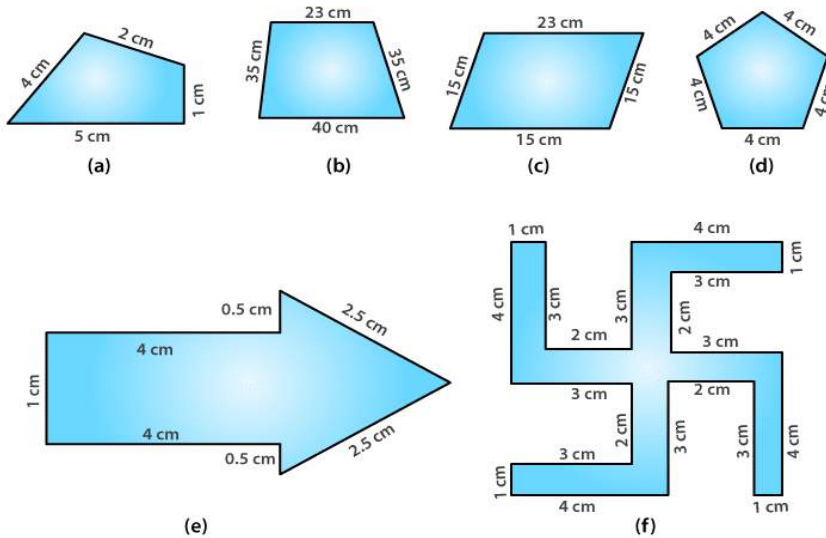


EXERCISE 10.1

PAGE NO: 212

1. Find the perimeter of each of the following figures:



Solutions:

(a) Perimeter = Sum of all the sides

$$= 1 + 2 + 4 + 5$$

$$= 12 \text{ cm}$$

(b) Perimeter = Sum of all the sides

$$= 23 + 35 + 35 + 40$$

$$= 133 \text{ cm}$$

(c) Perimeter = Sum of all the sides

$$= 15 + 15 + 15 + 15$$

$$= 60 \text{ cm}$$

(d) Perimeter = Sum of all the sides

$$= 4 + 4 + 4 + 4 + 4$$

$$= 20 \text{ cm}$$

(e) Perimeter = Sum of all the sides

$$= 1 + 4 + 0.5 + 2.5 + 2.5 + 0.5 + 4$$

$$= 15 \text{ cm}$$

(f) Perimeter = Sum of all the sides

$$= 4 + 1 + 3 + 2 + 3 + 4 + 1 + 3 + 2 + 3 + 4 + 1 + 3 + 2 + 3 + 4 + 1 + 3 + 2 + 3$$

$$= 52 \text{ cm}$$

2. The lid of a rectangular box of sides 40 cm by 10 cm is sealed all around with tape. What is the length of the tape required?

Solutions:

Length of required tape = Perimeter of rectangle

$$= 2 (\text{Length} + \text{Breadth})$$

$$= 2 (40 + 10)$$

$$= 2 (50)$$

$$= 100 \text{ cm}$$

∴ Required length of tape is 100 cm

3. A table top measures 2 m 25 cm by 1 m 50 cm. What is the perimeter of the table top?

Solutions:

Length of table top = 2 m 25 cm = 2.25 m

Breadth of table top = 1 m 50 cm = 1.50 m

$$\begin{aligned}\text{Perimeter of table top} &= 2 (\text{Length} + \text{Breadth}) \\ &= 2 (2.25 + 1.50) \\ &= 2 (3.75) \\ &= 2 \times 3.75 \\ &= 7.5 \text{ m}\end{aligned}$$

∴ The perimeter of the table top is 7.5 m

4. What is the length of the wooden strip required to frame a photograph of length and breadth 32 cm and 21 cm respectively?

