

Name : _____

Grade : VI

Subject : Mathematics

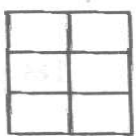
Chapter: 10 Mensuration

Objective Type Questions

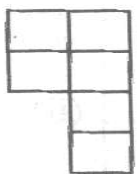
1 Marks

I. Multiple choice questions

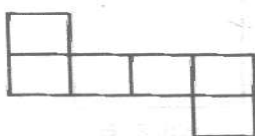
1. Following figures are formed by joining six unit square. Which figure has the smallest perimeter?



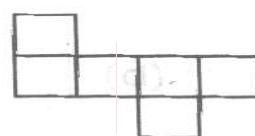
(i)



(ii)



(iii)



(iv)

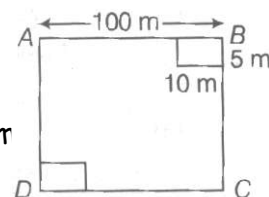
a. (ii)

b. (iii)

c. (iv)

d. (i)

2. A square shaped park ABCD of side 100 m has two equal rectangular flower beds each of size 10 m x 5 m (see the figure). Length of the boundary of the remaining park is



a. 360 m

b. 400 m

c. 340 cm

d. 460 cm

3. The perimeter of a triangle whose sides are 1.2 cm, 3.4 cm and 1.7 cm, is

a. 6.3 cm

b. 6.2 m

c. 6.5 cm

d. 6.4 cm

4. The perimeter of a rectangle, whose sides are 1 m 30 cm and 70 cm, is

a. 20 m

b. 4 m

c. 0.2 m

d. 2 m 30 cm

5. The side of a square is 10 cm. how many times will the new perimeter become, if the side of the square is doubled?

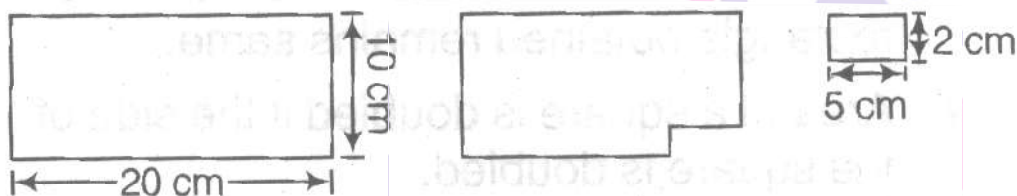
a. 2 times

b. 4 times

c. 6 times

d. 8 times

6. The perimeter of a square, whose each side of the square is doubled?
- a. 5.4 m b. 5.14 m c. 5.24 m d. 5.04
7. The perimeter of an equilateral triangle of side 5 cm each is
- a. $\frac{\sqrt{3}}{4} \times 15$ cm b. $\frac{\sqrt{3}}{4} \times 10$ cm c. 10 cm d. 15 cm
8. Cost of fencing a rectangular park of length 200 m and width 150 m at the rate of ₹ 25 per metre is
- a. ₹ 17500 b. ₹ 1750 c. ₹ 1705 d. ₹ 10750
9. Length and breadth of a rectangular sheet of paper are 20 cm and 10 cm, respectively. A rectangular piece is cut from the sheet as shown in figure. Which of the following statements is correct for the remaining sheet?



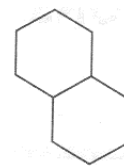
- a. Perimeter remains same but area changes
- b. Area remains same, but perimeter changes
- c. Both area and perimeter are changing
- d. Both area and perimeter remain the same
10. The top of a table is 1 m 20 cm wide and 1 m 50 cm long. The perimeter of this top is
- a. 5.30 m b. 5.40 m c. 5.50 m d. 5.60 m

1.(d)	2. (b)	3. (a)	4. (b)	5. (a)	6. (c)	7. (d)	8. (a)	9. (a)	10. (b)
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II. Multiple choice questions

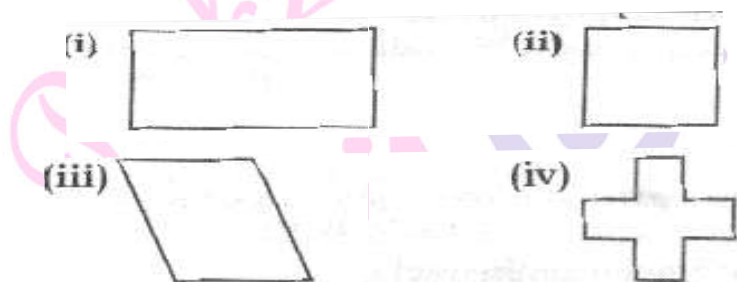
1. The side of a square is 10 cm. how many times will the new perimeter become if the side of square is doubled?
- a. 2 times b. 4 times c. 6 times d. 8 times

2. Two regular Hexagons of perimeter 30cm each are joined as shown in Fig. The perimeter of the new figure is:



- a. 65 cm b. 60 cm c. 55 cm d. 50 cm

3. In given Fig. Which of the following is a regular Polygon? All have equal side except (i)



- a. (i) b. (ii) c. (iii) d. (iv)

4. The length and breadth of a rectangular fields are 25 m & 10 m respectively. What is its perimeter?

- a. 250 m b. 35 m c. 70 m d. 5 m

5. What distance Aslam will travel if he takes three rounds of a square park of side 50 m?

- a. 100 m b. 600 m c. 2500 m d. 10000 m

6. The perimeter of a regular pentagon is 100m. how long is its each side?

- a. 400 m b. 20 m c. 500 m d. 50 m

7. Which of the following is the area of the rectangle of length 10 cm & breadth 6 cm?

- a. 40 cm^2 b. 32 cm^2 c. 50 cm^2 d. 60 cm^2

8. What is the area of the square of side 5 cm?

- a. 20 cm^2 b. 25 cm^2 c. 50 cm^2 d. 60 cm^2

9. One side of a regular pentagon is 5 cm. Its perimeter is:

- a. 10 cm b. 25 cm c. 15 cm d. 50 cm

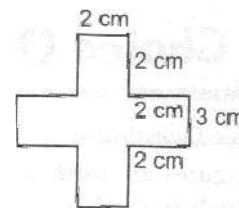
10. The distance around a 2 dimensional shape is:

- a. Area b. perimeter c. diagonal d. none of these

11. The l and b of a rectangle are 5.7 cm and 4.3 cm respectively. Its perimeter is:

- a. 10 cm b. 24.5 cm c. 20 cm d. 40 cm

12. The perimeter of the following figure is:



- a. 42 cm b. 25 cm c. 36 cm d. 26 cm

13. The amount of space inside boundary of a 2-D shape is:

- a. Perimeter b. diagonal c. area d. circumference

14. The circumference of a circle is 88 cm. Its diameter is:

- a. 28 cm b. 42 cm c. 56 cm d. none of these

15. The diameter of a wheel of a car is 70 cm. How much distance will it cover in making 50 revolutions?

- a. 350 m b. 110 m c. 165 m d. 220 m

16. A lane 150 m long and 9 m wide is to be paved with bricks, each measuring 22.5 cm by 7.5 cm. how many bricks are required?

- a. 65000 b. 70000 c. 75000 d. 80000

17. A room is 5 m 40 cm long and 4m 50 cm broad. Its area is:

- a. 24.3 m² b. 34.3 m² c. 25 m² d. 98.01 m²

18. How many envelopes can be made out of a sheet of paper 72 cm by 48 cm, each envelope requires a paper of size 18 cm by 12 cm?

- a. 4 b. 8 c. 12 d. 16

1. (a)	2. (d)	3. (b)	4. (c)	5. (b)	6. (b)	7. (d)
8. (b)	9. (b)	10. (b)	11. (c)	12. (d)	13. (c)	14. (a)
15. (b)	16. (d)	17. (a)	18. (d)			

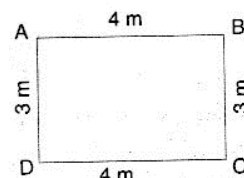
III. Multiple choice questions

1. Perimeter of a rectangle =

- a. Length x Breadth b. Length x Breadth
c. 2 x (Length + Breadth) d. 2 x (Length x Breadth)

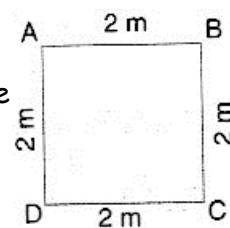
2. Perimeter of a square =
 a. $4 \times$ Length of a side
 b. $2 \times$ Length of a side
 c. $3 \times$ Length of a side
 d. $6 \times$ Length of a side
3. Perimeter of an equilateral triangle =
 a. $2 \times$ Length of a side
 b. $3 \times$ Length of a side
 c. $4 \times$ Length of a side
 d. $6 \times$ Length of a side
4. Area of a rectangle =
 a. Length \times Breadth
 b. Length + Breadth
 c. $2 \times$ (Length + Breadth)
 d. $2 \times$ (Length \times Breadth)
5. Area of a square =
 a. Side \times side
 b. $4 \times$ Length of a side
 c. $2 \times$ Length of a side
 d. $6 \times$ Length of a side
6. Perimeter of a regular pentagon =
 a. $4 \times$ Length of a side
 b. $3 \times$ Length of a side
 c. $6 \times$ Length of a side
 d. $5 \times$ Length of a side
7. Perimeter of a regular hexagon =
 a. $3 \times$ Length of a side
 b. $4 \times$ Length of a side
 c. $5 \times$ Length of a side
 d. $6 \times$ Length of a side
8. Apala went to a park 20 m long and 10 m wide. She took one complete round of it. The distance covered by her is
 a. 30 m
 b. 60 m
 c. 20 m
 d. 10 m
9. The perimeter of the figure is

- a. 12 m
 b. 14 m
 c. 24 m
 d. 7 m



10. The perimeter of the figure is

- a. 8 m
 b. 16 m
 c. 4 m
 d. none of these

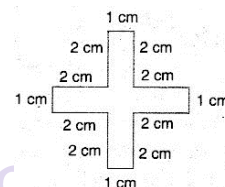
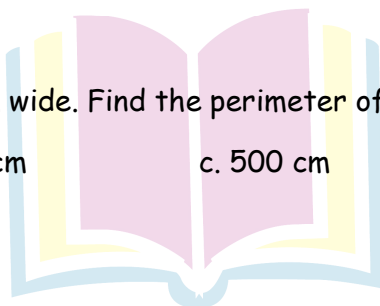


11. A page is 25 cm long and 20 cm wide. Find the perimeter of this page.

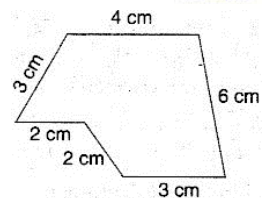
- a. 90 cm
 b. 45 cm
 c. 500 cm
 d. 5 cm

12. The perimeter of the figure is

- a. 5 cm
 b. 10 cm
 c. 15 cm
 d. 20 cm



13. The perimeter of the figure is



- a. 20 cm b. 10 cm c. 24 cm d. 15 cm

14. Menu wants to put a lace border all around a rectangular table cover 2 m long and 1 m wide.

Find the length of the lace required by Meenu.

