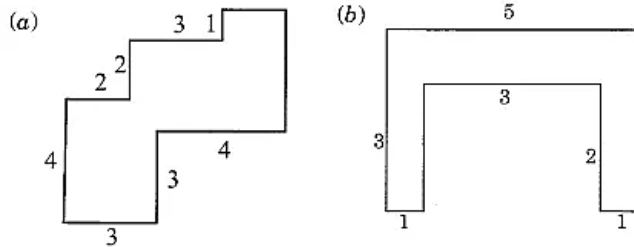
Ans. Length of the floor = 5 m
and its breadth = 4 m
 \therefore Area of the floor = length \times breadth
 $= 5 \text{ m} \times 4 \text{ m} = 20 \text{ sq m}$
Side of the carpet = 3m
 \therefore Area of the square carpet = side \times side = $3 \text{ m} \times 3 \text{ m} = 9 \text{ sq m}$
 \therefore Area of the floor which is not carpeted = $20 \text{ sq m} - 9 \text{ sq m}$
 $= 11 \text{ sq m}$.

9. Five square flower beds each of side 1 m are dug on a piece of land 5 m long and 4 m wide. What is the area of the remaining part of the land?

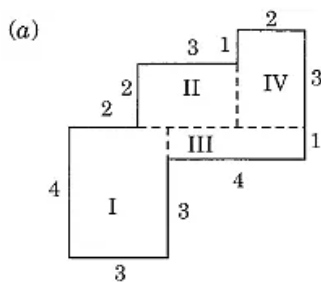
Ans. Side of the square flower bed = 1 m.
 \therefore Area of 1 square flower bed = $1 \text{ m} \times 1 \text{ m} = 1 \text{ sq m}$.
 \therefore Area of 5 square flower beds = $1 \text{ sq m} \times 5 = 5 \text{ sq m}$.
Now the length of the land = 5 m
and its breadth = 4 m
 \therefore Area of the land = length \times breadth = $5 \text{ m} \times 4 \text{ m} = 20 \text{ sq m}$
 \therefore Area of the remaining part of the land = $20 \text{ sq m} - 5 \text{ sq m}$

= 15 sq m.

10. By splitting the following figures into rectangles find their areas (The measures are given in centimeters).



Ans. Splitting the given figure into the rectangles I, II, III, and IV, we have



Area of the rectangle I = length \times breadth

= 4 cm \times 3 cm = 12 sq cm

Area of the rectangle II = length \times breadth

= 3 cm \times 2 cm = 6 sq cm.

Area of the rectangle III = length \times breadth

= 4 cm \times 1 cm = 4 sq cm

Area of the rectangle IV = length \times breadth

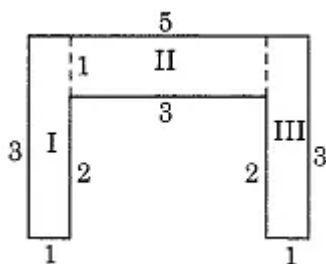
= 3 cm \times 2 cm = 6 sq cm

\therefore Total area of the whole figure

= 12 sq cm + 6 sq cm + 4 sq cm + 6 sq cm

= 28 sq cm.

(b) Splitting the given figure into the rectangles I, II, and III, we get



Area of the rectangle I

$$= 12 \text{ cm} \times 2 \text{ cm} = 24 \text{ sq cm}$$

Area of the rectangle II

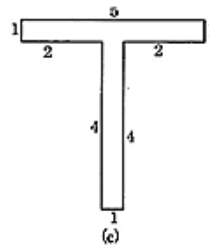
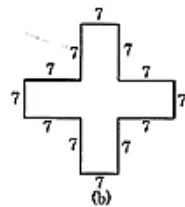
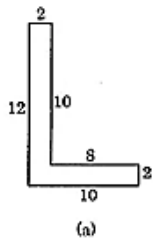
$$= 8 \text{ cm} \times 2 \text{ cm} = 16 \text{ sq cm}$$

Area of rectangle III

$$= 3 \text{ cm} \times 1 \text{ cm} = 3 \text{ sq cm}$$

\therefore Total area of the given figure = 3 sq cm + 3 sq cm + 3 sq cm = 9 sq cm.

11. Split the following shapes into rectangles and find their areas (The measurements are given in centimeters).



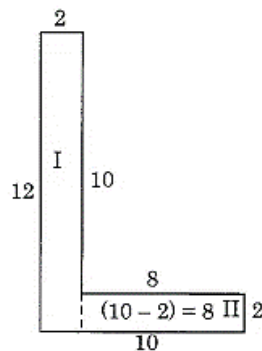
- Ans.** (a) Splitting the given figure into the rectangles I and II, we get

Area of the rectangle I

$$= 12 \text{ cm} \times 2 \text{ cm} = 24 \text{ sq cm}$$

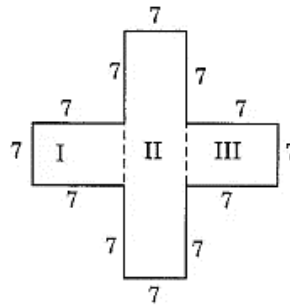
Area of the rectangle II

$$= 8 \text{ cm} \times 2 \text{ cm} = 16 \text{ sq cm}$$



\therefore Total area of the whole figure = 24 sq cm + 16 sq cm = 40 sq cm.

- (b) Splitting the given figure into the rectangles I, II, and III, we get



Area of the rectangle I

$$= 7 \text{ cm} \times 7 \text{ cm} = 49 \text{ sq cm}$$

Area of the rectangle II

$$= 21 \text{ cm} \times 7 \text{ cm} = 147 \text{ sq cm}$$

Area of the rectangle III

$$= 7 \text{ cm} \times 7 \text{ cm} = 49 \text{ sq cm}$$

∴ Total area of the whole figure

$$= 49 \text{ sq cm} + 147 \text{ sq cm} + 49 \text{ sq cm}$$

$$= 245 \text{ sq cm.}$$

12. How many tiles whose length and breadth are 12 cm and 5 cm respectively will be needed to fit in a rectangular region whose length and breadth are respectively:

(a) 100 cm and 144 cm

(b) 70 cm and 36 cm

Ans. Length of one tile = 12 cm

Breadth of the tile = 5 cm

$$\therefore \text{Area of 1 tile} = \text{length} \times \text{breadth} = 12 \text{ cm} \times 5 \text{ cm} = 60 \text{ sq cm}$$

(a) Length of the rectangular region = 144 cm

Breadth of the region = 100 cm

$$\therefore \text{Area of the rectangular region} = \text{length} \times \text{breadth} = 144 \text{ cm} \times 100 \text{ cm}$$

$$= 14400 \text{ sq cm}$$

∴ Number of tiles needed to cover the whole rectangular region

$$= 14400 \text{ sq cm} \div 60 \text{ sq cm}$$

$$= 240 \text{ tiles}$$

(b) Length of the rectangular region = 70 cm

Breadth of the region = 36 cm

$$\therefore \text{Area of the rectangular region} = \text{length} \times \text{breadth} = 70 \text{ cm} \times 36 \text{ cm} = 2520 \text{ sq cm}$$

∴ Number of tiles needed to cover the whole rectangular region

$$= 2520 \text{ sq cm} \div 60 \text{ sq cm}$$

$$= 42 \text{ tiles.}$$

