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CLASS 6TH

MATHS

CHAPTER-10th

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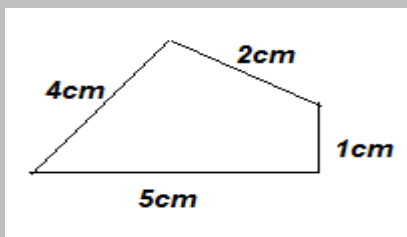
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EXERCISE- 10.1

NCERT SOLUTION

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

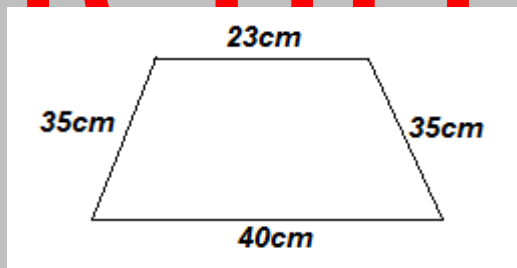
(a)



Ans.

Perimeter of the given figure = $4\text{cm} + 2\text{cm} + 1\text{cm} + 5\text{cm} = 12\text{cm}$.

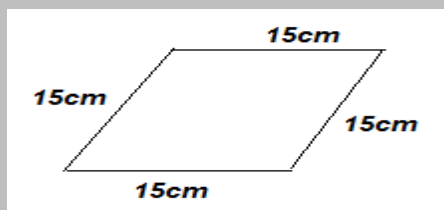
(b)



Ans.

Perimeter of the given figure = $23\text{cm} + 35\text{cm} + 40\text{cm} + 35\text{cm} = 133\text{cm}$ or 1.3m.

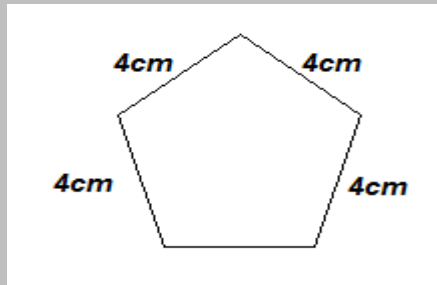
(c)



Ans.

Perimeter of the given figure = $15\text{cm} + 15\text{cm} + 15\text{cm} + 15\text{cm} = 60\text{cm}$.

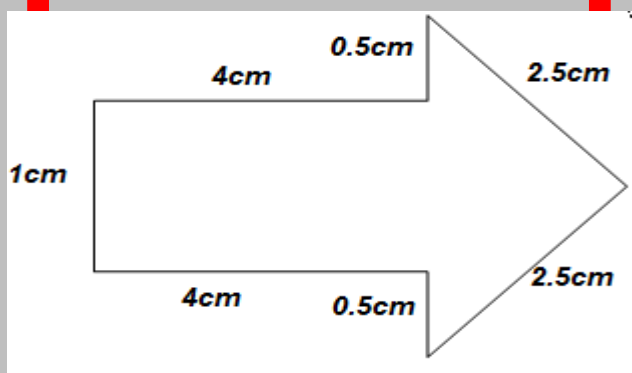
(d)



Ans.

Perimeter of the given figure = $4\text{cm} + 4\text{cm} + 4\text{cm} + 4\text{cm} + 4\text{cm} = 20\text{cm}$.

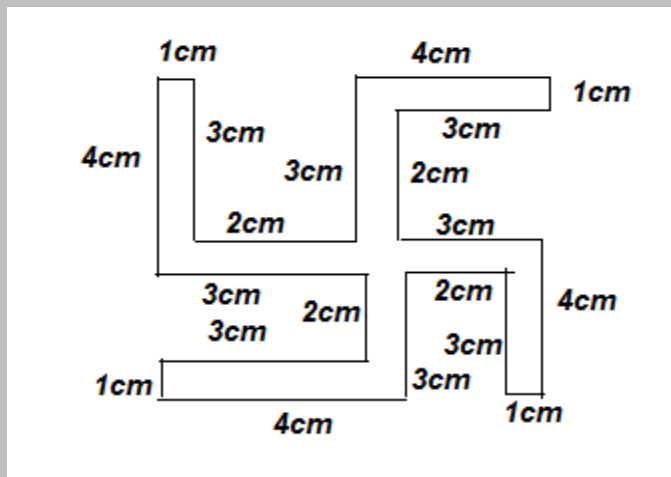
(e)



Ans.