- a. 3 m b. 4 m c. 5 m d. 6 m

15. Find the perimeter of a rectangle whose length and breadth are 9 cm and 1 cm respectively.

- a. 10 cm b. 20 cm c. 30 cm d. 40 cm

16. An athlete takes 10 rounds of a rectangular park, 40 m long and 30 m wide. Find the total distance covered by him.

- a. 1400 m b. 700 m c. 70m d. 2800 m

17. Find the cost of fencing a rectangular park of length 10 m and breadth 5 m at the rate of ₹ 10 per metre.

- a. ₹300 b. 600 c. ₹ 150 d. ₹ 1200

18. The perimeter of a square of side 1 m is

- a. 1 cm b. 2 cm c. 3 cm d. 4 m

19. The perimeter of an equilateral triangle of side 1 m is

- a. 1 m b. 2m c. 3 m d. 6 m

20. The perimeter of a regular pentagon of side 1 m is

- a. 3 m b. 10 m c. 15 m d. 20 m

21. The perimeter of a regular hexagon of side

- a. 3 m b. 2 m c. 4 d. 6 m

22. Find the distance travelled by Sangeeta if she takes 5 rounds of a square park of side 10 m.

- a. 200 m b. 100 m c. 400 m d. 800 m

23. The perimeter of an equilateral triangle is 9 m. find the length of the side.

- a. 1 m b. 2 m c. 3 m d. 9 m

24. The perimeter of a square is 8 m. find the length of the side.

- a. 1 m b. 2 m c. 4 m d. 8 m

25. The perimeter of a regular pentagon is 10 m. find the length of the side.

- a. 1 m b. 2m c. 5 m d. 10 m

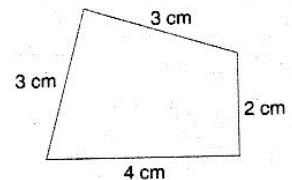
26. The perimeter of a regular hexagon is 12 m. Find the length of the side.

- a. 2 m b. 3 m c. 4 m d. 6 m



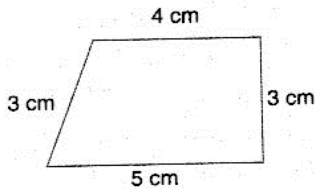
27. The perimeter of the figure is

- a. 12cm b. 7cm c. 6 d. 24 cm



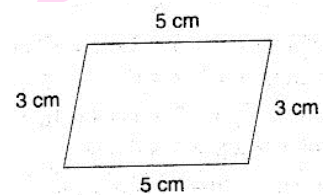
28. The perimeter of the figure is

- a. 15 cm b. 30 c. 7.5 cm d. 20 cm



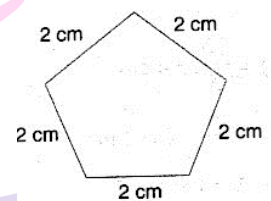
29. The perimeter of the figure is

- a. 8 b. 12 cm c. 15 cm d. 16 cm



30. The perimeter of the figure is

- a. 10 cm b. 20 cm c. 15 cm d. 50 cm



31. The perimeter of a triangle of sides 2 cm, 3 cm and 4 cm is

- a. 9cm b. 18cm c. 27 cm d. 36 cm

32. Two sides of a triangle are 5 cm and 4 cm. the perimeter of the triangle is 12 cm. the third side has length.

- a. 1 cm b. 2 cm c. 3 cm d. 6 cm

33. A rectangular piece of land measures 0.5 km by 0.25 km. Each side is to be fenced with 4 rounds of wire. What is the length of the wire needed?

- a. 2 km b. 3 km c. 4 km d. 6 km

34. The area of a rectangle of length 2 cm and breadth 1 cm is

- a. 1 cm^2 b. 2 cm^2 c. 4 cm^2 d. 8 cm^2

35. The area of a square of side 1 cm is

- a. 1 cm^2 b. 4 cm^2 c. 9 cm^2 d. 16 cm^2

36. The area of a rectangular sheet of paper is 20 cm^2 . Its length is 5 cm. Find its width.

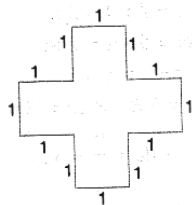
- a. 1 cm b. 2 cm c. 3 cm d. 4 cm

37. The perimeter of a rectangular piece of cardboard is 6 m. its breadth is 1 m. Find its length.

- a. 1 m b. 2 m c. 3 m d. 6 m

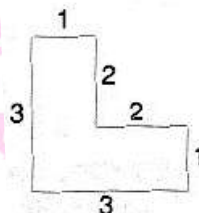


38. The area of the figure is



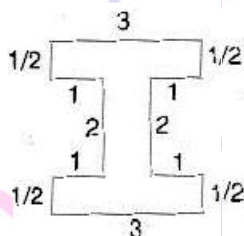
- a. 1 sq. unit b. 5 sq. unit c. 4 sq. unit d. 6 sq. unit

39. The area of the figure in (sq. unit) is



- a. 1 b. 5 c. 4 d. 6

40. The area of the figure is



- a. 5 sq. unit b. 9 sq. unit c. 7 sq. unit d. 8 sq. unit

1.(c)	2. (a)	3. (b)	4. (a)	5. (a)	6. (d)	7. (d)	8. (b)	9. (b)	10. (a)
11. (a)	12. (d)	13. (a)	14. (d)	15. (b)	16. (a)	17. (a)	18. (d)	19. (c)	20. (a)
21. (d)	22. (a)	23. (c)	24. (b)	25. (b)	26. (a)	27. (a)	28. (a)	29. (d)	30. (a)
31. (a)	32. (c)	33. (d)	34. (b)	35. (a)	36. (d)	37. (b)	38. (b)	39. (b)	40. (a)

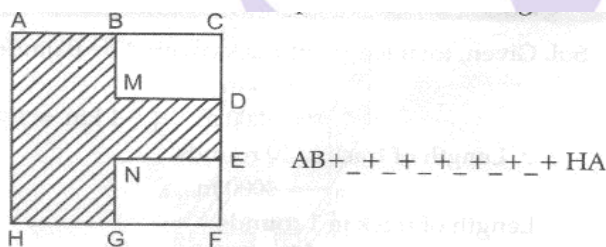
I. Fill in the blanks

- Diagonal of a square is _____ side.
- Standard unit of area is _____.
- The area of a play ground is 1190 m^2 . If its length is 35 m, the width is _____.
- The area of a rectangular park whose length is 30 m and width is 20 m, is _____.
- The perimeter of a square whose area is 64 m^2 is _____.
- The number of square tiles, which can be fitted on a floor of dimension 40 m by 30 m and size of tile is 2 m x 2 m is _____.

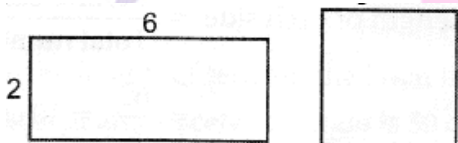
1. $\sqrt{2}$	2. Cm^2 or m^2	3. Area of play ground $= l \times b$ $\Rightarrow 1190 = 35 b$ $\Rightarrow b = \frac{1190}{35} = 34 \text{ m.}$
4. Area of rectangular park = $l + b = 30 \times 20 =$ 600 sq m.	5. Area of a square = Side x Side $\Rightarrow 64 = \text{Side} \times \text{Side} \Rightarrow 8 \times 8 = \text{Side} \times \text{Side} \Rightarrow \text{Side} = 8 \text{ m}$ Perimeter = $4 \times \text{Side} = 4 \times 8 = 32 \text{ m}$	6. Number of tiles = $\frac{\text{Area of the floor}}{\text{Area of one tile}} =$ $\frac{40 \times 30}{2 \times 2} = \frac{1200}{4} = 300$

II. Fill in the blanks

1. Perimeter of the shaded portion in Given Fig.



2. The amount of region enclosed by a plane closed figure is called its _____.
3. Area of a rectangle with length 5 cm and breadth 3 cm is _____.
4. A rectangle and a square have the same perimeter see fig.,



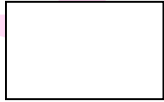
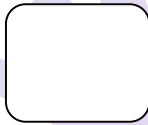
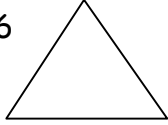

- a. The area of the rectangle is _____.
- b. The area of the square is _____.
5. Sum of the side of a square = _____.
6. Length of a rectangle = _____.
7. Breadth of a rectangle = _____.
8. Side of a regular triangle = _____.
9. Area of a square = _____.
10. Area of rectangle = _____.
11. Length of a rectangle = _____.
12. Breadth of a rectangle = _____.

