EXERCISE 10.3

PAGE NO. 219

1. Find the area 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

Solutions:

We know that

Area of rectangle = Length × Breadth

(a) l = 3 cm and b = 4 cm

Area = l × b = 3 × 4

= 12 cm^2

(b) l = 12 m and b = 21 m

Area = l × b = 12 × 21

= 252 m^2

(c) l = 2 km and b = 3 km

Area = l × b = 2 × 3

= 6 km^2

(d) l = 2 m and b = 70 cm = 0.70 m

Area = l × b = 2 × 0.70

= 1.40 m^2

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

(a) 10 cm

(b) 14 cm

(c) 5 m

Solutions:

(a) Area of square = side^2

= 10^2

= 100 cm^2

(b) Area of square = side^2

= 14^2

= 196 cm^2

(c) Area of square = side^2

= 5^2

=25 cm^2

3. The length and breadth of the 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?

Solutions:

(a) Area of rectangle = l × b

= 9 × 6

= 54 m^2

(b) Area of rectangle = l × b

= 17 × 3

= 51 m^2

(c) Area of rectangle = l × b

= 4 × 14

= 56 m^2

The area of rectangle 56 m^2, i.e. (c), is the largest area and the area of rectangle 51 m^2, i.e. (b), is the smallest area

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

Solutions:

Area of rectangle = length × width

300 = 50 × width

width = 300 / 50

width = 6 m

∴ The width of the garden is 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 ₹ 8 per hundred sq m?

Solutions:

Area of land = length × breadth

= 500 × 200

= 1,00,000 m^2

∴ Cost of tiling 1,00,000 sq m of land = (8 × 1,00,000) / 100

= ₹ 8000

∴ The cost of tiling a rectangular plot of land is ₹ 8000.

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

Solutions:

Given

l = 2m

b = 1m 50 cm = 1.50 m

Area = l × b = 2 × 1.50

= 3 m^2

∴ The area of the tabletop is 3 m^2.

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

Solutions:

Given

l = 4m

b = 3 m 50 cm = 3.50 m

Area = l × b = 4 × 3.50

= 14 m^2

∴ The carpet required to cover the floor is 14 m^2.

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.

Solutions:

Area of floor = l × b = 5 × 4

= 20 m^2

Area of square carpet = 3 × 3

= 9 m^2

Area of floor that is not carpeted = 20 – 9

= 11 m^2

∴ The area of the floor that is not carpeted is 11 m^2.

9. Five square flower beds, each of sides 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?

Solutions:

Area of flower square bed = 1 × 1

= 1 m^2

Area of 5 square bed = 1 × 5

= 5 m^2

Area of land = 5 × 4

= 20 m^2

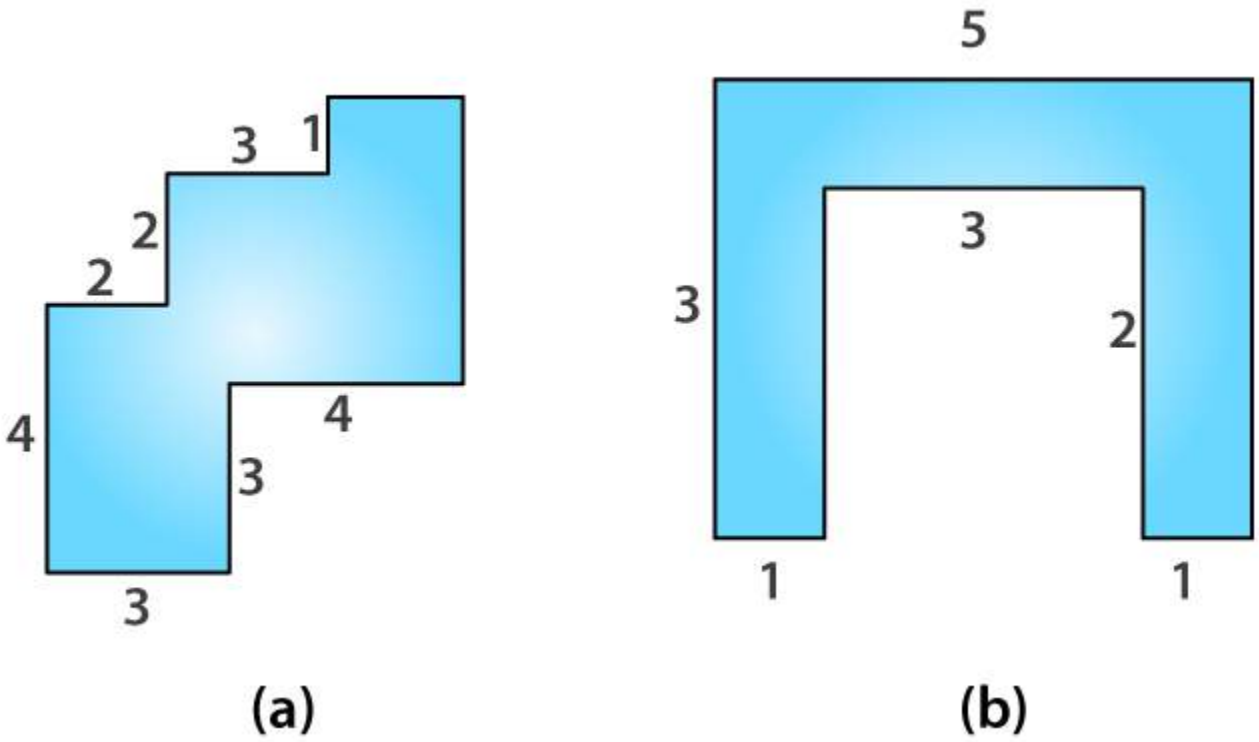
Remaining part of the land = Area of land – Area of 5 square bed

