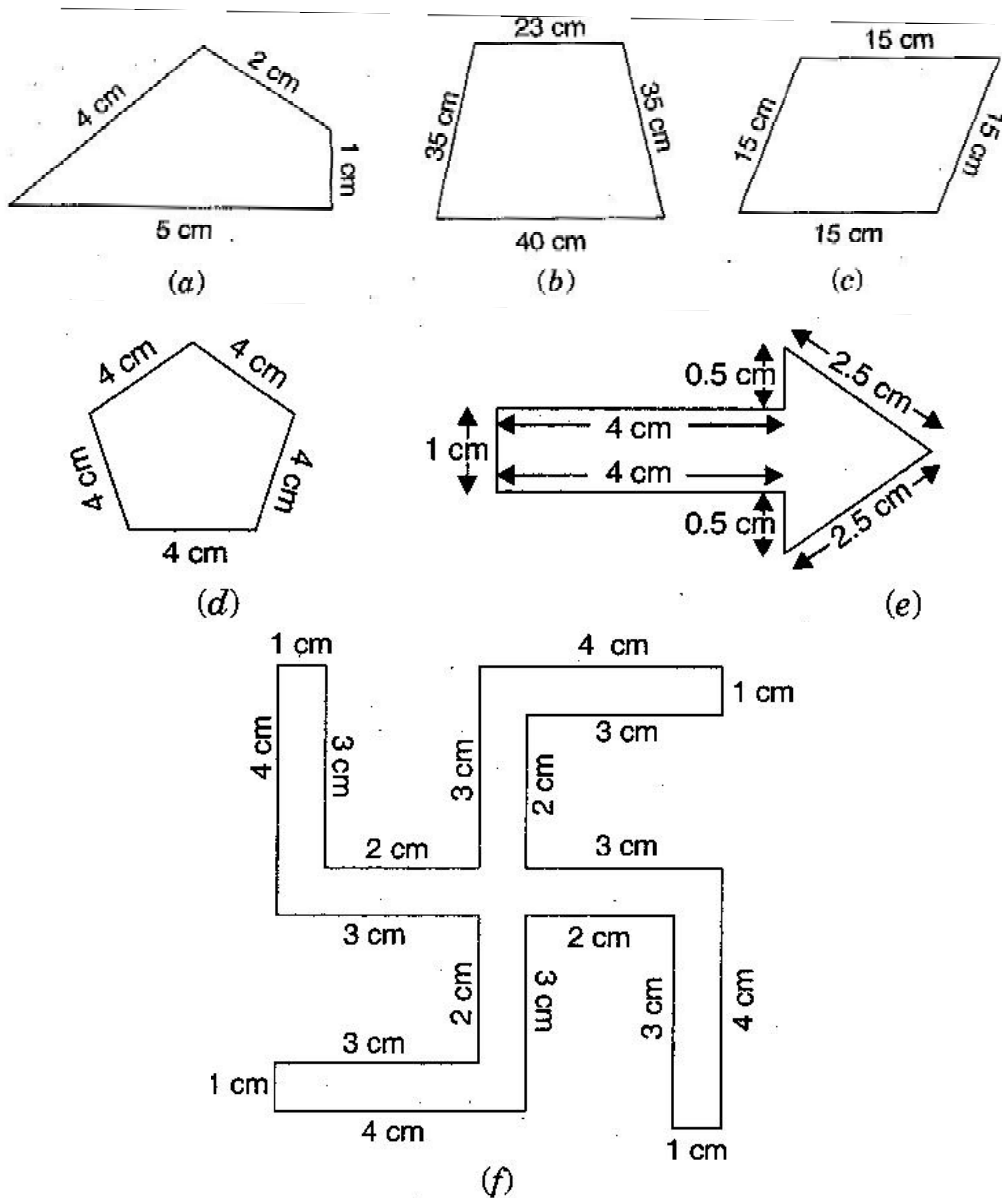

Class -VI Mathematics (Ex. 10.1)