1. $BM + MD + DE +$ $EN + NG + GH$	2. Area	3. 15 sq cm	4. a. 12 sq units b. 16 sq units
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5. perimeter	6. $\left(\frac{\text{Perimeter}}{2} - \text{Breadth}\right)$	7. $\left(\frac{\text{Perimeter}}{2} - \text{Length}\right)$	8. $\left(\frac{\text{Perimeter}}{3}\right)$
9. Side x Side	10. $l \times b$	11. $\frac{\text{Area}}{\text{Bradth}}$	12. $\frac{\text{Area}}{\text{Length}}$


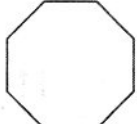

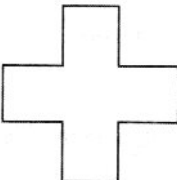
I. Match the followings

I. Match the Column I and with Column II.

	Shapes		Perimeter
a.	 4 6 Rectangle	(i)	10
b.	 4 Square	(ii)	18
c.	 6 6 6 Equilateral triangle	(iii)	20
d.	 4 4 2 Isosceles triangle	(iv)	16

a. (iii)	b. (iv)	c. (ii)	d. (i)
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II. Match the followings

Column A	Column B
a. 	i. 16 cm
b. 	ii. 20 cm
c. 	iii. 24 cm
d. 	iv. 28 cm

III. Match the followings

Column A	Column B
a. Area of rectangle	i. πr^2
b. area of a square	ii. $4 \times \text{Side}$
c. Perimeter of a rectangle	iii. $l \times b$
d. Perimeter of a square	iv. $(\text{side})^2$
e. Area of a circle	v. $2(l + b)$

(I)	a. (iv)	b.(i)	c. (ii)	d. (iii)	
(II)	a.(iii)	b.(iii)	c. (ii)	d. (i)	
(III)	a.(iii)	b.(iv)	c. (v)	d. (ii)	e. (i)

I. True or False

1. If the side of a square is doubled, then its area becomes four times.
2. 1 hectare = $100 \times 100 \text{ m}^2$.
3. Perimeter of rectangle is $(l + b)$.
4. If length of a rectangle is halved and breadth is doubled, then the area of the rectangle obtained remains same.
5. Area of a square is doubled if the side of the square is doubled.
6. Perimeter of a regular octagon of side 6 cm is 36 cm.
7. A farmer who wants to fence his field, must find the perimeter of the field.
8. 1 sq m = 100 cm.

1. True	2. True	3. False	4. True	5. False	6. False	7. True	8. False
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II. True or False

1. An engineer who plans to build a compound wall on all sides of a house must find the area of the compound.
2. To find the cost of painting a wall we need to find the perimeter of the wall.
3. To find the cost of a frame of a picture, we need to find the perimeter of the picture.
4. A rectangle and square can have same perimeter.
5. We find perimeter for plastering a room.
6. We find area for polishing a surface.
7. We find area for printing a saree.
8. $1 \text{ mm}^2 = 100 \text{ cm}^2$.
9. While calculation area by square paper we neglect half squares.

1. False	2. False	3. True	4. True	5. False	6. True	7. True
8. False	9. False					

I. Very Short Answer Type Questions

1. Find the perimeter of a triangle, whose three sides are 5 cm, 6 cm and 7 cm, respectively.

$$\begin{aligned} \text{Perimeter of a triangle} &= \text{Sum of its all sides} = a + b + c \\ &= (5 + 6 + 7) \text{ cm} = 18 \text{ cm} \end{aligned}$$

2. Find the perimeter of an equilateral triangle, whose each side is 5 cm.

$$\begin{aligned} \text{Perimeter of an equilateral triangle} &= 3 \times \text{Side of length} \\ &= 3 \times 5 = 15 \text{ cm} \end{aligned}$$

3. Find the area of a rectangle, whose length and width are 10 cm and 6 cm, respectively?

$$\text{Given that, length } (l) = 10 \text{ cm}$$

$$\text{And width } (b) = 6 \text{ cm}$$

We know that, the perimeter of a rectangle

$$\begin{aligned} &= 2(l + b) = 2(10 + 6) \text{ sq cm} \\ &= 2 \times 16 \text{ sq cm} = 32 \text{ sq cm} \end{aligned}$$

4. Find the side of an equilateral triangle, if its perimeter is 30 cm.

$$\text{Given, that perimeter of an equilateral triangle} = 30 \text{ cm}$$

$$\therefore \text{Perimeter of an equilateral triangle} = 3 \times \text{Side of a triangle}$$

$$= 3 \times \text{Side of a triangle}$$

$$\Rightarrow 30 = 3 \times \text{Side of triangle} = 30 \text{ cm}$$

$$\Rightarrow \text{Side} = \frac{30}{3} = 10 \text{ cm}$$

Hence, side of an equilateral triangle is 10 cm.

5. If the area of a square is 36 cm^2 , then find its perimeter.

$$\text{Give, area} = 36 \text{ cm}^2$$

$$\text{Area} = \text{Side} \times \text{Side}$$

$$\Rightarrow 36 = \text{Side} \times \text{Side}$$

$$\Rightarrow \text{Side} \times \text{Side} = 6 \times 6$$

$$\Rightarrow \text{Side} = 6 \text{ cm}$$

$$\therefore \text{Perimeter} = 4 \times \text{Side} = 4 \times 6 = 24 \text{ cm}$$

6. Perimeter of an isosceles triangle is 50 cm. if one of the two equal sides is 18 cm, find the third side.

$$\therefore \text{Perimeter} = 50 \text{ cm}$$

Perimeter of an isosceles triangle = Sum of its all sides

$$\Rightarrow \text{Perimeter} = a + b + c$$

$$\Rightarrow 50 = 18 + 18 + \text{Third side}$$

$$\Rightarrow 50 - 36 = \text{Third side}$$

$$\Rightarrow \text{Third side} = 14 \text{ cm.}$$

7. Length of a rectangle is three times its breadth. Perimeter of the rectangle is 40 cm. find its length and width.

Let width of rectangle (b) = x cm

Then, length of rectangle (l) = $3x$ cm

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

$$\Rightarrow 40 = 2(3x + x)$$

$$\Rightarrow 8x = 40$$

$$\Rightarrow x = \frac{40}{8} = 5 \text{ cm}$$

Hence, length is 15 cm and width is 5 cm.

8. The perimeter of a regular pentagon is 1240 cm. how long is its each side?

Given, perimeter = 1240 cm

Perimeter of a regular pentagon = 5 x Length of each side

$$\text{Length of each side} = \frac{1240}{5} = 248 \text{ cm}$$

Hence, its each side is 248 cm.

II. Very Short Answer Type Questions

1. Find the length of each side of a carom board whose perimeter is 362 cm.

$$\text{Perimeter} = 4 \times \text{side of carom board}$$

$$\text{Side} = \text{Perimeter} \div 4$$

$$= 362 \div 4$$

$$= 90.5 \text{ cm}$$

2. Relate hectare and m^2 .

$$1 \text{ hectare} = 10000 \text{ m}^2.$$

3. Relate hectare and acre.

$$1 \text{ hectare} = 100 \text{ acre.}$$

4. If the length of a rectangle is doubled, then how should breadth be altered to keep the area same.

Half the breadth

5. If each side of a square is doubled what will be happen to its area.

Four times.

6. Bajinder runs ten times around a square track and covers 4 km. find the length of the track.

Given, total length of track covered by Bajinder = 4 km
= 4000 m [\because 1 km = 1000 m]

\therefore Length of track in 10 rounds = 4000 m

Length of track in 1 round = 400 m

Hence, the length of the track is 400 m.

7. Base of a tent is a regular hexagon of perimeter 60 cm. What is the length of each side of the base?

Given, perimeter of hexagon = 60 cm

and total sides in hexagon = 6

Now, length of each side = $\frac{\text{Perimeter of hexagon}}{\text{Total number of sides}}$
= $\frac{60}{6} = 10$ cm

III. Very Short Answer Type Questions

1. Define perimeter of a closed figure.

The length of the boundary of a closed figure is known as its perimeter.

2. Find the perimeter of the Fig. 10.5

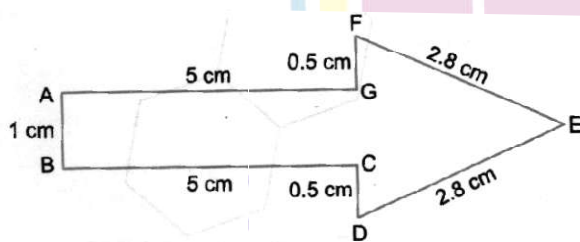


Fig. 10.5

We have,

$$\begin{aligned} \text{Perimeter} &= AB + BC + CD + DE + EF + FG + GA \\ &= 1 + 5 + 0.5 + 2.8 + 2.8 + 0.5 + 5 = 17.6 \text{ cm} \end{aligned}$$

3. What is the perimeter of a triangle with sides 4.2 cm, 6.05 cm and 7.52 cm?

The perimeter of triangle = Sum of its 3 sides

$$= 4.2 \text{ cm} + 6.05 \text{ cm} + 7.52 \text{ cm} = 17.77 \text{ cm}$$

4. Find the area of a square garden of side 30 m.

The area of the square garden = side \times side

$$= 30 \text{ m} \times 30 \text{ m} = 90 \text{ m}^2$$

I. Short Answer Type Questions

1. Tahir measured the distance around a squared field as 200 rods (*lath*). Later he found that the length of this rod was 140 cm. find the side of this field in meters.

Distance around a square field = 200 rods

Length of this rod = 140 cm

Total distance around a square field = $200 \times 140 = 28000 \text{ cm}$

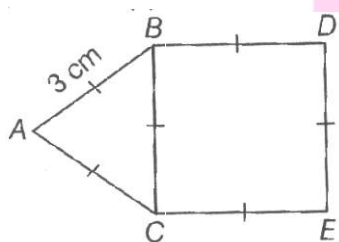
So, perimeter of this squared field = $28000 \text{ cm} = 280 \text{ m}$

Sides of this fields = $\frac{280}{4} = 70 \text{ m}$

2. From the following figure, find its

i. Perimeter

ii. Area of square



Given, ABC is an equilateral triangle of side 3 cm each and BCED is a square.