= 20 – 5

= 15 m^2

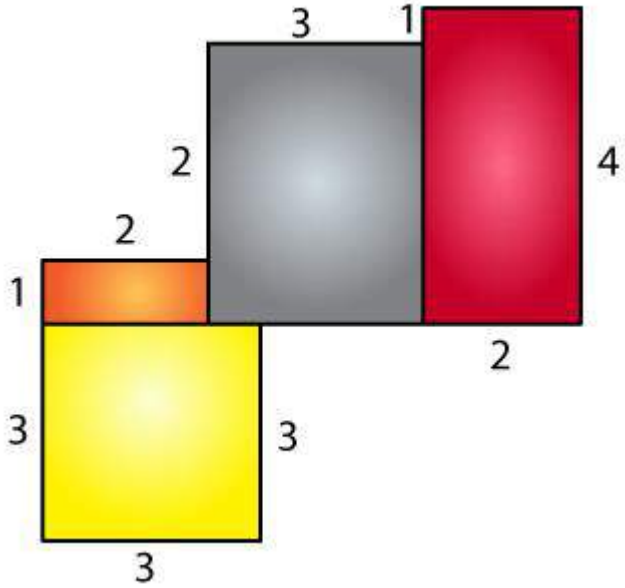
∴ The remaining part of the land is 15 m^2.

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



Solutions:

(a)



Area of yellow region = 3 × 3

= 9 cm^2

Area of orange region = 1× 2

= 2 cm^2

Area of grey region = 3 × 3

= 9 cm^2

Area of brown region = 2 × 4

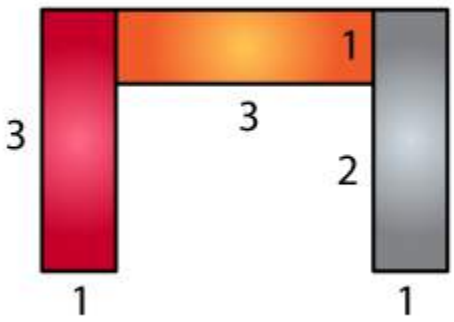
= 8 cm^2

Total area = 9 + 2 + 9 + 8

= 28 cm^2

∴ The total area is 28 cm^2.

(b)