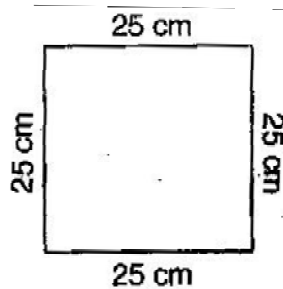
Questions

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

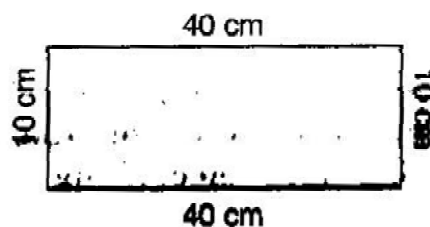


2. The lid of a rectangular box of sides 40 cm by 10 cm is sealed all round with tape. What is the length of the tape required?
3. A table-top measures 2 m 25 cm by 1 m 50 cm. What is the perimeter of the table-top?
4. What is the length of the wooden strip required to frame a photograph of length and breadth 32 cm and 21 cm respectively?
-

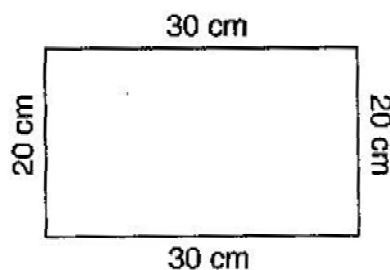
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5. A rectangular piece of land measures 0.7 km by 0.5 km. Each side is to be fenced with 4 rows of wires. What is the length of the wire needed?
 6. Find the perimeter of each of the following shapes:
 - (a) A triangle of sides 3 cm, 4 cm and 5 cm.
 - (b) An equilateral triangle of side 9 cm.
 - (c) An isosceles triangle with equal sides 8 cm each and third side 6 cm.
 7. Find the perimeter of a triangle with sides measuring 10 cm, 14 cm and 15 cm.
 8. Find the perimeter of a regular hexagon with each side measuring 8 cm.
 9. Find the side of the square whose perimeter is 20 m.
 10. The perimeter of a regular pentagon is 100 cm. How long is its each side?
 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?
 12. Two sides of a triangle are 12 cm and 14 cm. The perimeter of the triangle is 36 cm. What is the third side?
 13. Find the cost of fencing a square park of side 250 m at the rate of ₹ 20 per meter.
 14. Find the cost of fencing a rectangular park of length 175 m and breadth 125 m at the rate of ₹ 12 per meter.
 15. Sweety runs around a square park of side 75 m. Bulbul runs around a rectangular park with length of 60 m and breadth 45 m. Who covers less distance?
 16. What is the perimeter of each of the following figures? What do you infer from the answer?



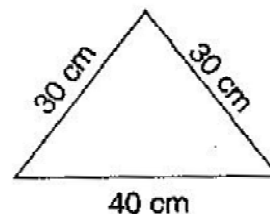
(a)



(b)

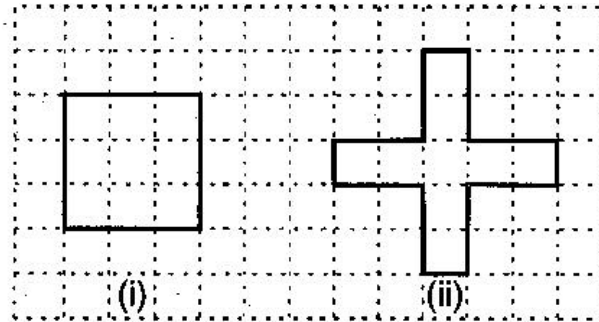


(c)



(d)

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



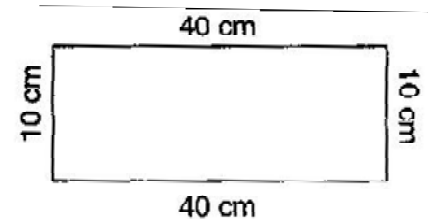
- (a) What is the perimeter of his arrangement?
- (b) Shari does not like his arrangement. She gets him to lay them out like a cross. What is the perimeter of her arrangement?
- (c) Which has greater perimeter?
- (d) Avneet wonders, if there is a way of getting an even greater perimeter. Can you find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

Class –VI Mathematics (Ex. 10.1)