Perimeter of the given figure = $4\text{cm} + 0.5\text{cm} + 2.5\text{cm} + 2.5\text{cm} + 0.5\text{cm} + 4\text{cm} + 1\text{cm} = 15\text{cm}$.

(f)



Ans.

Required perimeter = $4\text{ cm} + 1\text{ cm} + 3\text{ cm} + 2\text{ cm} + 3\text{ cm} + 4\text{ cm} + 1\text{ cm} + 3\text{ cm} + 2\text{ cm} + 3\text{ cm} + 4\text{ cm} + 1\text{ cm} + 3\text{ cm} + 2\text{ cm} + 3\text{ cm} + 4\text{ cm} + 1\text{ cm} + 3\text{ cm} + 2\text{ cm} + 3\text{ cm}$
 $= 52\text{ cm}$

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

Ans.

Length of the tape required = Perimeter of the Rectangular lid = $2 \times (l + b)$

$$= 2 \times (40 + 10)$$

$$= 2 \times (50)$$

$$= 100\text{cm}$$

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

Ans.

Perimeter of the table-top = $2 \times (l + b)$

$$= 2 \times (2\text{m } 25\text{cm} + 1\text{m } 50\text{cm})$$

$$= 2 \times (3\text{m}75\text{cm})$$

$$= 7\text{m}50\text{cm} = 7.5\text{m}$$

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

Ans.

Length of strip = 32cm

Breadth of Strip = 21cm

$$\text{Perimeter} = 2 \times (l + b)$$

$$= 2 \times (32 + 21)$$

$$= 2 \times (53)$$

$$= 106\text{cm or } 1\text{m } 6\text{cm}$$

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?

Ans.

Length of the rectangular piece of land = 0.7 km = $0.7 \times 1000 \text{ m} = 700 \text{ m}$

Breadth of the rectangular piece of land = 0.5 km = $0.5 \times 1000 \text{ m} = 500 \text{ m}$

Perimeter of the rectangular piece of land = $2 \times (\text{length} + \text{breadth})$

$$= 2 \times (700 \text{ m} + 500 \text{ m})$$

$$= 2 \times 1200 \text{ m} = 2400 \text{ m}$$

Total length of rope required = $4 \times 2400 \text{ m} = 9600 \text{ m or } 9.6\text{km}.$

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

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

Ans.

Perimeter of triangle = Sum of all sides of a given triangle = 3cm + 4cm + 5cm = 12cm

(b) An equilateral triangle of side 9 cm.

Ans.

Perimeter of triangle = Sum of all sides of a given triangle = 9cm + 9cm + 9cm = 27cm

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

Ans.

Perimeter of an isosceles triangle = Sum of all sides of a given triangle = 8cm + 8cm + 6cm = 22cm

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

Ans.

Perimeter of triangle = Sum of all sides of a given triangle = 10cm + 14cm + 15cm = 39cm

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

Ans.

Perimeter of a regular hexagon = 6 x side = 6 x 8 = 48cm.

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

Ans.

Perimeter of Square = 4 x side

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

$$\text{Side} = \frac{20}{4} = 5\text{cm}$$

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

Ans.

Perimeter of the regular pentagon = 100 cm

Number of sides in regular pentagon = 5

$$\begin{aligned}\therefore \text{Length of each side} &= \frac{\text{Perimeter}}{\text{Number of sides}} \\ &= \frac{100}{5} = 20 \text{ cm.}\end{aligned}$$

11. A piece of string 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?

Ans.