Solutions:

$$\begin{aligned}\text{Required length of wooden strip} &= \text{Perimeter of photograph} \\ &= 2 (\text{Length} + \text{Breadth}) \\ &= 2 (32 + 21) \\ &= 2 (53) \\ &= 2 \times 53 \\ &= 106 \text{ cm}\end{aligned}$$

∴ Required length of the wooden strip is 106 cm

5. A rectangular piece of land measures 0.7 km by 0.5 km. Each side is to be fenced with 4 rows of wires. What is the length of the wire needed?

Solutions:

$$\begin{aligned}\text{Perimeter of the field} &= 2 (\text{Length} + \text{Breadth}) \\ &= 2 (0.7 + 0.5) \\ &= 2 (1.2) \\ &= 2 \times 1.2 \\ &= 2.4 \text{ km}\end{aligned}$$

$$\begin{aligned}\text{Each side is to be fenced with 4 rows} &= 4 \times 2.4 \\ &= 9.6 \text{ km}\end{aligned}$$

∴ Total length of the required wire is 9.6 km

6. Find the perimeter of each of the following shapes:

(a) A triangle of sides 3 cm, 4 cm and 5 cm

(b) An equilateral triangle of side 9 cm

(c) An isosceles triangle with equal sides 8 cm each and third side 6 cm.

Solutions:

$$\begin{aligned}\text{(a) Perimeter of triangle} &= 3 + 4 + 5 \\ &= 12 \text{ cm}\end{aligned}$$

$$\begin{aligned}\text{(b) Perimeter of an equilateral triangle} &= 3 \times \text{side} \\ &= 3 \times 9 \\ &= 27 \text{ cm}\end{aligned}$$

(c) Perimeter of isosceles triangle = $8 + 8 + 6$
= 22 cm

7. Find the perimeter of a triangle with sides measuring 10 cm, 14 cm and 15 cm.

Solutions:

Perimeter of triangle = $10 + 14 + 15$
= 39 cm

∴ The perimeter of triangle is 39 cm

8. Find the perimeter of a regular hexagon with each side measuring 8 m.

Solutions:

Perimeter of hexagon = 6×8
= 48 m

∴ Perimeter of regular hexagon is 48 m

9. Find the side of the square whose perimeter is 20 m.

Solutions:

Perimeter of square = $4 \times \text{side}$

$20 = 4 \times \text{side}$

Side = $20 / 4$

Side = 5 m

∴ The side of the square is 5 m

10. The perimeter of a regular pentagon is 100 cm. How long is its each side?

Solutions:

Perimeter of regular pentagon = 100 cm

$5 \times \text{side} = 100 \text{ cm}$

Side = $100 / 5$

Side = 20 cm

∴ Side of the pentagon is 20 cm

11. A piece of strings is 30 cm long. What will be the length of each side if the string is used to form:

(a) a square?

(b) an equilateral triangle?

(c) a regular hexagon?

Solutions:

Perimeter of square = 30 cm

$4 \times \text{side} = 30$

Side = $30 / 4$

Side = 7.5 cm

Perimeter of an equilateral triangle = 30 cm

$3 \times \text{side} = 30$

Side = $30 / 3$

Side = 10 cm

Perimeter of a regular hexagon = 30 cm

$$6 \times \text{side} = 30$$
$$\text{Side} = 30 / 6$$
$$\text{Side} = 5 \text{ cm}$$

12. Two sides of a triangle are 12 cm and 14 cm. The perimeter of the triangle is 36 cm. What is its third side?

Solutions:

$$\text{Let } x \text{ cm be the third side}$$
$$\text{Perimeter of triangle} = 36 \text{ cm}$$
$$12 + 14 + x = 36$$
$$26 + x = 36$$
$$x = 36 - 26$$
$$x = 10 \text{ cm}$$

\therefore The third side is 10 cm

13. Find the cost of fencing a square park of side 250 m at the rate of ₹ 20 per metre.

Solutions:

$$\text{Side of square} = 250 \text{ m}$$
$$\text{Perimeter of square} = 4 \times \text{side}$$
$$= 4 \times 250$$
$$= 1000 \text{ m}$$
$$\text{Cost of fencing} = ₹ 20 \text{ per m}$$
$$\text{Cost of fencing for } 1000 \text{ m} = ₹ 20 \times 1000$$
$$= ₹ 20,000$$