(i) Perimeter = $AB + AC + BC + BD + DE + CE$

$$= 3 + 3 + 3 + 3 + 3 + 3 = 18 \text{ cm}$$

(ii) Area of square BCED = $\text{side}^2 = 3^2 = 9 \text{ sq cm}$

3. The length of a rectangular field is twice its breadth. Jamal jogged around it four times and covered a distance of 6 km. What is the length of the fields?

Let breath of rectangular field = $x \text{ m}$

Then, length of rectangular field = $2x$ m

Distance covered in one round = Perimeter

Distance covered in four rounds = $4 \times$ Perimeter

$$\Rightarrow 4 \times 2(l + b) = 6 \text{ km} \quad [\because \text{perimeter} = 2(l + b)] [\because 1 \text{ km} = 1000 \text{ m}]$$

$$\Rightarrow 8(l + b) = 6000 \text{ m}$$

$$8(2x + x) = 6000 \text{ m}$$

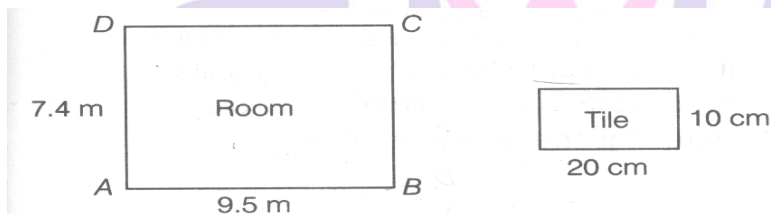
$$X = \frac{6000}{24} \text{ m} = 250 \text{ m}$$

\therefore Length of the field = 500 m

4. A room is 9.5 m long and 7.4 m wide. A person wants that's the floor of the room to be fitted with tiles of size 20 cm by 10 cm. find the number of tiles needed.

$$\text{Area of room} = 7.4 \times 9.5 \text{ m}^2 = 7.4 \times 9.5 \times 10000 \text{ cm}^2$$

$$\text{Area of one tile} = 20 \times 10 = 200 \text{ cm}^2$$



$$\begin{aligned} \text{Number of tiles} &= \frac{\text{Area of room}}{\text{Area of tile}} = \frac{7.4 \times 9.5 \times 100}{200} \\ &= \frac{74 \times 95}{2} = 95 \times 37 = 3515 \end{aligned}$$

5. Two plots of land having the same perimeter. One is a square with side 70 cm while other is rectangular of length 100 cm. which plot has the greater area and by how much?

$$\begin{aligned} \text{Area of square} &= \text{Side} \times \text{Side} = 70 \times 70 \text{ sq cm} \\ &= 4900 \text{ sq cm} \end{aligned}$$

Given, length of rectangle = 100 cm perimeter of rectangle = Perimeter of square

$$\Rightarrow 2(100 + b) = 4 \times 70$$

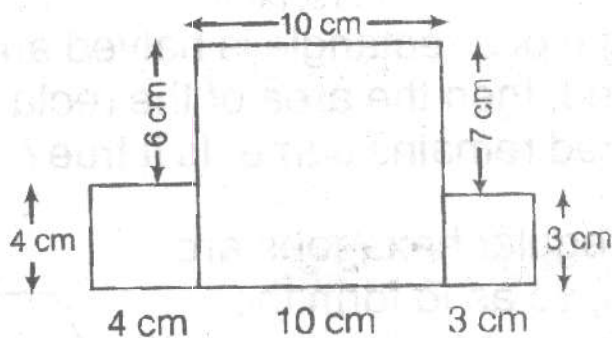
$$\Rightarrow 100 + b = 140$$

$$\Rightarrow b = 40 \text{ cm}$$

$$\begin{aligned} \text{Now, area of rectangle} &= l + b \\ &= 40 \times 100 = 4000 \text{ sq cm} \end{aligned}$$

Hence, area of square is more than the area of rectangle by 900 cm^2 .

6. Three square are joined together as shown in figure. Their sides are 4 cm, 10 cm and 3 cm. Find the perimeter of the figure.



Given, sides of three are 4 cm, 10 cm and 3 cm, respectively.

Total perimeter of given squares

$$\begin{aligned}
 &= \text{Sum of all outer sides of the figure} \\
 &= 4 + 4 + 4 + 6 + 10 + 7 + 3 + 3 + 3 + 10 \\
 &= 54 \text{ cm}
 \end{aligned}$$

7. The perimeter of rectangle and square are equal. If length of the rectangle is 8 m and breadth is 6 m. Find the area of square.

Given, length of rectangle (l) = 8 m

and breadth of rectangle (b) = 6 m

Perimeter of rectangle = Perimeter of square

$$2(l + b) = 4 \times \text{Side of a square}$$

$$\Rightarrow 2(8 + 6) = 4 \times \text{Side of a square}$$

$$\text{Side of square} = \frac{2(8+6)}{4} = 7 \text{ m}$$

$$\therefore \text{Area of square} = (7 \times 7) = 49 \text{ sq m}$$

8. The floor of a room is square in shape. If the side of the floor is 5 m. find the area of the floor.

Given, side of the floor = 5 m

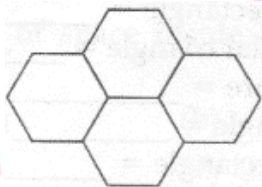
Area of the floor = Side \times Side = 5 \times 5 sq m = 25 sq m

Hence, area of the floor is 25 sq m

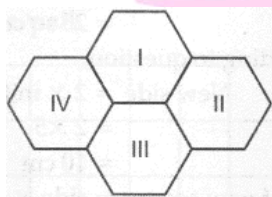
Next Generation School

II. Short Answer Type Questions

1. Four regular hexagon are drawn, so as form the design as shown in figure, if the perimeter of the design is 28 cm. Then, find the length of each side of the hexagon.



Given, four regular hexagons so as form the design as shown in the figure:



Perimeter of the design = 28 cm

Perimeter of the given design = Sum of all outer sides of the four hexagon

Here, this figure has 14 outer equal sides.

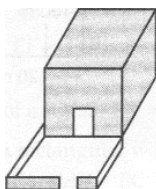
\therefore Perimeter of the design = 14 x Length of one side of hexagon

$$28 = 14 \times \text{Length of one side of hexagon}$$

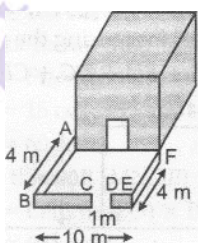
$$\text{Length of One side hexagon} = \frac{28}{14} = 2 \text{ cm}$$

Hence, the length of each side of the hexagon is 2 cm.

2. There is a rectangular lawn 10 m long and 4 m wide in front of Meena's house. It is fenced along the two smaller sides and one longer side leaving a gap of 1 m for the entrance. Find the length of fencing.



Given width of the lawn $AB = EF = 4$ m and length of the lawn, $BE = 10$ m



Also, Given, length of gap, $CD = 1$ m

$$\begin{aligned} \text{Total length of fencing} &= AB + (BC + DC) + EF \\ &= AB + (BE - CD) + EF \end{aligned}$$

[∴ Here we subtract the length gap (CD) from BE]

$$\begin{aligned} &= 4 \text{ cm} + (10 - 1) \text{ cm} + 4 \text{ cm} \\ &= (4 + 9 + 4) \text{ cm} = 17 \text{ m} \end{aligned}$$

Hence, the length of fencing the lawn is 17.

3. **Perimeter of an isosceles triangle is 50 cm. if one of the two equal sides is 18 cm, find the third side.**

Given, perimeter = 50 cm

Perimeter of an isosceles triangle = sum of its all side

$$\begin{aligned} \Rightarrow \text{Perimeter} &= a + b + c \\ \Rightarrow 50 &= 18 + 18 + \text{Third side} \\ \Rightarrow 50 - 36 &= \text{Third side} \\ \Rightarrow \text{Third side} &= 14 \text{ cm.} \end{aligned}$$

4. **The perimeter of a triangle is 28 cm. one of it's sides is 8 cm. write all the sides of the possible isosceles triangles with these measurements.**

Let an isosceles triangle with equal sides be x cm.

Given, one side of an isosceles triangle = 8 cm
and perimeter of a triangle = 28 cm

we know that, perimeter of a triangle

$$\begin{aligned} &= \text{Sum of length of all sides} \\ \Rightarrow 28 &= x + x + 8 \\ \Rightarrow 28 &= 2x + 8 \\ \Rightarrow 2x &= 28 - 8 \\ \Rightarrow 2x &= 20 \\ \therefore x &= \frac{20}{2} = 10 \text{ cm} \end{aligned}$$

5. **The perimeter of a regular pentagon is 1540 cm. how long is its each side?**

Given, that perimeter of regular pentagon = 1540 cm.

∴ Perimeter of regular pentagon = 5 × length of its side

[∴ pentagon has 5 sides of equal length]

$$1540 = 5 \times \text{length of its side}$$

$$\therefore \text{length of its side} = \frac{1540}{5} = 308$$

Hence, the length of each side is 308 cm.

6. Length of a rectangular fields is 6 times its breadth. If the length of the fields is 120 cm. find the breadth and perimeter of the field.

Given, length of rectangular field (l) = 120 cm

Let breadth of rectangular field = b

According to question, length is 6 times its breadth.

$$\therefore l = 6b$$

$$\Rightarrow 120 = 6b$$

$$\frac{120}{6} = \frac{6b}{6} \quad [\text{dividing both sides by 6}]$$

$$\Rightarrow b = 20 \text{ cm}$$

We know that,

Perimeter of the field = 2 x (Length + Breadth)

$$= 2 (120 + 20)$$

$$= 280 \text{ cm}$$

7. The side of a square is 5 cm. How many times does the area increase, if the side of the square is doubled?

Given, side of square = 5 cm

\therefore Area of square = side x side

$$= 5 \times 5$$

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

Now according to question,

New side = 2 x initial side

$$= 2 \times 5$$

$$= 10 \text{ cm}$$

\therefore Area of new square = side x side

$$= 10 \times 10$$

$$= 100 \text{ sq cm.}$$

$$\therefore \frac{\text{Area of new square}}{\text{Area of old square}} = \frac{100}{25} = 4$$

Hence, the area of new square is 4 times increase.