Answers

1. (a) Perimeter = Sum of all the sides
 $= 4 \text{ cm} + 2 \text{ cm} + 1 \text{ cm} + 5 \text{ cm} = 12 \text{ cm}$
- (b) Perimeter = Sum of all the sides
 $= 23 \text{ cm} + 35 \text{ cm} + 40 \text{ cm} + 35 \text{ cm} = 133 \text{ cm}$
- (c) Perimeter = Sum of all the sides
 $= 15 \text{ cm} + 15 \text{ cm} + 15 \text{ cm} + 15 \text{ cm} = 60 \text{ cm}$
- (d) Perimeter = Sum of all the sides
 $= 4 \text{ cm} + 4 \text{ cm} + 4 \text{ cm} + 4 \text{ cm} + 4 \text{ cm} = 20 \text{ cm}$
- (e) Perimeter = Sum of all the sides
 $1 \text{ cm} + 4 \text{ cm} + 0.5 \text{ cm} + 2.5 \text{ cm} + 2.5 \text{ cm} + 0.5 \text{ cm} + 4 \text{ cm} = 15 \text{ cm}$
- (f) Perimeter = Sum of all the sides
 $= 4 \text{ cm} + 1 \text{ cm} + 3 \text{ cm} + 2 \text{ cm} + 3 \text{ cm} + 4 \text{ cm} + 1 \text{ cm} + 3 \text{ cm} + 2 \text{ cm} + 3 \text{ cm} + 4 \text{ cm}$
 $1 \text{ cm} + 3 \text{ cm} + 2 \text{ cm} + 3 \text{ cm} + 4 \text{ cm} + 1 \text{ cm} + 3 \text{ cm} + 2 \text{ cm} + 3 \text{ cm}$
 $= 52 \text{ cm}$

2. Total length of tape required = Perimeter of rectangle
 $= 2 (\text{length} + \text{breadth})$
 $= 2 (40 + 10)$
 $= 2 \times 50$
 $= 100 \text{ cm} = 1 \text{ m}$



Thus, the total length of tape required is 100 cm or 1 m.

3. Length of table top = 2 m 25 cm = 2.25 m
Breadth of table top = 1 m 50 cm = 1.50 m
Perimeter of table top = $2 \times (\text{length} + \text{breadth})$
 $= 2 \times (2.25 + 1.50)$
 $= 2 \times 3.75 = 7.50 \text{ m}$

Thus, perimeter of table top is 7.5 m.

4. Length of wooden strip = Perimeter of photograph
Perimeter of photograph = $2 \times (\text{length} + \text{breadth})$
 $= 2 (32 + 21)$
 $= 2 \times 53 \text{ cm} = 106 \text{ cm}$

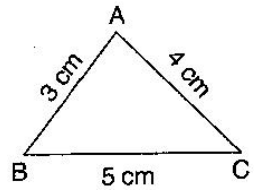
Thus, the length of the wooden strip required is equal to 106 cm.

5. Since the 4 rows of wires are needed. Therefore the total length of wires is equal to 4 times the perimeter of rectangle.
-

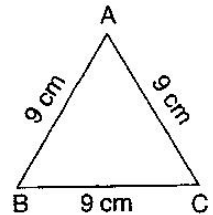
$$\begin{aligned}\text{Perimeter of field} &= 2 \times (\text{length} + \text{breadth}) = 2 \times (0.7 + 0.5) = 2 \times 1.2 = 2.4 \text{ km} \\ &= 2.4 \times 1000 \text{ m} = 2400 \text{ m}\end{aligned}$$

Thus, the length of wire = $4 \times 2400 = 9600 \text{ m} = 9.6 \text{ m}$

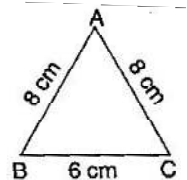
6. (a) Perimeter of $\triangle ABC = AB + BC + CA$
 $= 3 \text{ cm} + 5 \text{ cm} + 4 \text{ cm}$
 $= 12 \text{ cm}$



(b) Perimeter of equilateral $\triangle ABC = 3 \times \text{side}$
 $= 3 \times 9 \text{ cm}$
 $= 27 \text{ cm}$



(c) Perimeter of $\triangle ABC = AB + BC + CA$
 $= 8 \text{ cm} + 6 \text{ cm} + 8 \text{ cm}$
 $= 22 \text{ cm}$



7. Perimeter of triangle = Sum of all three sides
 $= 10 \text{ cm} + 14 \text{ cm} + 15 \text{ cm}$
 $= 39 \text{ cm}$

Thus, perimeter of triangle is 39 cm.

