Area

* Area is the amount of space it covers. It is formed by calculating how many square units are needed to exactly cover the given shape.

* Area will be measured in square unit i.e ; mm², cm², m² and Km².

Self Practice 17B

1. Complete the table for the area of rectangles.

	(a)	(b)	(c)	(d)	(e)
Length	40 cm	0.12 m	11 mm	12.5 cm	25 mm
Width	18 cm	10 m	7 mm	20 cm	60 mm
Area					

Solution 1:-

(a) Length = 40 cm, Breadth = 18 cm, Area = ?

$$Area = l \times b$$
$$= 40 \, cm \times 18 \, cm$$
$$= 720 \, cm^2$$

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(b) Length = 0.12 m, Breadth = 10 m, Area = ?

$$Area = l \times b$$
$$= 0.12 \times 10 \, m$$
$$= 1.2 \, m^2$$

(d) Length = 12.5 cm, Breadth = 20 cm, Area = ?

$$Area = l \times b$$
$$= 12.5 \, cm \times 20 \, cm$$
$$= 250 \, cm^2$$

In Q1. (c) and (e) are homework.

3. Calculate the area of each of the objects shown below.

(a) 6 cm, 9 cm

(b) 11 cm, 8.5 cm

(c) 4.7 m, 3.2 m
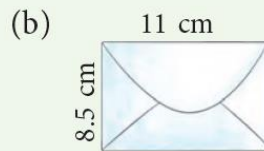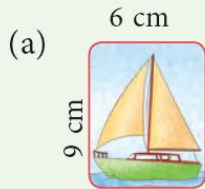
Solution 3:- This question is homework. Do it by yourself.

4. Find the area of each of the rectangles whose dimensions are given below.
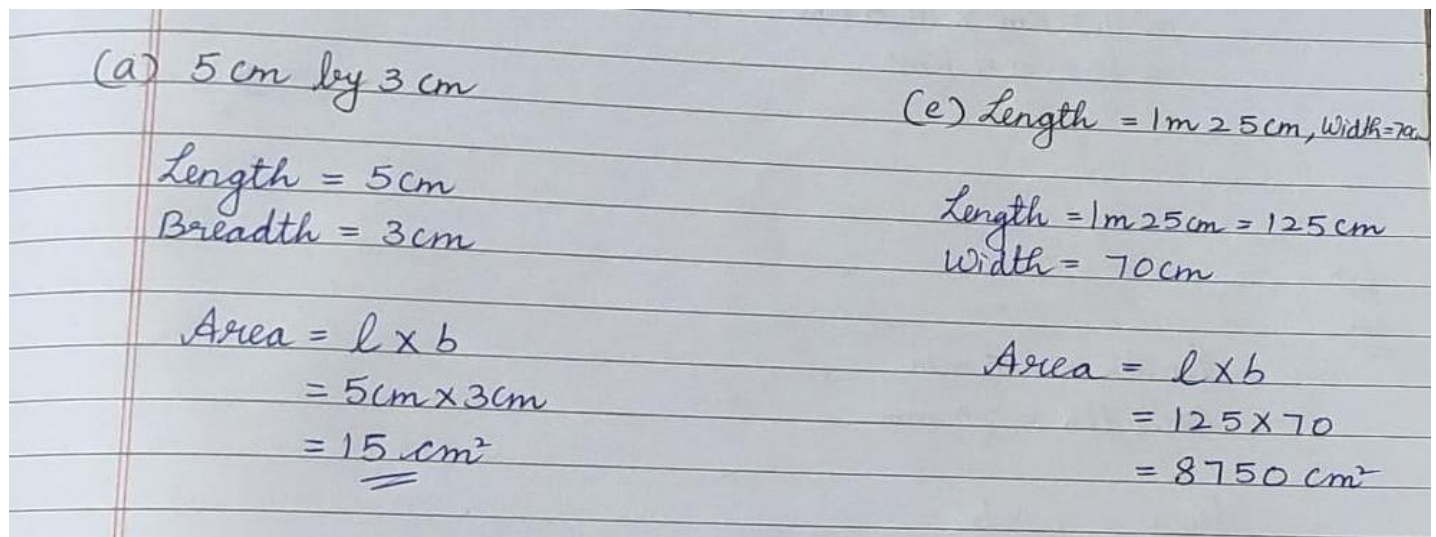
   (a) 5 cm by 3 cm   (b) 8 cm by 5 cm   (c) 22 cm by 10 cm

   (d) 28 cm by 23 cm   (e) Length = 1 m 25 cm, Width = 70 cm

Solution 4:-

(a) 5 cm by 3 cm

Length = 5 cm
Breadth = 3 cm

Area = $l \times b$
     = 5 cm × 3 cm
     = 15 cm²

(e) Length = 1 m 25 cm, Width = 70 cm

Length = 1 m 25 cm = 125 cm
Width = 70 cm

Area = $l \times b$
     = 125 × 70
     = 8750 cm²

In Q4. (b) , (c) and (d) are homework.