(a) Length of string = 30 cm

Number of sides in a square = 4

$$\therefore \text{Length of each side of the square} = \frac{30}{4} = 7.50 \text{ cm.}$$

(b) Length of string = 30 cm

Number of sides in equilateral triangle = 3

$$\therefore \text{Length of each side of the equilateral triangle} = \frac{30}{3} = 10 \text{ cm}$$

(c) Length of string = 30 cm

Number of sides in regular hexagon = 6

$$\therefore \text{Length of each side of the regular hexagon} = \frac{30}{6} = 5 \text{ cm}$$

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?

Ans.

Two sides of triangle = 12cm and 14cm

Perimeter of the triangle = 36cm

$$\text{Length of the third side} = 36 - (12 + 14) = 10 \text{ cm}$$

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

Ans.

Length of a Square park = 250m

Perimeter of a Square park = $4 \times \text{side}$
 $= 4 \times 250 = 1000\text{m}$

Cost of fencing a Square park = ₹20 per metre

$\therefore$ Cost of Fencing = $1000 \times 20 = ₹20,000$

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

Ans.

Length of the park = 175m

Breadth of the park = 125m

Perimeter of a park = $2 \times (l + b)$
 $= 2 \times (175 + 125)$
 $= 2 \times 300 = 600\text{m}$

Cost of fencing a rectangular park = ₹12 per metre

$\therefore$ Cost of Fencing = $600 \times 12 = ₹7200$

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?

Ans.

Sweety

Side of the square park = 75 m

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

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

Bulbul

Perimeter of the rectangular park = $2 [\text{length} + \text{breadth}]$

Perimeter of the rectangular park = $2 [60 \text{ m} + 45 \text{ m}]$

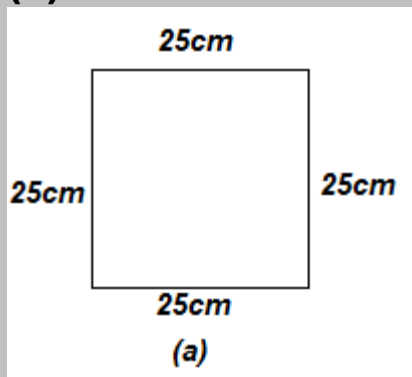
$= 2 \times 105 \text{ m} = 210 \text{ m.}$

Since $210\text{ m} < 300\text{ m}$.

So, Bulbul covers less distance.

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

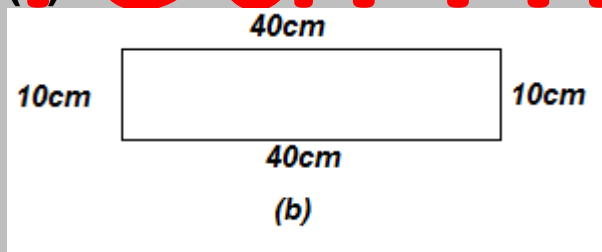
(a)



Ans.

Perimeter of the square = $25 + 25 + 25 + 25 = 4 \times 25\text{ cm} = 100\text{ cm}$

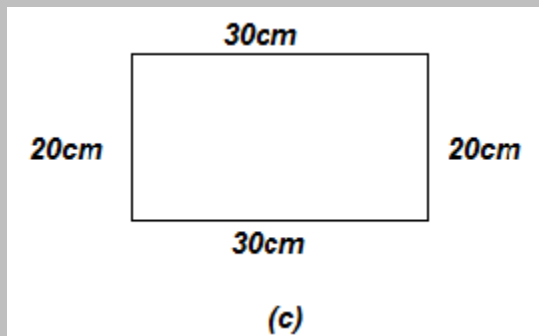
(b)



Ans.