Area of brown region = 3 × 1

= 3 cm^2

Area of orange region = 3 × 1

= 3 cm^2

Area of grey region = 3 × 1

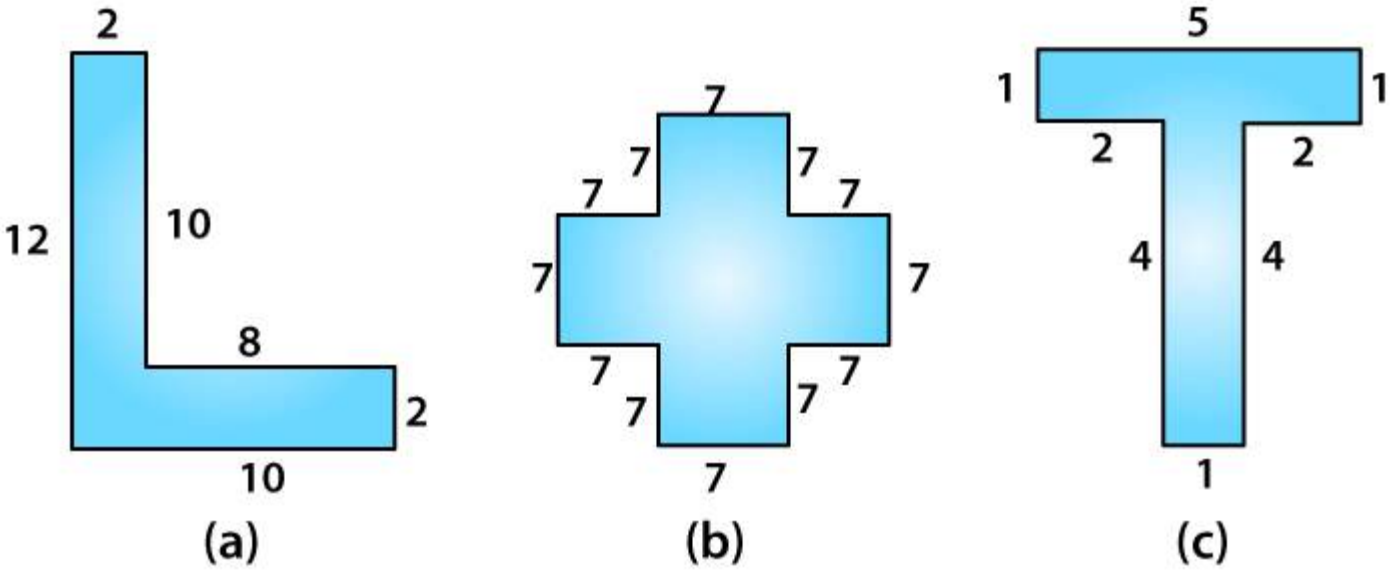
= 3 cm^2

Total area = 3 + 3 + 3

= 9 cm^2

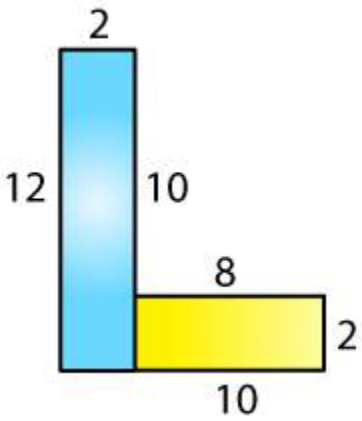
∴ The total area is 9 cm^2.

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



Solutions:

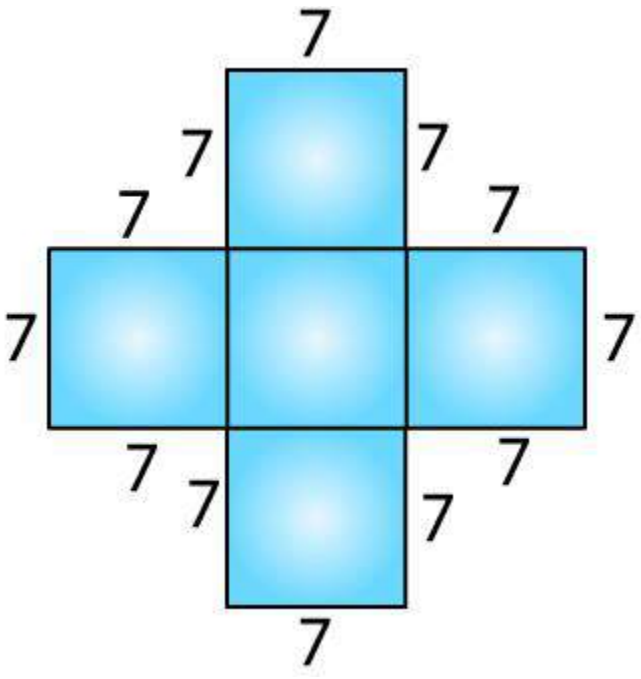
(a)



Total area of the figure = 12 × 2 + 8 × 2

= 40 cm^2

(b)

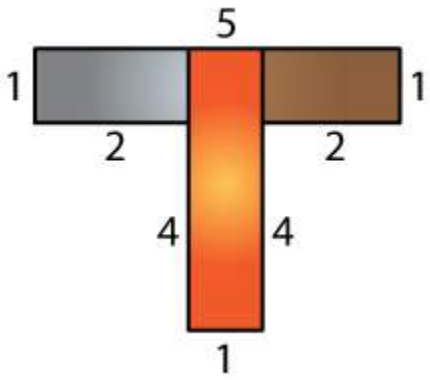


There are 5 squares, and each side is 7 cm.

Area of 5 squares = 5×7^2

= $245\ cm^2$

(c)



Area of grey rectangle = 2×1

= $2\ cm^2$

Area of brown rectangle = 2×1

= $2\ cm^2$

Area of orange rectangle = 5×1

= 5 cm^2

Total area = 2 + 2 + 5

= 9 cm^2

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?

Solutions:

(a) Area of rectangle = 100 × 144

= 14400 cm

Area of one tile = 5 × 12

= 60 cm^2

Number of tiles = (Area of rectangle) / (Area of one tile)

= 14400 / 60

= 240

Hence, 240 tiles are needed

(b) Area of rectangle = 70 × 36

= 2520 cm^2

Area of one tile = 5 × 12

= 60 cm^2

Number of tiles = (Area of rectangle) / (Area of one tile)

= 2520 / 60

= 42

Hence, 42 tiles are needed.