III. Short Answer Type Questions

1. Length of a rectangle is three times its breadth. Perimeter of the rectangle is 40 cm. find its length and width.

Let width of rectangle (b) = x cm

Then, length of rectangle (l) = $3x$ cm

As we know, perimeter of rectangle = $2(l + b)$

$$\Rightarrow 40 = 2(3x + x)$$

$$\Rightarrow 8x = 40$$

$$\Rightarrow x = \frac{40}{8} = 5 \text{ cm}$$

Hence, the length of rectangle is 15 cm and the width is 5 cm.

2. Tahir measured the distance around a square field as 299 rods (*lathi*). Later, he found that the length of this rod was 140 cm, Find the side of this field in metres.

Given, Tahir measured the distance around a square field as 200 rods (*lathi*).

Distance covered by Tahir in one round = Perimeter of the square field

\therefore Perimeter of a square field = 200 rods

Later on, Tahir found that the length of this rod was 140 cm.

\therefore Perimeter of a square field (in cm) = $200 \times 140 \text{ cm}$

and perimeter of a square field in meters = $\frac{200 \times 140}{100} \text{ m}$ [$\therefore 1 \text{ cm} = \frac{1}{100} \text{ m}$]

$$= 2 \times 140 \text{ m} = 280 \text{ m}$$

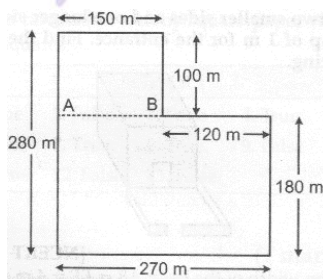
We know that, perimeter of a square field = $4 \times$ Length of one side

$$280 = 4 \times \text{Length of one side}$$

$$\therefore \text{Length of one side} = \frac{280}{4} = 70 \text{ m}$$

Hence, the side of a square field is 70 m.

3. Total cost of fencing the park shown in figure is ₹ 55000. Find the cost of fencing per metre.



Total perimeter for fencing the park = $FE + ED + DC + CB + BG + GF$

$$= 280 \text{ cm} + 270 \text{ cm} + 180 \text{ cm} + 120 \text{ cm} + 100 \text{ cm} + 150 \text{ cm}$$

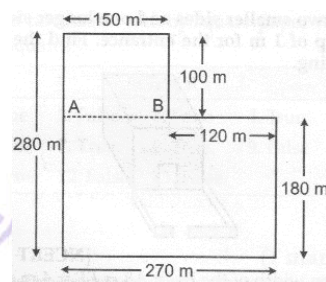
$$= 1100 \text{ m}$$

But it is given, the total cost of fencing the park = ₹ 55000.

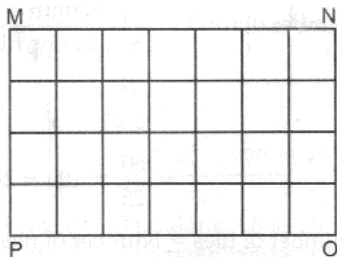
\therefore Cost of fencing the park for 1100 m = ₹ 55000

\therefore Cost of fencing the park for per meter = $\frac{₹ 55000}{1100} = ₹ 50$

Hence, the cost of fencing per meter is ₹ 50.



4. Rectangular wall MNOP of a kitchen is covered with square tiles of 15 cm length. See fig. Find the area of the wall.



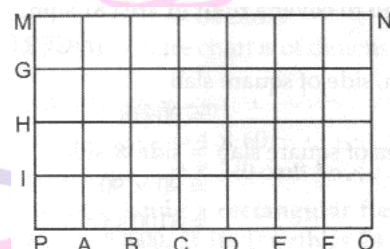
Let us denote some points of a rectangular wall MNOP of a kitchen as

$$\begin{aligned} \text{Now, } PA &= AB = BC = DC = DE = EF = FO = PI = HI = HG = GM \\ &= 15 \text{ cm} \end{aligned}$$

Given length of a square tile = 15 cm

Length of a rectangular wall MNOP = PO

$$\begin{aligned} &= PA + AB + BC + CD + DE + EF + FO \\ &= 15 \text{ cm} + 15 \text{ cm} + 15 \text{ cm} + 15 \text{ cm} + 15 \text{ cm} + 15 \text{ cm} + 15 \text{ cm} \\ &= 105 \text{ cm} \end{aligned}$$



and breadth of rectangular wall MNOP = PM

$$\begin{aligned} &= PI + IH + HG + GM \\ &= 15 \text{ cm} + 15 \text{ cm} + 15 \text{ cm} + 15 \text{ cm} \\ &= 60 \text{ cm} \end{aligned}$$

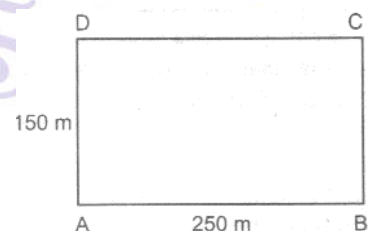
Now, area of the wall (MNOP)

$$\begin{aligned} &= \text{Length (PO)} \times \text{Breadth (PM)} \\ &= PO \times PM \\ &= 105 \times 60 = 6300 \text{ sq cm.} \end{aligned}$$

Hence, the area of the wall is 6300 sq cm.

5. Length of a rectangular field is 250 m and width is 150 m. Anuradha runs around this field 3 times. How far did she run? How many times should she run around the field to cover a distance of 4 km?

Given, length of rectangular field (l) = 250 m
and width of rectangular field (b) = 150 m



$$\begin{aligned} \text{Perimeter of the field} &= 2(l + b) \\ &= 2(250 + 150) \text{ m} \end{aligned}$$

$$= (2 \times 400) \text{ m}$$

$$= 800 \text{ m}$$

∴ Distance covered in one round = perimeter of the fields
= 800 m

∴ Distance covered in three rounds = 3×800
= 2400 m

Now, no. of rounds to cover 4 km, i.e. 4000 m
= $\frac{4000}{800} = 5$ [∴ 1 km = 1000]

Hence, she should run 5 times around the field to cover the distance of 4 km.

6. A rectangular path of 60 m length and 3 m width is covered by square tiles of side 25 cm. How many tiles will there be in on row along its width? How many such rows will be there? Find the number of tiles used to make this path?

Given, length of path = 60 m

and width of path = 3 m

Side of square tile = 25 cm

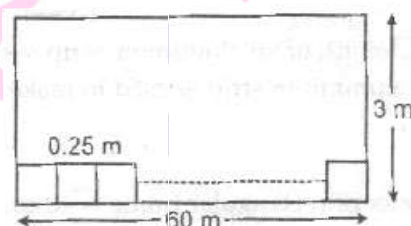
$$= \frac{25}{100} \text{ m} = 0.25 \text{ m} \quad [\because 1 \text{ m} = 100 \text{ m}]$$

Diagram of path is shown below

$$\text{Number of tiles in one row along with} = \frac{\text{Width}}{\text{Side of one tile}}$$

$$= \frac{3}{0.25}$$

$$= \frac{3 \times 100}{25} = 12$$



$$\text{Number of rows} = \frac{\text{Length}}{\text{Side of one tile}}$$

$$= \frac{60}{0.25}$$

$$= \frac{60}{25} \times 100 = 240$$

Also, number of tiles = Number of tiles in one row \times number of rows
= $12 \times 240 = 2880$

7. Amita wants to make rectangular cards measuring 8 cm \times 5 cm. she has a square chart paper of side 60 cm. how many complete cards can she make from this chart? What area of the Chart paper will be left?

Let ABCD be a square chart of side 60 cm. We have to cut out rectangular cards measuring 8 cm \times 5 cm out of this chart.

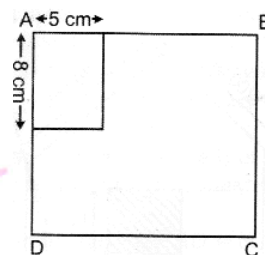
Now, if we cut chart along AB as shown in figure, then we can cut 12 rectangular cards from one row. Similarly, we can cut 7 rows with 12 rectangular cards in each Area of cut outs of rectangular cards = 7×12

$$= 84 \text{ cards}$$

The left part of square chart is of dimensions 4 cm \times 60 cm.

Now, area of the left part = 4×60

$$= ₹ 240 \text{ cm}^2$$



8. The cost of fencing a rectangular field at ₹ 7.50 per meter is ₹ 600. If its length is 24 m, find its breadth.

Since, total cost of fencing = ₹ 600

Rate of fencing = ₹ 7.50 per m

Therefore,

Perimeter of the field = $\left(\frac{\text{Total cost}}{\text{rate/m}}\right)$

$$= \left(\frac{600}{7.50}\right) \text{ m}$$

$$= \left(\frac{600 \times 100}{750}\right) \text{ m}$$

$$= 80 \text{ m}$$

Let breadth of the field = b meters.

Then perimeter = $2(24 + b)$

Or $80 = 2(24 + b)$

Or $(24 + b) = \frac{80}{2}$

Or $24 + b = 40$

Or $b = 40 - 24$

Or $b = 16$

Hence, the breadth of the field = 16 m.

V. Short Answer Type Questions

1. Fill in the blanks

- i. The amount of region enclosed by a plane closed figure is called _____.
- ii. The perimeter of an equilateral triangle is _____ times the length of its each side.
- iii. Area of a square of side 5 cm is _____ than the area of a rectangle with length 5 cm and breadth 3 cm.

iv. The distance covered along the boundary of a closed figure is called its _____ perimeter.

- (i) area (ii) 3 (iii) greater (iv) perimeter

2. Four regular hexagons are drawn so as to form the design as shown in Fig. 10.6. If the perimeter of the design is 28 cm, find the length of each side of the hexagon.

Perimeter of the design = 28 cm

Number of sides of the design = 14

So, length of each side of the hexagon
 $= 28 \text{ cm} \div 14 = 2 \text{ cm}$

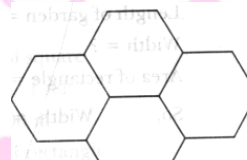


Fig. 10.6

3. 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?