14. Find the cost of fencing a rectangular park of length 175 cm and breadth 125 m at the rate of ₹ 12 per metre.

Solutions:

$$\text{Length} = 175 \text{ cm}$$
$$\text{Breadth} = 125 \text{ m}$$
$$\text{Perimeter of rectangular park} = 2 (\text{Length} + \text{Breadth})$$
$$= 2 (175 + 125)$$
$$= 2 (300)$$
$$= 2 \times 300$$
$$= 600 \text{ m}$$
$$\text{Cost of fencing} = 12 \times 600$$
$$= 7200$$

\therefore Cost of fencing is ₹ 7,200

15. Sweety runs around a square park of side 75 m. Bulbul runs around a rectangular park with length 60 m and breadth 45 m. Who covers less distance?

Solutions:

$$\text{Perimeter of square} = 4 \times \text{side}$$
$$= 4 \times 75$$
$$= 300 \text{ m}$$

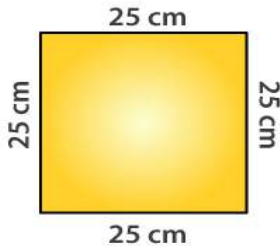
\therefore Distance covered by Sweety is 300 m

$$\text{Perimeter of rectangular park} = 2 (\text{Length} + \text{Breadth})$$

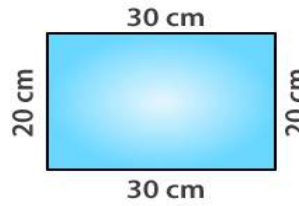
$$\begin{aligned}
 &= 2 (60 + 45) \\
 &= 2 (105) \\
 &= 2 \times 105 \\
 &= 210 \text{ m}
 \end{aligned}$$

\therefore Distance covered by Bulbul is 210 m
Hence, Bulbul covers less distance than Sweety.

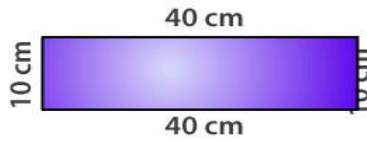
16. What is the perimeter of each of the each of the following figures? What do you infer from the the answers?



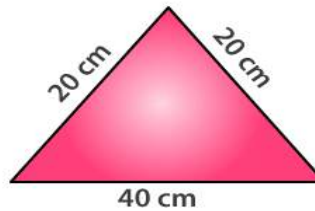
(a)



(c)



(b)



(d)

Solutions:

(a) Perimeter of square = $4 \times \text{side}$
 $= 4 \times 25$
 $= 100 \text{ cm}$

(b) Perimeter of rectangle = $2 (40 + 10)$
 $= 2 \times 50$
 $= 100 \text{ cm}$

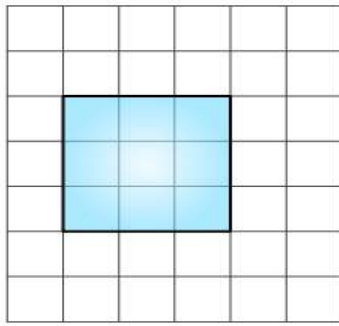
(c) Perimeter of rectangle = $2 (\text{Length} + \text{Breadth})$
 $= 2 (30 + 20)$
 $= 2 (50)$
 $= 2 \times 50$
 $= 100 \text{ cm}$

(d) Perimeter of triangle = $30 + 30 + 40$
 $= 100 \text{ cm}$

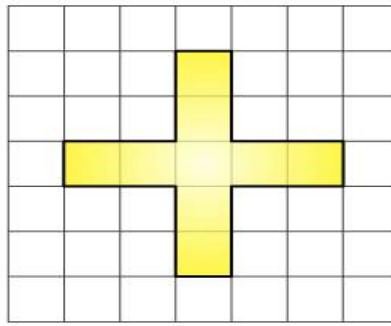
All the figures have same perimeter.

