

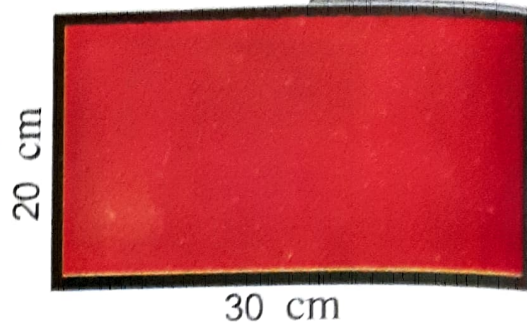


Teacher — Radhika, which shape is it ?

Radhika — It is rectangular in shape.

Teacher — Meena, what will be the perimeter of this rectangular shaped region ?

Meena — Perimeter = $2 \times (\text{length} + \text{breadth})$
 $= 2 \times (30 \text{ cm} + 20 \text{ cm})$
 $= 2 \times 50 \text{ cm}$
 $= 100 \text{ cm}$



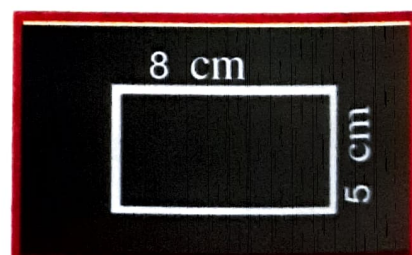
Perimeter of this rectangle is 100 cm.

Teacher — Well done! We observed that the total length of all the four sides or the perimeter of this rectangle is 100 cm. The coloured portion of the rectangular shape is called its region. The place enclosed by a closed figure is called its region. The measurement of its region is its area.

Area of rectangular region

Activity

Place a book on the blackboard, draw the lines along with its all edges and remove it . Measurement of its length is 8 cm and its breadth 5 cm. We have to measure the total region enclosed by this shape or area of this rectangular shape.



To find the area of this region we multiply the length by the breadth of rectangle—

Length of the rectangular region = 8 cm
 Breadth of the rectangular region = 5 cm
 Area of the rectangular region = length $\times$ breadth
 $= 8 \text{ cm} \times 5 \text{ cm}$
 $= 40 \text{ sq cm}$

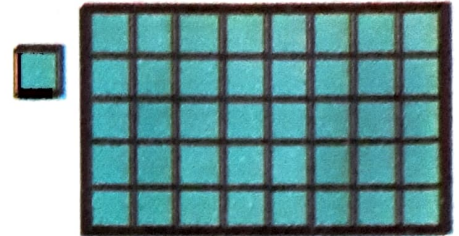


We have learnt —

The area of a rectangular shaped region is the product of its length and breadth. **Area of a rectangular shaped region = length $\times$ breadth**

Let's understand like this —

We took square pieces of coloured paper of 1 cm length and 1 cm breadth.



Let's paste these square pieces side by side in the adjoining rectangular figure in such a way that there is no gap in between.

Area of square paper of 1 cm of lengths and breadth —

$$\begin{aligned} l \times b &= 1 \text{ cm} \times 1 \\ &= 1 \text{ sq cm} \end{aligned}$$

Area is measured in the square unit of length.

Count and tell how many coloured squares have been pasted ?

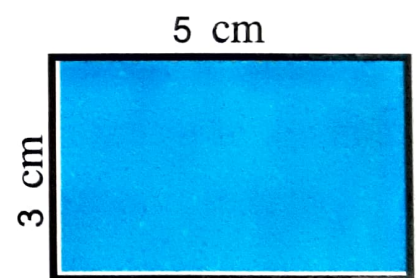
8 pieces in length $\times$ 5 pieces in breadth = 40 pieces

We observed that total area of this figure is 40 square cm because area of each small piece is 1 square cm. The same area has been obtained by multiplying the length by the breadth of the above given figure — $8 \text{ cm} \times 5 \text{ cm} = 40 \text{ sq cm}$



Do it yourself—

- Find the area of adjoining rectangular figure by pasting the squares of 1 cm in it.
- The length of a rectangular field is 20 metres and the breadth is 12 metres. Find the area of the field.



Let's know this too —

$$\begin{aligned} 1 \text{ cm} &= 10 \text{ mm} \\ 1 \text{ sq cm} &= (10 \text{ mm}) \times (10 \text{ mm}) \\ \text{or } 1 \text{ sq cm} &= 100 \text{ sq mm} \end{aligned}$$

$$\begin{aligned} 1 \text{ metre} &= 100 \text{ cm} \\ 1 \text{ sq metre} &= (100 \text{ cm}) \times (100 \text{ cm}) \\ \text{or } 1 \text{ sq metre} &= 10000 \text{ sq cm} \end{aligned}$$



The bigger unit of area is 'Are' -

$$\begin{aligned} 1 \text{ are is} &= (10 \text{ m}) \times (10 \text{ m}) \\ &= 100 \text{ sq m} \end{aligned}$$

$$\begin{aligned} 1 \text{ hectare} &= 100 \text{ are} \\ &= 100 \times 100 \text{ sq m} \\ &= 10000 \text{ sq m} \end{aligned}$$

Area of a square shaped region —

Lets draw such a square shaped figure that has sides of 5 cm each.