5. Find the area of a square whose one side is

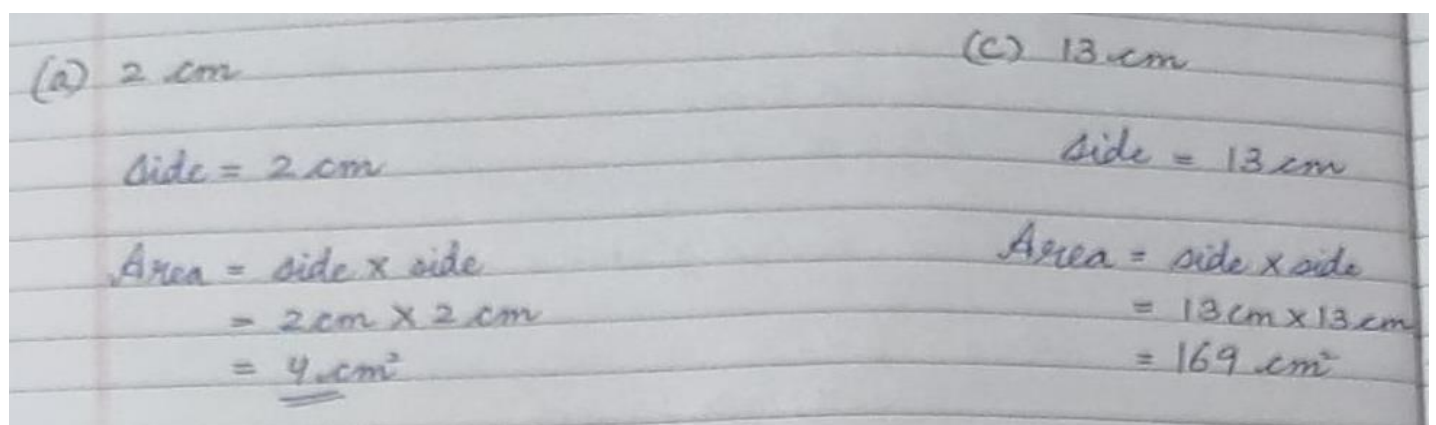   (a) 2 cm   (b) 15 cm   (c) 13 cm   (d) 1.2 m   (e) 2.5 cm

   (f) 27 m   (g) 11.5 km   (h) 100 m   (i) $4\frac{1}{2}$ m

Solution 5:-

(a) 2 cm

Side = 2 cm

Area = side × side
     = 2 cm × 2 cm
     = 4 cm²

(c) 13 cm

Side = 13 cm

Area = side × side
     = 13 cm × 13 cm
     = 169 cm²

(g) 11.5 Km

Side = ~~020~~ 11.5 Km

Area = Side × Side
$$= 11.5 \text{ Km} \times 11.5 \text{ Km}$$
$$= 132.25 \text{ Km}^2$$

(i) $4\frac{1}{2}$ m

Side = $\frac{9}{2}$ m

Area = Side × Side
$$= \frac{9}{2} \text{m} \times \frac{9}{2} \text{m}$$
$$= \frac{81}{4} \text{ m}^2 = 20\frac{1}{4}$$

> **In Q5. (b) , (d) , (e) , (f) and (h) are homework.**

8. What is the area of the dial of a watch that is 25 mm long and 23 mm wide?

Solution 8:-

Length = 25 mm
Breadth = 23 mm

Area = $l \times b$
$$= 25 \text{ mm} \times 23 \text{ mm}$$
$$= 575 \text{ mm}^2$$

9. Compare the areas of a square of side 15 cm and a rectangle 11 cm by 8 cm. Which figure has greater area and by how much?

Solution 9:-

Side = 15 cm	Length = 11 cm, Breadth = 8 cm
Area = side × side	Area = $l \times b$
$= 15 \text{ cm} \times 15 \text{ cm}$	$= 11 \text{ cm} \times 8 \text{ cm}$
$= 225 \text{ cm}^2$	$= 88 \text{ cm}^2$

Area of square is greater than Area of rectangle.

Difference $= 225 \text{ cm}^2 - 88 \text{ cm}^2$
$$= 137 \text{ cm}^2$$

10. A rectangular park measures 500 m by 100 m and a square field has a 220 m side.

(a) Do the two parks have the same area?

(b) Which park requires more fencing and by how much more?

[Hint: Length of fencing = Perimeter = Sum of all sides]

Solution 10:-

(a) Length = 500m, Breadth = 100m

Area of Rectangle = $l \times b$

= 500m × 100m

= 50000 m²

Side = 220m

Area of square = side × side

= 220 × 220 m

= 48400 m²

No, Area of the two parks is not same.

(b) Length = 500m, Breadth = 100m

Perimeter of rectangle = 2 × ($l+b$)

= 2 × (500+100) m

= 2 × 600m

= 1200 m

Side = 220m

Perimeter of square = 4 × side

= 4 × 220m

= 880 m

Difference = 1200m − 880m

= 320m

∴ A rectangular park requires more fencing by 320 m

11. **Find the length of the rectangle whose**
    (a) Area = 400 sq cm and breadth = 16 cm   (b) Area = 1800 sq cm and breadth = 36 cm

Solution 11:-

(a) Area = 400 sq cm , Breadth = 16 cm

$$\text{Length} = \frac{\text{Area}}{\text{Breadth}}$$

$$= \frac{\overset{25}{\cancel{400}} \, cm^2}{\cancel{16} \, cm}$$

$$= 25 \, cm$$

In Q11. (b) is homework.

12. **Find the breadth of the rectangle whose**
    (a) Area = 221 cm² and length = 17 cm   (b) Area = 100000 m² and length = 1000 m

Solution 12:-

(b) Area = 100000 m² , length = 1000 m

$$\text{Breadth} = \frac{\text{Area}}{\text{length}}$$

$$= \frac{\overset{100}{\cancel{100000}} \, m^2}{\cancel{1000} \, m}$$

$$= 100 \, m$$

In Q12. (a) is homework.

Q2, Q6, Q7 and Q13 are omitted.