Perimeter of the rectangle = $40\text{ cm} + 10\text{ cm} + 40\text{ cm} + 10\text{ cm}$
 $= 2 [40\text{ cm} + 10\text{ cm}] = 2 \times 50\text{ cm} = 100\text{ cm}$

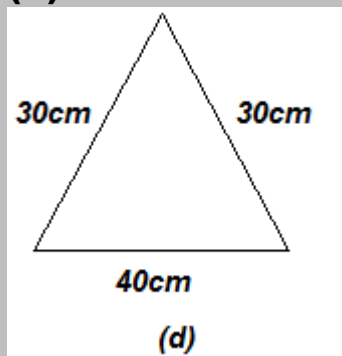
(c)



Ans.

$$\begin{aligned}\text{Perimeter of the rectangle} &= 30 \text{ cm} + 20 \text{ cm} + 30 \text{ cm} + 20 \text{ cm} \\ &= 2 [30 \text{ cm} + 20 \text{ cm}] = 2 \times 50 \text{ cm} = 100 \text{ cm}\end{aligned}$$

(d)



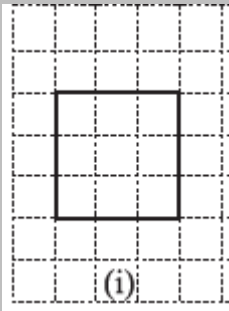
Ans.

$$\text{Perimeter of the triangle} = \text{Sum of all sides} = 30 \text{ cm} + 30 \text{ cm} + 40 \text{ cm} = 100 \text{ cm}$$

From all the above figures we inferred that all the figures have same perimeter.

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

(a) What is the perimeter of his arrangement.



Ans.

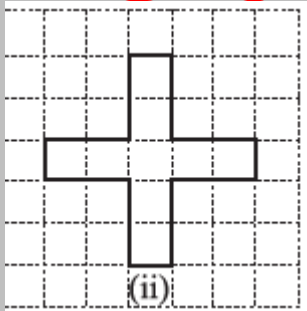
$$\text{Side of square} = \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = 1\frac{1}{2}$$

$\therefore$ Perimeter of the square arrangement = 4 x side

$$= 4 \times 1\frac{1}{2}$$

$$= 4 \times \frac{3}{2} = 6\text{m}$$

(b) Shari does not like his arrangement. She gets him to lay them out like a cross. What is the perimeter of her arrangement.



Ans.

$$\begin{aligned} \text{Perimeter of cross arrangement} &= \frac{1}{2} + 1 + 1 + \frac{1}{2} + 1 + 1 + \frac{1}{2} + 1 + \\ &1 + \frac{1}{2} + 1 + 1 = 10\text{m} \end{aligned}$$

(c) Which has greater perimeter?

Ans.

Perimeter of cross arrangement is greater.

(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.)

Ans

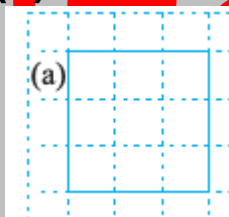


EXERCISE- 10.2

NCERT SOLUTION

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

(a)



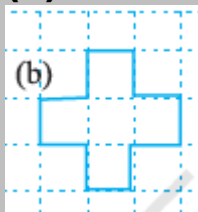
Ans.

Number of full square = 9

Area of 1 square = 1 sq unit

$\therefore$ Area of the figure = $9 \times 1 = 9$ sq units.

(b)



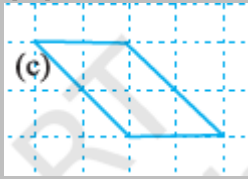
Ans.

Number of full square = 5

Area of 1 square = 1 sq unit

$\therefore$ Area of the figure = $5 \times 1 = 5$ sq units.

(c)



Ans.

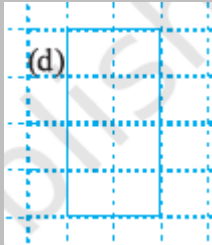
Number of full square = 2

Number of half square = 4

Area of 1square = 1sq unit

$\therefore$ Area of the figure = $2 \times 1 + 4 \times \frac{1}{2} = 2 + 2 = 4$ sq unit.