17. Avneet buys 9 square paving slabs, each with a side of $1/2$ m. He lays them in the form of a square.

(a) What is the perimeter of his arrangement [fig 10.7(i)]?



(i)



(ii)

- (b) Shari does not like his arrangement. She gets him to lay them out like a cross. What is the perimeter of her arrangement [(Fig 10.7 (ii))]?
 (c) Which has greater perimeter?
 (d) Avneet wonders if there is a way of getting an even greater perimeter. Can you find a way of doing this? (The paving slabs must meet along complete edges i.e they cannot be broken.)

Solutions:

(a) Side of square = $3 \times \text{side}$
 $= 3 \times 1/2$
 $= 3/2 \text{ m}$

Perimeter of Square = $4 \times 3/2$
 $= 2 \times 3$
 $= 6 \text{ m}$

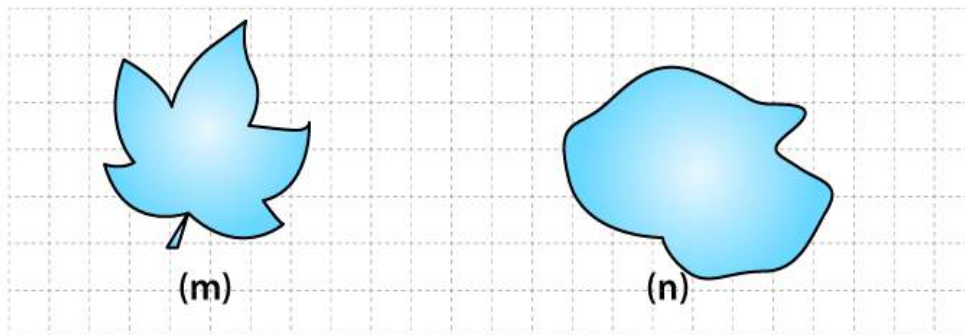
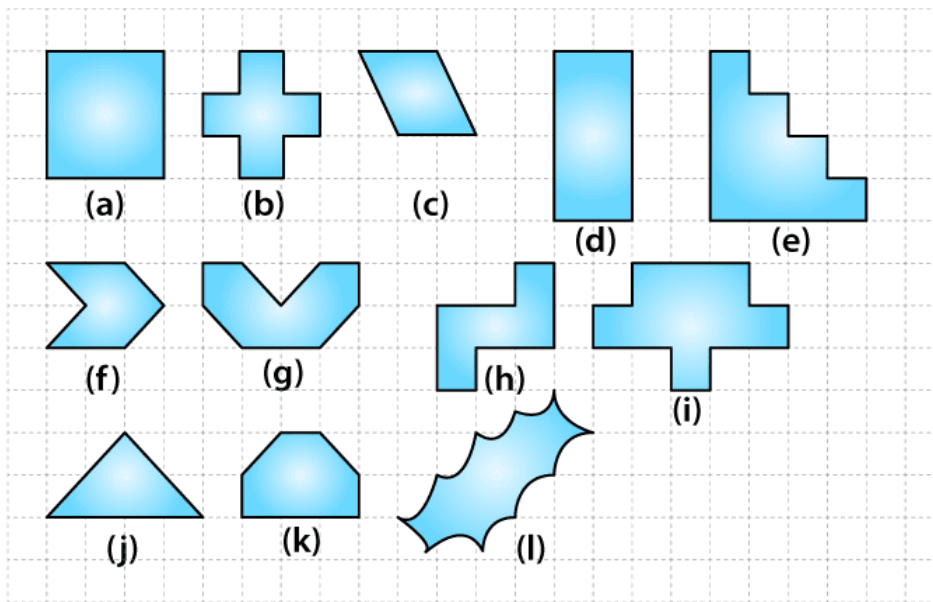
(b) Perimeter = $0.5 + 1 + 1 + 0.5 + 1 + 1 + 0.5 + 1 + 1 + 0.5 + 1 + 1$
 $= 10 \text{ m}$

- (c) The arrangement in the form of cross has greater perimeter
 (d) Perimeters greater than 10 m cannot be determined.