8. Perimeter of Hexagon = $6 \times \text{length of one side}$
 $= 6 \times 8 \text{ m}$
 $= 48 \text{ m}$

Thus, the perimeter of hexagon is 48 m.

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

$$\Rightarrow 20 = 4 \times \text{side} \qquad \Rightarrow \text{side} = \frac{20}{4} = 5 \text{ cm}$$

Thus, the side of square is 5 cm.

10. Perimeter of regular pentagon = 100 cm

$$\Rightarrow 5 \times \text{side} = 100 \text{ cm} \qquad \Rightarrow \text{side} = \frac{100}{5} = 20 \text{ cm}$$

Thus, the side of regular pentagon is 20 cm.

11. Length of string = Perimeter of each figure

(a) Perimeter of square = 30 cm

$$\Rightarrow 4 \times \text{side} = 30 \text{ cm} \qquad \Rightarrow \text{side} = \frac{30}{4} = 7.5 \text{ cm}$$

Thus, the length of each side of square is 7.5 cm.

(b) Perimeter of equilateral triangle = 30 cm

$$\Rightarrow 3 \times \text{side} = 30 \text{ cm} \qquad \Rightarrow \text{side} = \frac{30}{3} = 10 \text{ cm}$$

Thus, the length of each side of equilateral triangle is 10 cm.

(c) Perimeter of hexagon = 30 cm

$$\Rightarrow 6 \times \text{side} = 30 \text{ cm} \qquad \Rightarrow \text{side} = \frac{30}{6} = 5 \text{ cm}$$

Thus, the side of each side of hexagon is 5 cm.

12. Let the length of third side be x cm.

Length of other two side are 12 cm and 14 cm.

Now, Perimeter of triangle = 36 cm

$$\Rightarrow 12 + 14 + x = 36 \qquad \Rightarrow 26 + x = 36$$

$$\Rightarrow x = 36 - 26 \qquad \Rightarrow x = 10 \text{ cm}$$

Thus, the length of third side is 10 cm.

13. Side of square = 250 m

$$\begin{aligned} \text{Perimeter of square} &= 4 \times \text{side} \\ &= 4 \times 250 = 1000 \text{ m} \end{aligned}$$

Since, cost of fencing of per meter = ₹ 20

Therefore, cost of fencing of 1000 meters = $20 \times 1000 = ₹ 20,000$

14. Length of rectangular park = 175 m

Breadth of rectangular park = 125 m

$$\begin{aligned} \text{Perimeter of park} &= 2 \times (\text{length} + \text{breadth}) \\ &= 2 \times (175 + 125) \\ &= 2 \times 300 = 600 \text{ m} \end{aligned}$$

Since, cost of fencing park per meter = ₹ 12

Therefore, cost of fencing park of 600 m = $12 \times 600 = ₹ 7,200$

15. Distance covered by Sweety = Perimeter of square park

$$\begin{aligned} \text{Perimeter of square} &= 4 \times \text{side} \\ &= 4 \times 75 = 300 \text{ m} \end{aligned}$$

Thus, distance covered by Sweety is 300 m.

Now, distance covered by Bulbul = Perimeter of rectangular park

$$\begin{aligned} \text{Perimeter of rectangular park} &= 2 \times (\text{length} + \text{breadth}) \\ &= 2 \times (60 + 45) \\ &= 2 \times 105 = 210 \text{ m} \end{aligned}$$

Thus, Bulbul covers the distance of 210 m.

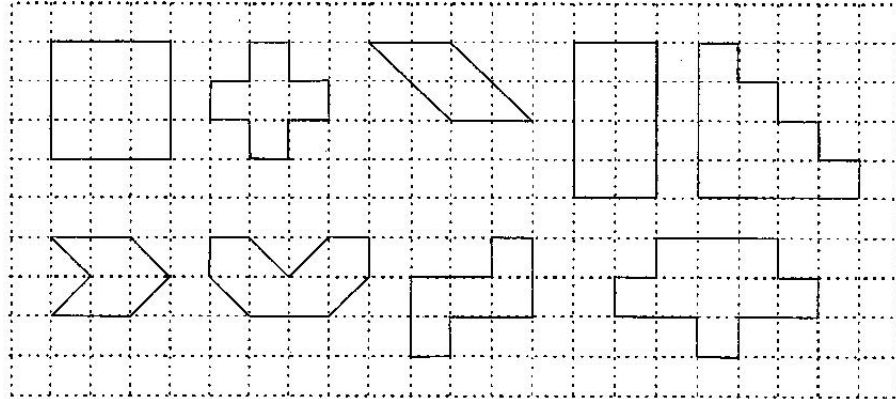
And Bulbul covers less distance.