(d)



Ans.

Number of full square = 8

Area of 1square = 1sq unit

$\therefore$ Area of the figure = $8 \times 1 = 8$ sq units.

(e)



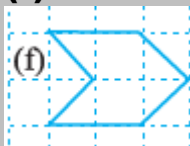
Ans.

Number of full square = 10

Area of 1square = 1sq unit

$\therefore$ Area of the figure = $10 \times 1 = 10$ sq units.

(f)



Ans.

Number of full square = 2

Number of half square = 4

Area of 1square = 1sq unit

∴ Area of the figure = $2 \times 1 + 4 \times \frac{1}{2} = 2 + 2 = 4$ sq unit.

(g)



Ans.

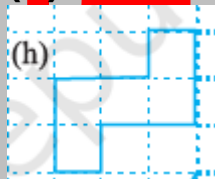
Number of full square = 4

Number of half square = 4

Area of 1square = 1sq unit

∴ Area of the figure = $4 \times 1 + 4 \times \frac{1}{2} = 4 + 2 = 6$ sq unit.

(h)



Ans.

Number of full square = 5

Area of 1square = 1sq unit

∴ Area of the figure = $5 \times 1 = 5$ sq units.

(i)



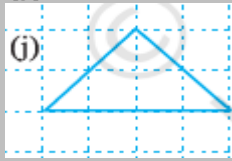
Ans.

Number of full square = 9

Area of 1square = 1sq unit

∴ Area of the figure = $9 \times 1 = 9$ sq units.

(j)



Ans.

Number of full square = 2

Number of half square = 4

Area of 1square = 1sq unit

∴ Area of the figure = $2 \times 1 + 4 \times \frac{1}{2} = 2 + 2 = 4$ sq unit.

(k)



Ans.

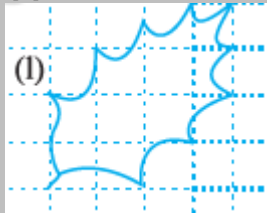
Number of full square = 4

Number of half square = 2

Area of 1square = 1sq unit

∴ Area of the figure = $4 \times 1 + 2 \times \frac{1}{2} = 4 + 1 = 5$ sq unit,

(l)



Ans.

Number of full square = 4

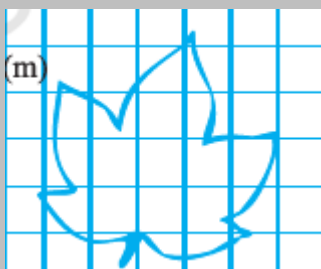
Number of half square = 2

Number of more than half = 3

Area of 1square = 1sq unit

∴ Area of the figure = $4 \times 1 + 3 \times 1 + 2 \times \frac{1}{2} = 4 + 3 + 1 = 8$ sq unit.

(m)



Ans.

Number of full square = 7

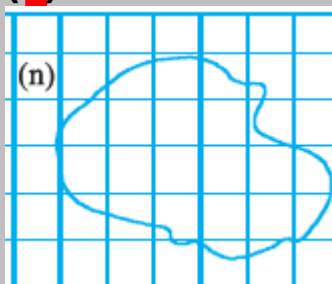
Number of half square = 4

Number of more than half = 5

Area of 1square = 1sq unit

$\therefore$ Area of the figure = $7 \times 1 + 5 \times 1 + 4 \times \frac{1}{2} = 7 + 5 + 2 = 14$ sq unit.

(n)



Ans.

Number of full square = 10

Number of half square = 6

Number of more than half = 5

Area of 1square = 1sq unit

$\therefore$ Area of the figure = $10 \times 1 + 5 \times 1 + 6 \times \frac{1}{2} = 10 + 5 + 3 = 18$ sq unit.