EXERCISE 10.2

PAGE NO: 216

1. Find the areas of the following figures by counting square:



- (a) The figure contains only 9 fully filled squares. Hence, the area of this figure will be 9 square units.
- (b) The figure contains only 5 fully filled squares. Hence, the area of this figure will be 5 square units.
- (c) The figure contains 2 fully filled squares and 4 half filled squares. Hence, the area of this figure will be 4 square units.
- (d) The figure contains only 8 fully filled squares. Hence, the area of this figure will be 8 square units.
- (e) The figure contains only 10 fully filled squares. Hence, the area of this figure will be 10 square units.
- (f) The figure contains only 2 fully filled squares and 4 half filled squares. Hence, the area of this figure will be 4 square units.
- (g) The figure contains 4 fully filled squares and 4 4 half filled squares. Hence, the area of this figure will be 6 square units.
- (h) The figure contains 5 fully filled squares. Hence, the area of this figure will be 5 square units.
- (i) The figure contains 9 fully filled squares. Hence, the area of this figure will be 9 square units.
- (j) The figure contains 2 fully filled squares and 4 half filled squares. Hence, the area of this figure will be 4 square units.
- (k) The figure contains 4 fully filled squares and 2 half filled squares. Hence, the area of this figure will be 5 square units.

(l) From the given figure, we observe

Covered Area	Number	Area estimate (square units)
Fully filled squares	2	2
Half filled squares	-	-
More than half filled squares	6	6
Less than half filled squares	6	0

Therefore total area = $2 + 6$
= 8 square units.

(m) From the given figure, we observe

Covered Area	Number	Area estimate (square units)
Fully filled squares	5	5
Half filled squares	-	-
More than half filled squares	9	9
Less than half filled squares	12	0

Therefore total area = $5 + 9$
= 14 square units

(n) From the given figure, we observe

Covered Area	Number	Area estimate (square units)
Fully filled squares	8	8
Half filled squares	-	-
More than half filled squares	10	10
Less than half filled squares	9	0

Therefore total area = $8 + 10 = 18$ square units

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

$$\text{Area of rectangle} = \text{Length} \times \text{Breadth}$$

- (a) $l = 3$ cm and $b = 4$ cm
Area = $l \times b = 3 \times 4$
 $= 12$ cm²
- (b) $l = 12$ m and $b = 21$ m
Area = $l \times b = 12 \times 21$
 $= 252$ m²
- (c) $l = 2$ km and $b = 3$ km
Area = $l \times b = 2 \times 3$
 $= 6$ km²
- (d) $l = 2$ m and $b = 70$ cm = 0.70 m
Area = $l \times b = 2 \times 0.70$
 $= 1.40$ m²

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

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

Solutions:

- (a) Area of square = side²
 $= 10^2$
 $= 100$ cm²
- (b) Area of square = side²
 $= 14^2$
 $= 196$ cm²
- (c) Area of square = side²
 $= 5^2$
 $= 25$ cm²

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?**Solutions:**

- (a) Area of rectangle = $l \times b$
 $= 9 \times 6$

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

(b) Area of rectangle = $l \times b$

$$= 17 \times 3$$

$$= 51 \text{ m}^2$$

(c) Area of rectangle = $l \times b$

$$= 4 \times 14$$

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

Area of rectangle 56 m^2 i.e (c) is the largest area and 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 \times width

$$300 = 50 \times \text{width}$$

$$\text{width} = 300 / 50$$

$$\text{width} = 6 \text{ m}$$

\therefore 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 \times breadth

$$= 500 \times 200$$

$$= 1,00,000 \text{ m}^2$$

\therefore Cost of tiling 1,00,000 sq m of land = $(8 \times 1,00,000) / 100$

$$= ₹ 8000$$

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

Solutions:

Given

$$l = 2 \text{ m}$$

$$b = 1 \text{ m } 50 \text{ cm} = 1.50 \text{ m}$$

$$\text{Area} = l \times b = 2 \times 1.50$$

$$= 3 \text{ m}^2$$

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

Solutions:

Given

$$l = 4 \text{ m}$$

$$b = 3 \text{ m } 50 \text{ cm} = 3.50 \text{ m}$$

$$\text{Area} = l \times b = 4 \times 3.50$$

$$= 14 \text{ m}^2$$

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:

$$\begin{aligned} \text{Area of floor} &= l \times b = 5 \times 4 \\ &= 20 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of square carpet} &= 3 \times 3 \\ &= 9 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of floor that is not carpeted} &= 20 - 9 \\ &= 11 \text{ m}^2 \end{aligned}$$

\therefore 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:

$$\begin{aligned} \text{Area of flower square bed} &= 1 \times 1 \\ &= 1 \text{ m}^2 \end{aligned}$$

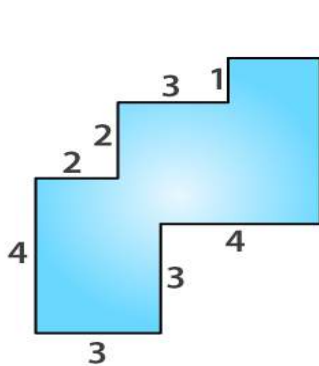
$$\begin{aligned} \text{Area of 5 square bed} &= 1 \times 5 \\ &= 5 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of land} &= 5 \times 4 \\ &= 20 \text{ m}^2 \end{aligned}$$

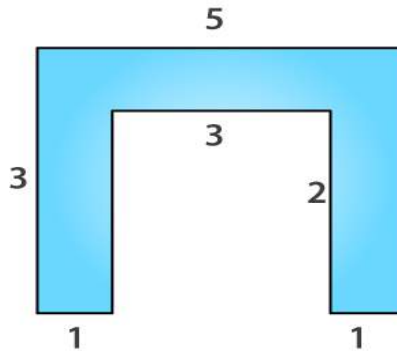
$$\begin{aligned} \text{Remaining part of the land} &= \text{Area of land} - \text{Area of 5 square bed} \\ &= 20 - 5 \\ &= 15 \text{ m}^2 \end{aligned}$$

\therefore 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).



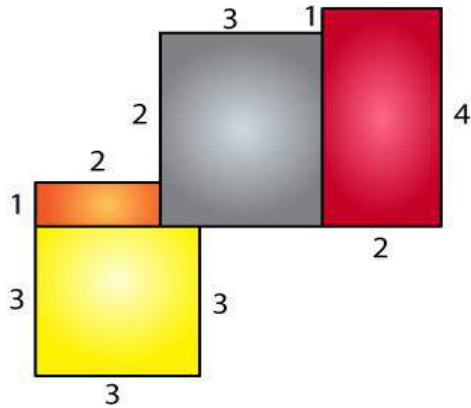
(a)



(b)

Solutions:

(a)



Area of yellow region = 3×3
= 9 cm^2

Area of orange region = 1×2
= 2 cm^2

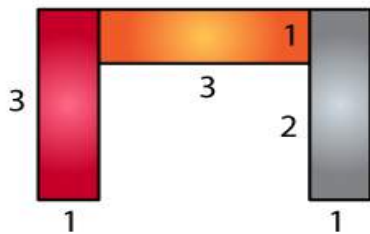
Area of grey region = 3×3
= 9 cm^2

Area of brown region = 2×4
= 8 cm^2

Total area = $9 + 2 + 9 + 8$
= 28 cm^2

∴ Total area is 28 cm^2

(b)