Length of rectangular box = 40 cm

Breadth of rectangular box = 10 cm

Here, Length of tape around the box would be equal to its perimeter, therefore

Perimeter of box = $2 \times (\text{Length} + \text{Breadth})$
 $= 2 \times (40 + 10) = 2 \times (50) = 100 \text{ cm}$

Length of tape is 100 cm or 1 m.

4. What will happen to the area of a rectangle if its length is tripled and breadth is doubled?

Let length of the rectangle be l cm

and breadth of the rectangle be b cm.

New length = $3l$

New breadth = $2b$

\therefore New area = $3l \times 2b$
 $= 6(l \times b) = 6$ times the area of rectangle.

5. Find the missing length, if the perimeter of the given Fig. 10.7 is 21 cm.

Let the unknown side be x cm

Perimeter = Sum of length of all sides
 $= 2 \text{ cm} + 2 \text{ cm} + 6 \text{ cm} + 6 \text{ cm} + x \text{ cm}$

or $21 \text{ cm} = 16 \text{ cm} + x \text{ cm}$

$\Rightarrow x = 21 \text{ cm} - 16 \text{ cm} = 5 \text{ cm}$

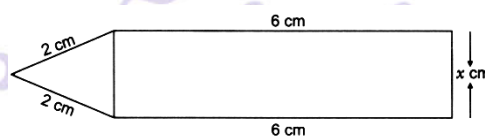


Fig. 10.7

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

Area of garden = 300 sq m

Length of garden = 50 m

Width?

Area of rectangle = Length \times Width

$$\text{So, Width} = \frac{\text{Area}}{\text{Length}}$$

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

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

We have,

$$\begin{aligned} \text{Length of table top} &= 2 \text{ m } 25 \text{ cm} \\ &= 200 + 25 \text{ cm} = 225 \text{ cm} \quad (\text{as } 1 \text{ m} = 100 \text{ cm}) \end{aligned}$$

$$\begin{aligned} \text{Breadth of table top} &= 1 \text{ m } 50 \text{ cm} \\ &= 100 + 50 \text{ cm} = 150 \text{ cm} \end{aligned}$$

$$\begin{aligned} \text{Perimeter of table top} &= 2 \times (\text{Length} \times \text{Breadth}) \\ &= 2 \times (225 + 150) = 2 \times (375) = 750 \text{ cm or } 7 \text{ m } 50 \text{ cm} \end{aligned}$$

Therefore, Perimeter of table top is 7 m 50 cm or 7.5 m

8. 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?

We have,

Length of land = 0.7 km

Breadth of land = 0.5 km

Here, length of wire needed would be equal to the perimeter, so

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

Now, each side is to be fenced with 4 rows of wire.

So, length of wire needed = $4 \times 2.4 = 9.6 \text{ km}$

Length of wire needed would be 9.6 km.

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

Length of side of square = 250 m

Here, length of wire to be used to fence the park is equal to it's perimeter, so

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

Cost of fencing the park = ₹20.

Therefore, the total cost of fencing the park = ₹ 20 \times 1000 = ₹ 20,000

10. 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 more distance?

Length of side of square park = 75 m

Distance covered by sweety in one round = Perimeter of square
 $= 4 \times \text{length of side}$
 $= 4 \times 75 = 300 \text{ m}$

Distance covered by Bulbul in one round = Perimeter of rectangle

Therefore, the total cost of fencing the park
 $= 2 \times (\text{length} + \text{breadth})$
 $= 2 \times (60 + 45)$
 $= 2 \times (105) = 210 \text{ m}$

Difference in the distance = $300 \text{ m} - 210 \text{ m} = 90 \text{ m}$

Therefore, Sweety covers more distance than Bulbul.

11. Tahir measured the distance around a square field as 200 rods (*lathi*). Later he found that the length of this rod was 140 cm. Find the side of this field in meters.

Distance of field = 200 rods

Length of rod = 140 cm

Therefore, Distance around square field
 $= \text{Distance of field in rods} \times \text{Length of rod}$
 $= 200 \times 140 = 28000 \text{ cm}$

Here, distance of field = Perimeter of square

$28000 \text{ cm} = 4 \times \text{side of field}$

Side of field = $\frac{28000}{4} \text{ cm} = 7000 \text{ cm}$ or 70 m

So, side of square field is 70 m.

12. The cost of putting a fence around a square field at ₹ 35 per metre is ₹ 4480. Find the length of each side of the field.

Total cost of fencing = ₹ 4480

Rate of fencing = ₹ 35 per metre

Length of boundary of field = $\left(\frac{\text{Total cost}}{\text{Rate}}\right)$
 $= \frac{4480}{35} = 128 \text{ m}$

Let length of each side be x metres

Thus, perimeter = $(4x) \text{ m}$

$\therefore 4x = 128 \Rightarrow x = \frac{128}{4} = 32$

Hence, length of each side is 32 m.

13. What is the cost of tilling a rectangular plot of land 500 m long and 200 m wide at the rate of ₹ 8 per hundred sq m?

Length of rectangular plot = 500 m

Width of rectangular plot = 200 m

So, Area of rectangle = length \times width
 $= 500 \times 200 = 100000 \text{ sq m}$

Rate of tiling = ₹ 8 per hundred sq m

Thus, cost of tiling = Rate of tiling \times Area per hundred sq m

$= ₹ 8 \times \frac{100000}{100}$

$$= ₹ 8 \times 1000 = ₹ 8000$$

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

- (i). 10m (ii) 14 cm (iii) 5 cm

i. Side of square = 10 m
Area of square = side \times side
 = 10 \times 10 = 100 sq cm

ii. Side of square = 14 cm
Area of square = side \times side
 = 14 \times 14 = 296 sq cm

iii. Side of square = 5 cm
Area of square = side \times side
 = 5 \times 5 = 25 sq cm

15. 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.

Length of floor = 5 m

So, Area of floor = 4 m

So, Area of floor = Length \times Width
 = 5 \times 4 = 20 sq m

Now, side of square = 3 m

Area of square = side \times side
 = 3 m \times 3m = 9 sq m

Area of floor not carpeted = Total area of floor - Area of square
 = 20 - 9 = 11 sq m.

16. Parmindar walks around a square park once and covers 800 m. What will be the area of this park?

Distance covered by Parmindar = 800 m

Here, distance covered = Perimeter of park = 4 \times side

$$800 = 4 \times \text{side}$$

$$\text{Side} = \frac{800}{4} = 200 \text{ m}$$

Now we know, area of square Park = side \times side
 = 200 \times 200
 = 40000 sq m

17. The area of a rectangular field is 1600 sq m. if the length of the field is 80 m, find the perimeter of the field.

Area of rectangular field = 1600 sq m

Length of field = 80 m

Perimeter of field = ?

Area of rectangle = length \times width

$$1600 = 80 \times \text{width}$$

So, width = $\frac{1600}{80} = 20$ m

Now, perimeter of rectangle = $2 \times (\text{length} + \text{width})$
 $= 2 \times (80 + 20)$
 $= 2 \times (100) = 200$ m

18. Perimeter of a square and a rectangle is same. If a side of the square is 15 cm and one side of the rectangle is 18 cm, find the area of the rectangle.

Side of square = 15 cm

Side of rectangle = 18 cm

Also, Perimeter of square = Perimeter of rectangle

$$4 \times \text{side} = 2 \times (\text{length} + \text{width})$$

Let length of rectangle = 18 cm.

So, $4 \times 15 = 2 \times (18 + \text{width})$

$$60 = 36 + 2 \text{ width}$$

$$2 \text{ Width} = 60 - 36$$

$$\text{Width} = \frac{24}{2} = 12 \text{ cm}$$

Now, Area of rectangle = length \times width
 $= 18 \times 12$
 $= 216$ sq cm.

I. Long Answer Type Questions

1. Length of a rectangular fields is 250 m and width is 150 m. Anuradha runs around this field 3 times. How far did she run? How many times she should run around the field to cover a distance of 4 km?

Given, length of rectangular field (l) = 250 m and width is 150 m.

Perimeter of this field = $2(l + b) = 2(250 + 150)$ m
 $= 2 \times 400$ m = 800 m

Distance covered in one round = Perimeter = 800 m

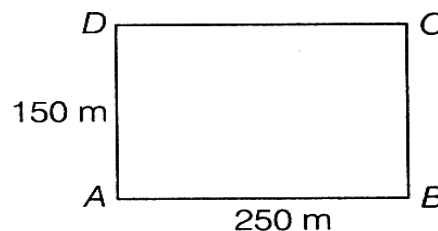
Distance covered in three rounds

$$= 3 \times 800 = 2400 \text{ m}$$

Now, number of rounds to cover 4 km, i.e. 4000 m.

$$= \frac{4000}{800} = 5 \quad [\because 1 \text{ km} = 1000 \text{ m}]$$

Hence, she should run 5 times around the field to cover the distance of 4 km.



2. The lawn in front of Molly's house is 12 m × 8 m, whereas the lawn in front of Dolly's house is 15 m × 5 m. A bamboo fencing is built around both the lawns. How much fencing is required for both?

Given, size of lawn in front of Molly's house

$$= 12 \text{ m} \times 8 \text{ m}$$

$$\text{Perimeter} = 2(12 + 8) \text{ m} = 40 \text{ m} \quad \dots\dots(i)$$

Now, size of lawn in front of Dolly's house

$$= 15 \text{ m} \times 5 \text{ m}$$

$$\text{Perimeter} = 2(15 + 5) \text{ m} = 40 \text{ m} \quad \dots\dots(ii)$$

From Eqs. (i) and (ii), we get = 40 + 40 = 80 m

Hence, total length of bamboo fencing is 80 m.

3. Find the cost of fencing a rectangular field 34 m long and 18 m wide at Rs 2.25 per metre. What is the cost of cultivating the field at ₹ 4.50 per square metre.