EXERCISE- 10.3

NCERT SOLUTION

1. Find the areas of the rectangles whose sides are:

(a) 3 cm and 4 cm

Ans.

Area of rectangle = length x breadth

Area of rectangle = $3\text{cm} \times 4\text{cm} = 12\text{cm}^2$.

(b) 12 m and 21 m

Ans.

Area of rectangle = length x breadth

Area of rectangle = $12\text{m} \times 21\text{m} = 252\text{m}^2$.

(c) 2 km and 3 km

Ans.

Area of rectangle = length x breadth

Area of rectangle = $2\text{km} \times 3\text{km} = 6\text{km}^2$.

(d) 2 m and 70 cm

Area of rectangle = length x breadth

Length of Rectangle = $2\text{m} = 2 \times 100 = 200\text{cm}$

Area of rectangle = $200\text{cm} \times 70\text{cm} = 14000\text{cm}^2$ or 1.4m^2

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

(a) 10 cm

Ans.

Area of square = Side x Side

Area of square = $10\text{cm} \times 10\text{cm} = 100\text{cm}^2$.

(b) 14 cm

Ans.

Area of square = Side x Side

Area of square = $14\text{cm} \times 14\text{cm} = 196\text{cm}^2$.

(c) 5 m

Ans.

Area of square = Side x Side

Area of square = $5\text{cm} \times 5\text{cm} = 25\text{cm}^2$.

3. The length and breadth of three rectangles are as given below: Which one has the largest area and which one has the smallest?

(a) 9 m and 6 m

Ans.

Area of rectangle = length x breadth

Area of rectangle = $9\text{m} \times 6\text{m} = 54\text{m}^2$.

(b) 17 m and 3 m

Ans.

Area of rectangle = length x breadth

Area of rectangle = $17\text{m} \times 3\text{m} = 51\text{m}^2$.

(c) 4 m and 14 m

Ans.

Area of rectangle = length x breadth

Area of rectangle = $4\text{m} \times 14\text{m} = 56\text{m}^2$.

Largest area = Rectangle (c) = 56m^2

Smallest Area = Rectangle (b) = 51m^2

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

Ans.

Area of Rectangle = 300m^2

Length of Rectangle = 50m

Width of Rectangle = $\frac{\text{Area of Rectangle}}{\text{Length of Rectangle}}$

Width of Rectangle = $\frac{300}{50} = 6\text{m}$

Hence, width of the garden = 6m

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?

Ans.

Length of Rectangular plot = 500m

Breadth of Rectangular plot = 200m

Area of Rectangular plot = Length x Breadth

Area of Rectangular plot = $500 \times 200 = 1,00,000$ sq.m

Rate of tiling a rectangular plot = ₹8 per hundred sq m

Cost of tiling 1,00,000 sqm of land = $\frac{8 \times 100000}{100} = ₹8,000$.

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

Ans.

Length of table = 2m

Breadth of table = 1m 50cm = 1.50m

Area of rectangular table = length x breadth

Area of table = $2 \times 1.5 = 3\text{m}^2$

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?

Ans.

Length of Room = 4m

Breadth of room = 3m 50cm = 3.50m

Area of carpet = length x breadth

Area of carpet = $4 \times 3.50 = 14\text{m}^2$

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.

Ans.

Length of floor = 5m

Breadth of floor = 4m

Area of floor = Length x breadth

Area of floor = $5\text{m} \times 4\text{m} = 20\text{m}^2$

Sides of square carpet = 3m

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

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

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

Ans.