We know that area = length $\times$ breadth

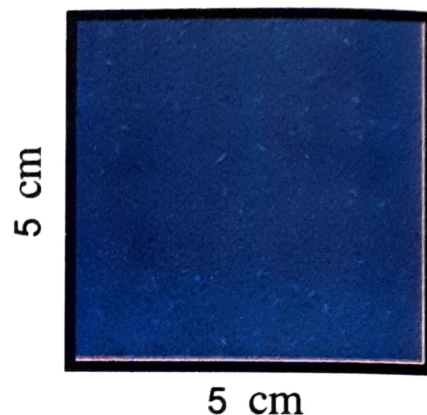
All the sides of the square are equal in length.

So, area of a square shaped region = length $\times$ breadth

$$= \text{side} \times \text{side}$$

$$= 5 \text{ cm} \times 5 \text{ cm}$$

$$= 25 \text{ sq cm}$$



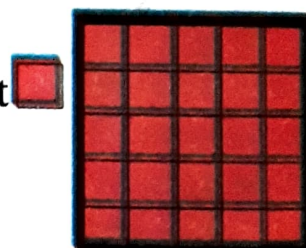
We have learnt —

$$\text{Area of a square shaped region} = \text{side} \times \text{side}$$

Let's understand in this way two —

Paste squares of papers of 1 cm side by side in the adjacent square shaped figure in such a way that no gap is left.

Tell, total how many pieces have been pasted ?



Total no. of pieces pasted = 25

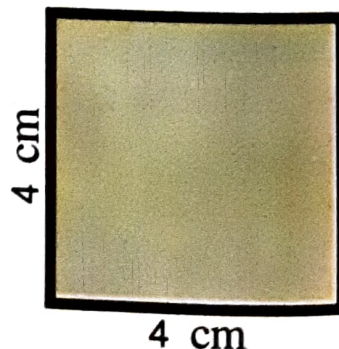
Hence, total area of the figure is = 25 sq cm

The same area is obtained by the product of the length and the breadth of the figure given above — $5 \text{ cm} \times 5 \text{ cm} = 25 \text{ sq cm}$



Do it yourself—

- Find the area of adjoining figure by pasting squares of papers of 1 sq cm.
- The length of a square room is 12 metres. Find the area of the room.



Word Problem-

Example 1 : 25 square metres area is needed to plant a mango tree. The length and breadth of Rahim's field is 50 metres and 40 metres respectively. How many maximum plants he can plant in his field.

Solution :

$$\begin{aligned}\text{Area of the field} &= \text{length} \times \text{breadth} \\ &= 50 \times 40 \text{ sq m} \\ &= 2000 \text{ sq m}\end{aligned}$$

$$\text{Area needed to plant a tree} = 25 \text{ sq m}$$

To find the number of the trees, the area of the field will be divided by the area of the place needed to plant a tree.

$$\begin{aligned}\text{Hence, the number of maximum trees are} &= \frac{2000}{25} \\ &= 80\end{aligned}$$

Therefore Rahim can plant maximum 80 trees in his field.

Example 2 : The area of a rectangular hall is 50 square metres. If its length is 10 metres, find its breadth.

Solution :

$$\begin{aligned}\text{Area of the hall} &= \text{length} \times \text{breadth} \\ 50 &= 10 \times \text{breadth} \\ \text{or breadth} &= \frac{50}{10} \text{ m} = 5 \text{ m}\end{aligned}$$

Hence, breadth of the hall is 5 m.

We have learnt

- Finding the area in real life situations.

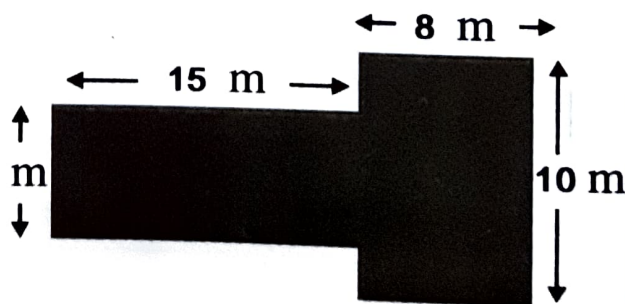
Exercise



1. Find the area of –
 - (a) a rectangular region which has length = 8.5 m and breadth = 4 cm
 - (b) a rectangular region which has length = 4 m and breadth = 3.5 cm
 - (c) a rectangular region which has length = 1.5 m and breadth = 0.75 cm
 - (d) a square shaped region which has a side = 7.5 cm
2. Fill in the blanks–

Length	Breadth	Area	
		Sq metre	Sq cm
30 cm	25 cm		
3 metres	50 cm		
0.75 metre	2 metres		

3. The length and the breadth of a courtyard is 15 m and 10 m respectively. How many slabs of 0.50 sq m can be laid on the floor of the courtyard? Cost of laying a slab is ₹ 2.50. What will be the total expenses to lay the slab on the whole of the courtyard.



4. The figure of a field is given. Find its area.

5. The length of a square shaped field is 50 m. If the ploughing cost of per square metre is 50 paise. What will be total expenses to plough the whole field?