-
16. (a) Perimeter of square = $4 \times \text{side}$
 $= 4 \times 25 = 100 \text{ cm}$
- (b) Perimeter of rectangle = $2 \times (\text{length} + \text{breadth})$
 $= 2 \times (40 + 10)$
 $= 2 \times 50 = 100 \text{ cm}$
- (c) Perimeter of rectangle = $2 \times (\text{length} + \text{breadth})$
 $= 2 \times (30 + 20)$
 $= 2 \times 50 = 100 \text{ cm}$
- (d) Perimeter of triangle = Sum of all sides
 $= 30 \text{ cm} + 30 \text{ cm} + 40 \text{ cm} = 100 \text{ cm}$
- Thus, all the figures have same perimeter.

17. (a) 6 m
(b) 10 m
(c) Second arrangement has greater perimeter.
(d) Yes, if all the squares are arranged in row, the perimeter be 10 cm.
-

Class -VI Mathematics (Ex. 10.2)
Questions

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



Class -VI Mathematics (Ex. 10.2)

Answers

1. (a) Number of filled square = 9
∴ Area covered by squares = $9 \times 1 = 9$ sq. units
- (b) Number of filled squares = 5
∴ Area covered by filled squares = $5 \times 1 = 5$ sq. units
- (c) Number of full filled squares = 2
Number of half filled squares = 4
∴ Area covered by full filled squares = $2 \times 1 = 2$ sq. units
And Area covered by half filled squares = $\cancel{4} \times \frac{1}{\cancel{2}} = 2$ sq. units
∴ Total area = $2 + 2 = 4$ sq. units
- (d) Number of filled squares = 8
∴ Area covered by filled squares = $8 \times 1 = 8$ sq. units
- (e) Number of filled squares = 10
∴ Area covered by filled squares = $10 \times 1 = 10$ sq. units
- (f) Number of full filled squares = 2
Number of half filled squares = 4
∴ Area covered by full filled squares = $2 \times 1 = 2$ sq. units
And Area covered by half filled squares = $\cancel{4} \times \frac{1}{\cancel{2}} = 2$ sq. units
∴ Total area = $2 + 2 = 4$ sq. units
- (g) Number of full filled squares = 4
Number of half filled squares = 4
∴ Area covered by full filled squares = $4 \times 1 = 4$ sq. units
And Area covered by half filled squares = $\cancel{4} \times \frac{1}{\cancel{2}} = 2$ sq. units
∴ Total area = $4 + 2 = 6$ sq. units
- (h) Number of filled squares = 5
∴ Area covered by filled squares = $5 \times 1 = 5$ sq. units
-

(i) Number of filled squares = 9

∴ Area covered by filled squares = $9 \times 1 = 9$ sq. units

(j) Number of full filled squares = 2

Number of half filled squares = 4

∴ Area covered by full filled squares = $2 \times 1 = 2$ sq. units

And Area covered by half filled squares = $\cancel{4} \times \frac{1}{2} = 2$ sq. units

∴ Total area = $2 + 2 = 4$ sq. units

(k) Number of full filled squares = 4

Number of half filled squares = 2

∴ Area covered by full filled squares = $4 \times 1 = 4$ sq. units

And Area covered by half filled squares = $\cancel{2} \times \frac{1}{2} = 1$ sq. units

∴ Total area = $4 + 1 = 5$ sq. units

(l) Number of full filled squares = 3

Number of half filled squares = 10

∴ Area covered by full filled squares = $3 \times 1 = 3$ sq. units

And Area covered by half filled squares = $\cancel{10} \times \frac{1}{2} = 5$ sq. units

∴ Total area = $3 + 5 = 8$ sq. units

(m) Number of full filled squares = 7

Number of half filled squares = 14

∴ Area covered by full filled squares = $7 \times 1 = 7$ sq. units

And Area covered by half filled squares = $\cancel{14} \times \frac{1}{2} = 7$ sq. units