Side of square bed = 1m

Area of Square bed = Side x side

Area of 1 square bed = $1 \times 1 = 1\text{m}^2$

$\therefore$ Area of 5 square bed = 5m^2

Now,

Length of land = 5m

Breadth of land = 4m

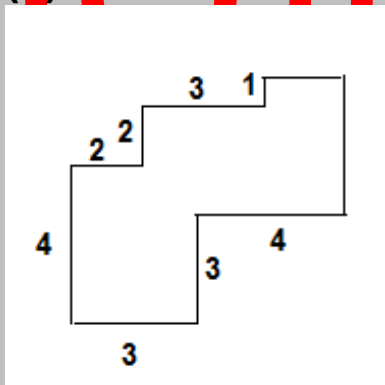
Area of the land = length x breadth

Area of the land = $5 \times 4 = 20\text{m}^2$

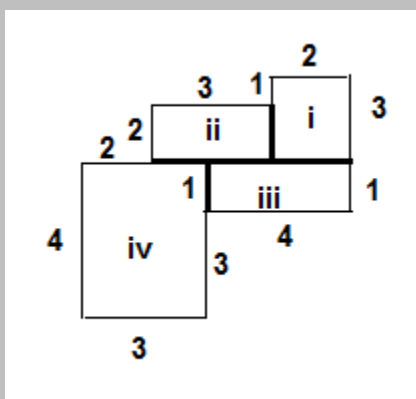
Area of remaining land = $20 - 5 = 15\text{m}^2$

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

(a)



Ans.



By splitting the following figure into rectangle

Area of rectangle (i) = length x breadth = $3 \times 2 = 6 \text{ cm}^2$

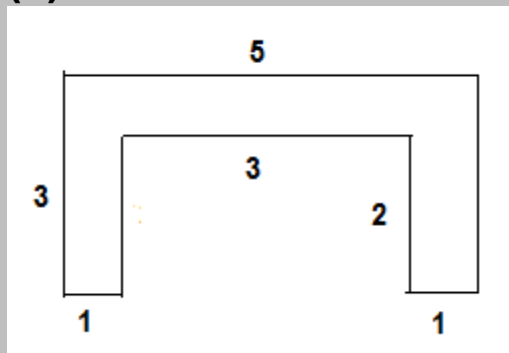
Area of rectangle (ii) = length x breadth = $3 \times 2 = 6 \text{ cm}^2$

Area of rectangle (iii) = length x breadth = $4 \times 1 = 4 \text{ cm}^2$

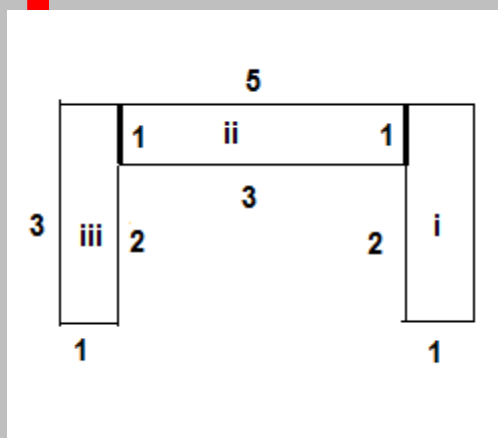
Area of rectangle (iv) = length x breadth = $4 \times 3 = 12 \text{ cm}^2$

Total Area = $6 + 6 + 4 + 12 = 28 \text{ cm}^2$

(b)



Ans.



By splitting the following figure into rectangle

Area of rectangle (i) = length x breadth = $3 \times 1 = 3 \text{ cm}^2$

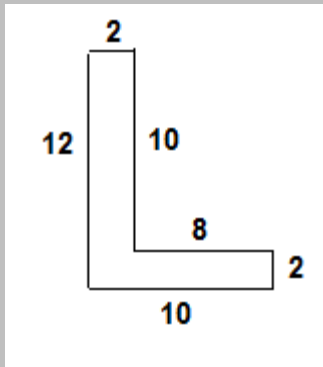
Area of rectangle (ii) = length x breadth = $3 \times 1 = 3 \text{ cm}^2$