Given, length of field (l) = 34 m

and width (b) = 18 m

$$\begin{aligned} \text{Perimeter of rectangular field} &= 2(34 + 18) \text{ m} \\ &= 104 \text{ m} \quad \dots\dots(i) \end{aligned}$$

$$\begin{aligned} \text{Area of rectangular field} &= 34 \times 18 \text{ sq m} \\ &= 612 \text{ sq m} \quad \dots\dots(ii) \end{aligned}$$

Cost of fencing of this rectangular field at ₹ 2.25 per m = ₹ 104 × 2.25 = ₹ 234

Now, cost of cultivating the field at ₹ 4.50 per sq m

$$= 612 \times 4.50 = ₹ 2754$$

4. A room 9.68 m long and 6.2 m wide. Its floor is to be covered with glazed tiles of 22 cm by 10 cm each. If rate of tiles is ₹ 25 per tile. Find the total cost of tiles.

Given, length of floor of the room (l) = 9.68 m

and width of floor of the room (b) = 6.2 m

$$\text{Area of the room} = 9.68 \times 6.2 \text{ sq m} \quad \dots\dots(i)$$

Also, given that length of each tile = 22 cm

and width of each tile = 10 cm

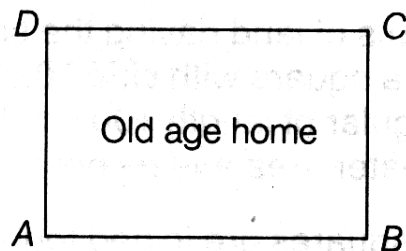
$$\text{Now, area of each tile} = 22 \times 10 \text{ sq cm} \quad \dots\dots(ii)$$

Number of tiles required to cover the floor of the room

$$\begin{aligned} &= \frac{9.68 \times 6.2 \times 100 \times 100}{22 \times 10} \quad [\because 1 \text{ m} = 100 \text{ cm}] \\ &= \frac{968 \times 62 \times 10}{22 \times 10} = \frac{968 \times 62}{22} = 2728 \end{aligned}$$

Total cost = ₹ 2728 × 25 = ₹ 68200

5. A plot is in the form of a rectangle. The length and the width of this rectangular plot is 300 m and 200 m, respectively. Owner of this plot wants an old age home for elderly people as shown in figure



- a. Find the area of this plot.
- b. Which values are depicted here?

a. Given, length of rectangular plot (l) = 300 m

and width of rectangle plot (b) = 200 m

Now, area of this plot = 300×200 sq m
= 60000 sq m.

b. Humanity, social cooptation and caring for others, helpfulness.

6. If length of a rectangle is halved and breadth is doubled, then the area of the rectangle obtained remains same. Is it true?

True, let the length and breadth of a rectangle be l and b respectively.

We know that,

Area of the initial rectangle = Length \times Breadth
= $l \times b$ sq units

If length of a rectangle is halved and breadth is doubled.

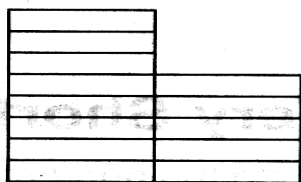
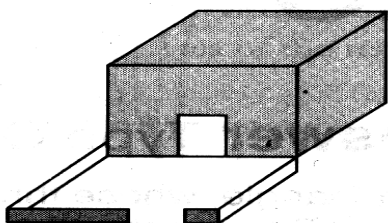
i.e. New length = $\frac{l}{2}$ units

and new breadth = $2b$ units

then, area of the new rectangle

= New Length \times New breadth = $\frac{l}{2} \times 2b = lb$ sq units

7. There is a rectangular lawn 10 m long and 4 m wide in front of Meena's house. It is fenced along the two smaller sides and one longer side leaving a gap of 1 m for the entrance. Find the length of fencing.



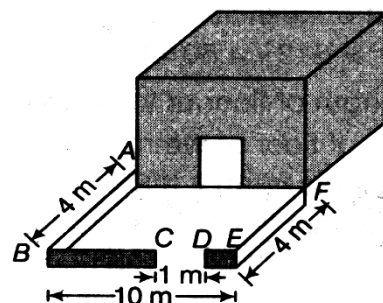
Given width of the lawn, $AB = EF = 4$ m

and length of the lawn, $BE = 10$ m

Also, given length of gap, $CD = 1$ m

Total length of fencing = $AB + (BC + DE) + EF$

= $AB + (BE - CD) + EF$

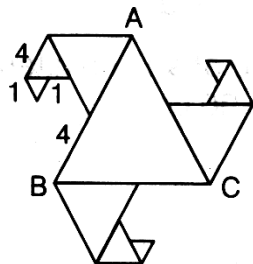


$$= 4\text{ m} + (10 - 1)\text{ m} + 4\text{ m}$$

$$= (4 + 9 + 4)\text{ m} = 17\text{ m}$$

Hence, the length of fencing of the lawn is 17 m.

8. In the given figure, all triangles are equilateral and $AB = 8$ units. Other triangles have been formed by taking the mid-points of the sides. What is the perimeter of the figure?



TIPS

Firstly, find the all outer sides of the given triangles and then find the perimeter by using sum of all outer sides of the triangle.

Given, $\triangle ABC$ is an equilateral triangle.

Here, $AB = 8$ units

$$\therefore AB = BC = CA = 8 \text{ units}$$

Thus, $\triangle ADE$ is an equilateral triangle.

Here, E is the mid-point of AB .

$$\therefore AE = BE = \frac{AB}{2} = \frac{8}{2} = 4 \text{ units}$$

Now, in $\triangle ADE$, $AD = DE = EA = 4$ units

Similarly, equilateral triangles are $\triangle BOT$ and $\triangle UPC$, having each side equal i.e.

$$BO = OT = BT = UC = PC = PU = 4 \text{ units}$$

Also, $\triangle DIF$ is an equilateral triangle.

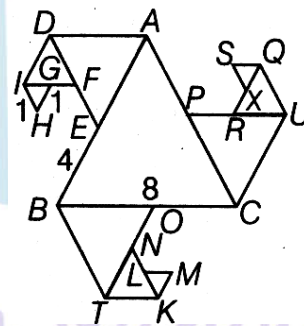
Here, F is the mid-point of DE .

$$\therefore DF = FE = \frac{DE}{2} = \frac{4}{2} = 2 \text{ units}$$

In $\triangle DIF$, $DI = IF = DF = 2$ UNITS

Similarly, in $\triangle TKN$ and $\triangle RQU$,

$$TK = KN = TN = RQ = UQ = UR = 2 \text{ units}$$



It is also clear that $NO = RP = 2$ units

Also, ΔHIG is an equilateral triangle

Here, G is the mid-point of IF .

$$\therefore IG = GF = \frac{IF}{2} = \frac{2}{2} = 1 \text{ unit}$$

Now, in ΔHIG , $HG = HI = GI = 1$ unit

Similarly, in ΔMLK and ΔXQS ,

$$ML = MK = LK = SQ = XS = QX = 1 \text{ unit}$$

It is also clear that, $LN = XR = 1$ unit

Now, perimeter of the given figure

= Sum of all outer sides of the given figure

$$= AD + DI + IH + HG + GF + FE + EB + BT + TK + KM + LM + LN + NO + OC + CU + UQ + QS + XS + XR + PR + PA$$

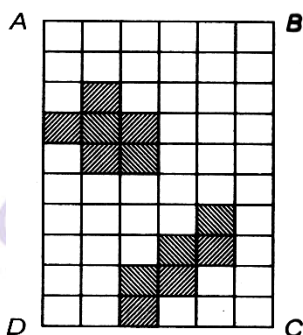
$$= [4 + 2 + 1 + 1 + 1 + 2 + 4 + 4 + 2 + 1 + 1 + 1 + 2 + 4 + 4 + 2 + 1 + 1 + 1 + 2 + 4] \text{ cm}$$

$$= 45 \text{ cm}$$

Hence, the perimeter of the given figure is 45 cm.

9. In figure each square is of unit length

- What is the perimeter of the rectangle ABCD?
- What is the area of the rectangle ABCD?
- Divide this rectangle into ten parts of equal area by shading squares. (Two parts of equal area are shown here)
- Find the perimeter of each part which you have divided. Are they all equal?



Given, each side of square is of unit length. Figure contains length of 10 square and width of 6 squares.

Now, length of rectangle, $AD = (BC)$

= Sum of length of a side of 10 squares

$$= 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1$$

$$= 10 \times 1 = 10 \text{ units}$$

And breadth of rectangle, $AB = (DC)$

= Width of 6 squares = $6 \times 1 = 6 \text{ units}$

a. The perimeter of the rectangle ABCD

$$= AB + BC + CD + DA$$

$$= 6 + 10 + 6 + 10$$

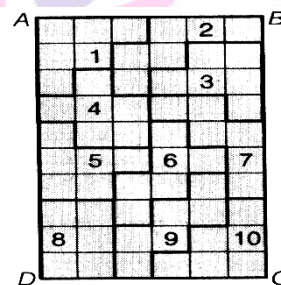
$$= 32 \text{ units}$$

b. The area of the rectangle ABCD = Length \times Breadth

$$= AD \times AB = 10 \times 6$$

$$= 60 \text{ units}$$

c. The total area of rectangle = 60 units

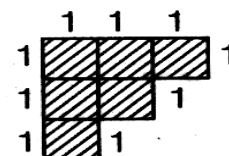


Now, we have to divide the rectangle into 10 equal parts i.e. $\frac{60}{10} = 6$ square units i.e. we have to take a group of 6-6 square blocks, which is shown in the figure.

a. Now, we find the perimeter of part 1. We know that perimeter of a figure is the total length of its boundary.

\therefore Perimeter of part 1

$$= 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 = 12 \text{ units}$$



Similarly, we can find the perimeter of remaining 9 parts, all the parts have same perimeter i.e. 12 units.

Yes, all the parts have same perimeter.

10. The perimeter of a squared garden is 48 m. a small flower bed covers 18 sq m area inside this garden. What is the area of the garden that is not covered by the flower bed? What fractional part of the garden is covered by flower bed? Find the ratio of the area covered by the flower bed and the remaining area.