∴ Total area = $7 + 7 = 14$ sq. units

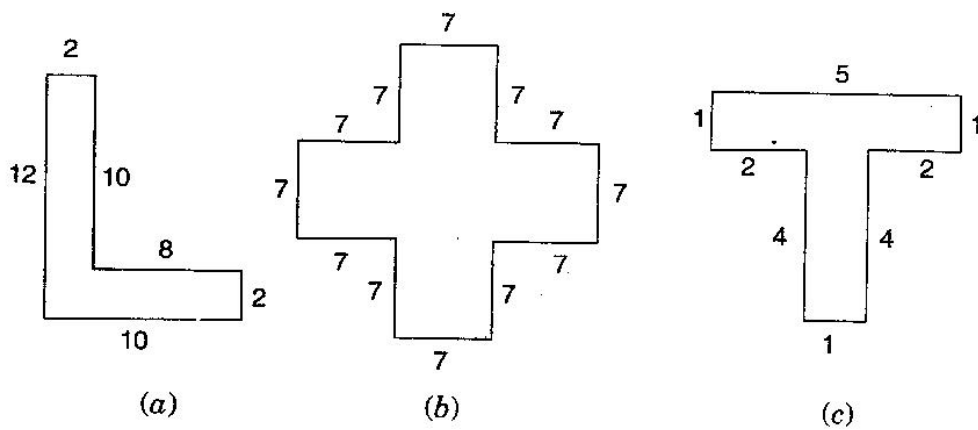
(n) Number of full filled squares = 10

Number of half filled squares = 16

∴ Area covered by full filled squares = $10 \times 1 = 10$ sq. units

And Area covered by half filled squares = $\cancel{16} \times \frac{1}{2} = 8$ sq. units

∴ Total area = $10 + 8 = 18$ sq. units



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

Class -VI Mathematics (Ex. 10.3)

Answers

1. (a) Area of rectangle = length x breadth
= 3 cm x 4 cm = 12 cm²
(b) Area of rectangle = length x breadth
= 12 m x 21 m = 252 m²
(c) Area of rectangle = length x breadth
= 2 km x 3 km = 6 km²
(d) Area of rectangle = length x breadth
= 2 m x 70 cm = 2 m x 0.7 m = 1.4 m²
2. (a) Area of square = side x side = 10 cm x 10 cm = 100 cm²
(b) Area of square = side x side = 14 cm x 14 cm = 196 cm²
(c) Area of square = side x side = 5 m x 5 m = 25 m²
3. (a) Area of rectangle = length x breadth = 9 m x 6 m = 54 m²
(b) Area of rectangle = length x breadth = 3 m x 17 m = 51 m²
(c) Area of rectangle = length x breadth = 4 m x 14 m = 56 m²

Thus, the rectangle (c) has largest area, i.e. 56 m² and rectangle (b) has smallest area, i.e., 56 m².

4. Length of rectangle = 50 m and Area of rectangle = 300 m²
Since, Area of rectangle = length x breadth

$$\text{Therefore, Breadth} = \frac{\text{Area of rectangle}}{\text{Length}} = \frac{300}{50} = 6 \text{ m}$$

Thus, the breadth of the garden is 6 m.

5. Length of land = 500 m and Breadth of land = 200 m
Area of land = length x breadth = 500 m x 200 m = 1,00,000 m²
∴ Cost of tilling 100 sq. m of land = ₹ 8
∴ Cost of tilling 1,00,000 sq. m of land = $\frac{8 \times 100000}{100} = ₹ 8000$
6. Length of table = 2 m and breadth of table = 1 m 50 cm = 1.50 m
Area of table = length x breadth
= 2 m x 1.50 m = 3 m²
7. Length of room = 4 m and breadth of room = 3 m 50 cm = 3.50 m
-

$$\begin{aligned}\text{Area of carpet} &= \text{length} \times \text{breadth} \\ &= 4 \times 3.50 = 14 \text{ m}^2\end{aligned}$$