Area of rectangle (iii) = length x breadth = $3 \times 1 = 3 \text{ cm}^2$

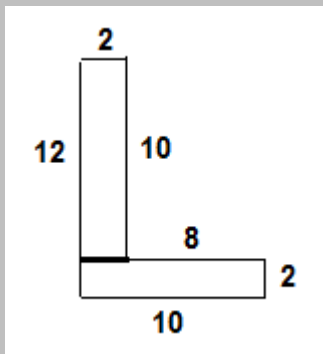
Total Area = $3 + 3 + 3 = 9 \text{ cm}^2$

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

(a)



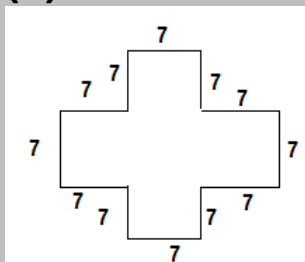
Ans.



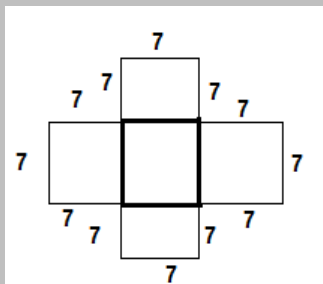
Area of Rectangle = length x breadth
 $= 10 \times 2 = 20\text{cm}^2$
 $= 10 \times 2 = 20\text{cm}^2$

Total Area = $20 + 20 = 40\text{cm}^2$

(b)



Ans.

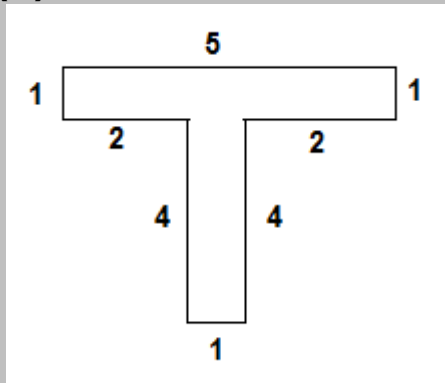


In the given figure, there are 5 squares each of side 5cm.

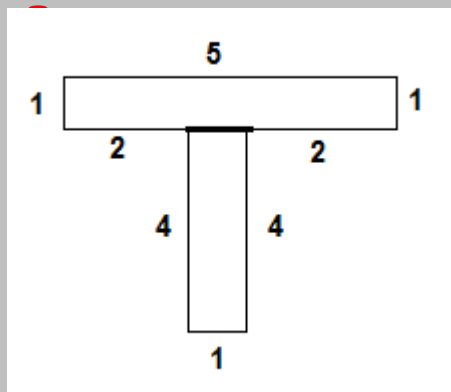
Area of one square = side x side
= $7 \times 7 = 49 \text{ cm}^2$

Area of 5 squares = $49 \times 5 = 245 \text{ cm}^2$

(c)



Ans.



Ans.

Area of Rectangle = length x breadth
= $5 \times 1 = 5 \text{ cm}^2$
= $4 \times 1 = 4 \text{ cm}^2$

Total Area = $5 + 4 = 9 \text{ cm}^2$

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 :

Ans.

Length of one tile = 12 cm

Breadth of the tile = 5 cm

$\therefore$ Area of 1 tile = length x breadth = 12 cm x 5 cm = 60 cm²

(a) 100 cm and 144 cm

Ans.

Length of the rectangular region = 144 cm

Breadth of the region = 100 cm

$\therefore$ Area of the rectangular region = length x breadth = 144 cm x 100 cm

= 14400 cm²

$\therefore$ Number of tiles needed to cover the whole rectangular region =

$\frac{14400}{60} = 240$ tiles

(b) 70 cm and 36 cm.

Length of the rectangular region = 70 cm

Breadth of the region = 36 cm

$\therefore$ Area of the rectangular region = length x breadth = 70 cm x 36 cm = 2520 sq cm

$\therefore$ Number of tiles needed to cover the whole rectangular region =

$\frac{2520}{60} = 42$ tiles.