Area of brown region = 3×1
= 3 cm^2

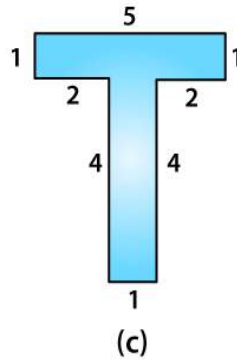
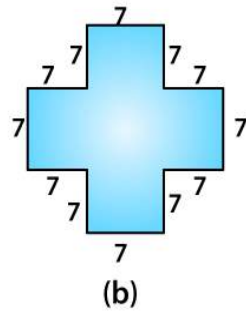
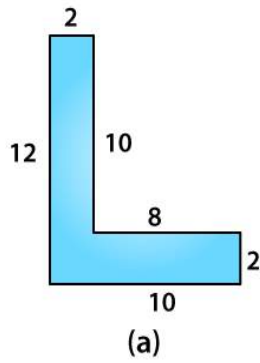
Area of orange region = 3×1
= 3 cm^2

Area of grey region = 3×1
= 3 cm^2

Total area = $3 + 3 + 3$
= 9 cm^2

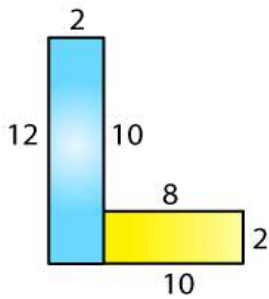
∴ Total area is 9 cm^2

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



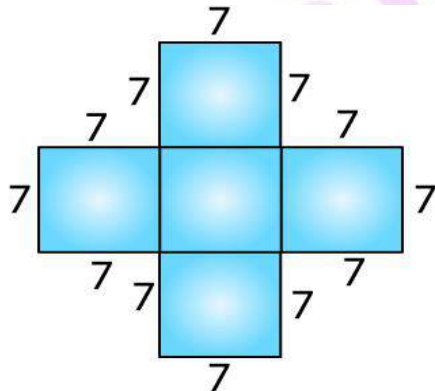
Solutions:

(a)



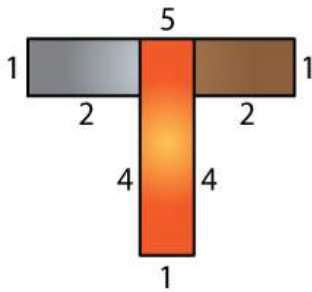
$$\begin{aligned} \text{Total area of the figure} &= 12 \times 2 + 8 \times 2 \\ &= 40 \text{ cm}^2 \end{aligned}$$

(b)



$$\begin{aligned} \text{There are 5 squares. Each side is 7 cm} \\ \text{Area of 5 squares} &= 5 \times 7^2 \\ &= 245 \text{ cm}^2 \end{aligned}$$

(c)



$$\begin{aligned} \text{Area of grey rectangle} &= 2 \times 1 \\ &= 2 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of brown rectangle} &= 2 \times 1 \\ &= 2 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of orange rectangle} &= 5 \times 1 \\ &= 5 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Total area} &= 2 + 2 + 5 \\ &= 9 \text{ cm}^2 \end{aligned}$$

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:

$$\begin{aligned} \text{(a) Area of rectangle} &= 100 \times 144 \\ &= 14400 \text{ cm} \end{aligned}$$

$$\begin{aligned} \text{Area of one tile} &= 5 \times 12 \\ &= 60 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Number of tiles} &= (\text{Area of rectangle}) / (\text{Area of one tile}) \\ &= 14400 / 60 \\ &= 240 \end{aligned}$$

Hence, 240 tiles are needed

$$\begin{aligned} \text{(b) Area of rectangle} &= 70 \times 36 \\ &= 2520 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of one tile} &= 5 \times 12 \\ &= 60 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Number of tiles} &= (\text{Area of rectangle}) / (\text{Area of one tile}) \\ &= 2520 / 60 \\ &= 42 \end{aligned}$$

Hence, 42 tiles are needed