8. Length of floor = 5 m and breadth of floor = 4 m

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

Now, Side of square carpet = 3 m

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

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

9. Side of square bed = 1 m

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

$$\therefore \text{Area of 5 square beds} = 1 \times 5 = 5 \text{ m}^2$$

Now, Length of land = 5 m and breadth of land = 4 m

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

$$\begin{aligned}\text{Area of remaining part} &= \text{Area of land} - \text{Area of 5 flower beds} \\ &= 20 \text{ m}^2 - 5 \text{ m}^2 = 15 \text{ m}^2\end{aligned}$$

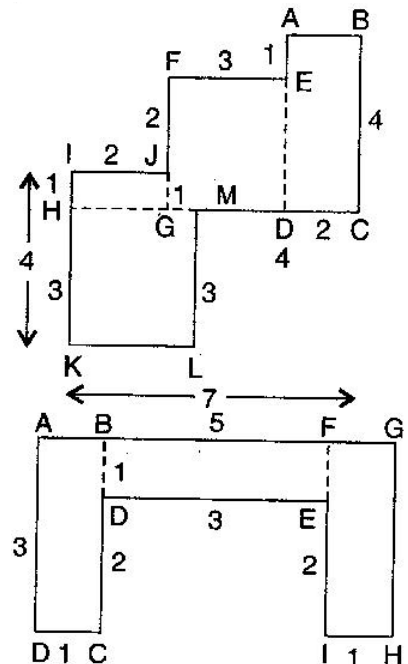
10. (a) Area of HKLM = $3 \times 3 = 9 \text{ cm}^2$

$$\text{Area of IJGH} = 1 \times 2 = 2 \text{ cm}^2$$

$$\text{Area of FEDG} = 3 \times 3 = 9 \text{ cm}^2$$

$$\text{Area of ABCD} = 2 \times 4 = 8 \text{ cm}^2$$

$$\text{Total area of the figure} = 9 + 2 + 9 + 8 = 28 \text{ cm}^2$$



- (b) Area of ABCD = $3 \times 1 = 3 \text{ cm}^2$

$$\text{Area of BDEF} = 3 \times 1 = 3 \text{ cm}^2$$

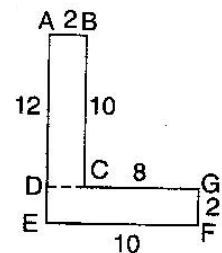
$$\text{Area of FGHI} = 3 \times 1 = 3 \text{ cm}^2$$

$$\text{Total area of the figure} = 3 + 3 + 3 = 9 \text{ cm}^2$$

11. (a) Area of rectangle ABCD = $2 \times 10 = 20 \text{ cm}^2$

$$\text{Area of rectangle DEFG} = 10 \times 2 = 20 \text{ cm}^2$$

$$\text{Total area of the figure} = 20 + 20 = 40 \text{ cm}^2$$



(b) There are 5 squares each of side 7 cm.

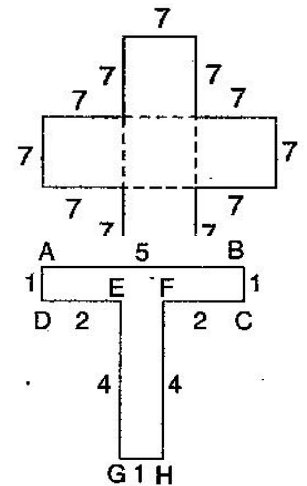
$$\text{Area of one square} = 7 \times 7 = 49 \text{ cm}^2$$

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

(c) Area of rectangle ABCD = $5 \times 1 = 5 \text{ cm}^2$

$$\text{Area of rectangle EFGH} = 4 \times 1 = 4 \text{ cm}^2$$

$$\text{Total area of the figure} = 5 + 4 \text{ cm}^2$$



12. (a) Area of region = $100 \text{ cm} \times 144 \text{ cm} = 14400 \text{ cm}^2$

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

$$\begin{aligned} \text{Number of tiles} &= \frac{\text{Area of region}}{\text{Area of one tile}} \\ &= \frac{14400}{60} = 240 \end{aligned}$$

Thus, 240 tiles are required.

(b) Area of region = $70 \text{ cm} \times 36 \text{ cm} = 2520 \text{ cm}^2$

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

$$\begin{aligned} \text{Number of tiles} &= \frac{\text{Area of region}}{\text{Area of one tile}} \\ &= \frac{2520}{60} = 42 \end{aligned}$$

Thus, 42 tiles are required.