Let side of square garden be x m.

Given that, perimeter of a square garden = 48 m

$$\therefore 4 \times \text{Side of a square} = 48$$

$$\Rightarrow 4x = 48 \Rightarrow x = \frac{48}{4} = 12 \text{ m}$$

$$\begin{aligned} \text{Now, area of the square garden} &= (x)^2 \\ &= (12)^2 = 144 \text{ m}^2 \end{aligned}$$

Also given, area of small flower bed cover inside the garden = 18 m²

$$\begin{aligned} \therefore \text{Area of the garden not covered by flower bed} \\ &= \text{Area of squared garden} - \text{Area of flower bed} \\ &= 144 \text{ m}^2 - 18 \text{ m}^2 = 126 \text{ m}^2 \end{aligned}$$

The fractional part of the garden covered by flower bed = $\frac{\text{Area covered by the flower}}{\text{Remaning Area of the squared garden}}$

$$= \frac{18}{126} = \frac{2}{14} = \frac{1}{7}$$

Hence, ratio of the area covered by the flower bed and the remaining area is 1 : 7.

II. Long Answer Type Questions

1. The length of a rectangular field is twice its breadth. Jamal jogged around it four times and covered a distance of 6 km. What is the length of the field?

Let breadth of a rectangular filed be x m and length of a rectangular field be $2x$ m.

Given, distance covered by Jamal in four round = 6 km

$$= 6 \times 1000 \text{ m} = 60000 \text{ m} \quad [\because 1 \text{ km} = 1000 \text{ m}]$$

Now, distance covered by jamal in one round = $\frac{6000}{4} \text{ m} = 1500 \text{ m}$

We, know that,

Distance covered by jamal in one round = Perimeter of the rectangular field

$$\Rightarrow \frac{6000}{4} = 2 \times (\text{Length} + \text{Breadth})$$

$$\therefore 2 \times [2x + x] = \frac{6000}{4}$$

$$\Rightarrow 2 \times 3x = \frac{6000}{4}$$

$$\Rightarrow 6x = \frac{6000}{4}$$

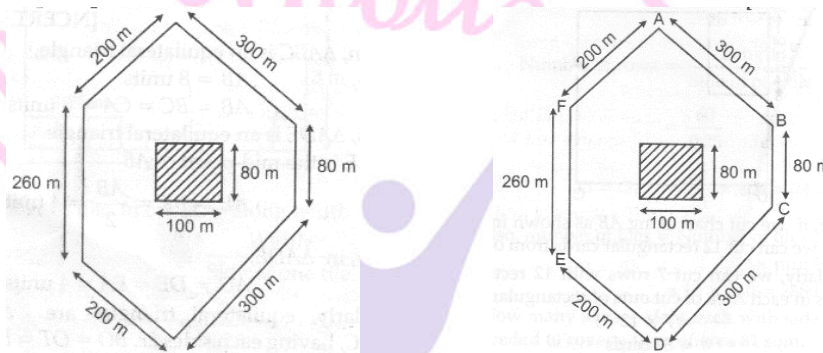
$$\Rightarrow x = \frac{6000}{4 \times 6} = 250 \text{ m}$$

\therefore Length of the rectangular field is

$$2x = 2 \times 250 = 500 \text{ m}$$

Hence, the length of a rectangular fields is 500 m.

2. What is the length of outer boundary of the park shown in figure? What will be the total cost of fencing it at the rate of ₹ 20 per meter? There is a rectangular flower bed in the centre of the park. Find the cost of manuring the flower bed at the rate of ₹ 50 per square meter.



Let the part be $ABCDEF$.

Here, $AB = 300$ m, $BC = 80$ m, $CD = 300$ m,
 $DE = 200$ m, $EF = 260$ m and $FA = 200$ m.

The total length of outer boundary of the park or perimeter of the park = Sum of outer length of all sides

$$\begin{aligned}
 &= AB + BC + CD + DE + EF + FA \\
 &= 300 \text{ m} + 80 \text{ m} + 300 \text{ m} + 200 \text{ m} + 260 \text{ m} + 200 \text{ m} \\
 &= (300 + 80 + 300 + 200 + 260 + 200) = 1340 \text{ m}
 \end{aligned}$$

Hence, the total length of outer boundary of the park is 1340 m.

Given, cost of fencing per meter = ₹ 20

$$\begin{aligned}
 \therefore \text{Cost of fencing a park} &= ₹ 20 \times \text{perimeter of the park} \\
 &= 20 \times 1340 = ₹ 26800
 \end{aligned}$$

Given, a rectangular flower bed in the centre of the park.

Length of rectangular flower bed = 100 m

And breadth of rectangular flower bed = 80 m

$$\begin{aligned}
 \text{Area of the rectangle flower bed} &= \text{Length} \times \text{Breadth} \\
 &= 100 \text{ m} \times 80 \text{ m} = 8000 \text{ sq m}
 \end{aligned}$$

$$\therefore \text{Cost of manuring the flower bed per sq meter} = ₹ 50$$

$$\begin{aligned}
 \therefore \text{Cost of manuring the flower bed} &= ₹ 8000 \times ₹ 50 \\
 &= ₹ 400000
 \end{aligned}$$

3. The perimeter of a square garden is 48 m. a small flower bed covers 18 sq. m area inside this garden. What is the area of the garden that is not covered by the flower bed? What fractional part of the garden is covered by flower bed? Find the ratio of the area covered by the flower bed and the remaining area.

Let side of a square garden be x m

\therefore Given, that, perimeter of a square garden = 48 m

$$\Rightarrow 4x = 48$$

$$\Rightarrow x = \frac{48}{4} = 12 \text{ m}$$

$$\begin{aligned} \text{Now, area of the square garden} &= (x)^2 \\ &= (12)^2 = 144 \text{ m}^2 \end{aligned}$$

Also given, area of small flower bed cover inside the garden = 18 m^2

\therefore Area of the garden not covered by the flower bed.

$$\begin{aligned} &= \text{Area of square garden} - \text{Area of flower bed} \\ &= 144 \text{ m}^2 - 18 \text{ m}^2 \\ &= 126 \text{ m}^2 \end{aligned}$$

The fractional part of the garden covered by the flower bed

$$\begin{aligned} &= \frac{\text{Area covered by the flower}}{\text{Area of square garden}} \\ &= \frac{18}{144} = \frac{1}{8} \end{aligned}$$

The ratio of the area covered by the flower bed and the remaining area = $18 : 126 = 1 : 7$

4. The area of each square on a chess board is 4 sq cm . Find the area of the board.

a. At the beginning of game when all the chess men are put on the board, write area of the squares left unoccupied.

b. Find the area of the squares occupied by chess men.

We know that, there are 64 squares in a chess board. Given area of each squares of chess board = 4 cm^2

$$\begin{aligned} \therefore \text{Area of the board} &= \text{Number of square in a board} \times \text{Area of one square} \\ &= 64 \times 4 \text{ cm} = 256 \text{ cm}^2 \end{aligned}$$

a. We know that in a game of chess, there are two players each of row 16 chess men.

Now, total number of squares occupied by the chess men in the board

$$= 16 \times 2 = 32$$

\therefore Total number of squares are unoccupied by the chess men in the board are

$$\begin{aligned} &= \text{Total number of squares in a chess board} - \text{Number of squares occupied by the chess men in the board} \\ &= 64 - 32 = 32 \end{aligned}$$

\therefore The area of the squares unoccupied

$$\begin{aligned} &= \text{Number of squares occupied by the chess men} \times \text{area of one square} \\ &= 32 \times 4 \text{ cm} = 128 \text{ cm}^2 \end{aligned}$$

b. The area of the squares occupied by chess men = Number of square occupied by chess board \times Area of one square

$$= 32 \times 4 \text{ cm} = 128 \text{ cm}^2$$

5. a. Find the all possible dimensions (in natural number) of a rectangle with a perimeter 36 cm and find their areas.

b.. Find all the possible dimensions (in natural numbers) of a rectangle with an area of 36 sq cm and find their perimeter.

Let length and breadth of a rectangle be l and b respectively.

a. Given, perimeter of a rectangle = 36 cm

$$2 \times (l + b) = 36 \text{ cm}$$

$$l + b = \frac{36}{2}$$

$$\Rightarrow l + b = 18 \text{ cm}$$

And area of the rectangle = $l \times b$ sq cm

Now, put different dimensions of l and b , we get different areas of rectangle.

Dimensions in cm	Area in sq cm
$l = 1$ and $b = 17$	$1 \times 17 = 17$
$l = 2$ and $b = 16$	$2 \times 16 = 32$
$l = 3$ and $b = 15$	$3 \times 15 = 45$
$l = 4$ and $b = 14$	$4 \times 14 = 56$
$l = 5$ and $b = 13$	$5 \times 13 = 65$
$l = 6$ and $b = 12$	$6 \times 12 = 72$
$l = 7$ and $b = 11$	$7 \times 11 = 77$
$l = 8$ and $b = 10$	$8 \times 10 = 80$
$l = 9$ and $b = 9$	$9 \times 9 = 81$

a. Given, the area of the rectangle = 36 sq cm.

i.e. $l \times b = 36 \text{ sq m}$

Now, perimeter of the rectangle = $2(l + b)$ cm

Now, put different dimensions of l and b , we get different perimeters of the rectangle.

Dimensions in cm	Area in sq cm i.e. \times
$l = 1$ and $b = 36$	$2(1 + 36) = 2 \times 37 = 74$
$l = 2$ and $b = 18$	$2(2 + 18) = 2 \times 20 = 40$
$l = 3$ and $b = 12$	$2(3 + 12) = 2 \times 15 = 30$
$l = 4$ and $b = 9$	$2(4 + 9) = 2 \times 13 = 26$
$l = 6$ and $b = 6$	$2(6 + 6) = 2 \times 12 = 24$

6. In an exhibition hall, there are 24 display boards each of length 1 m 50 cm and breadth 1 m. there is a 100 m long aluminium strip, which is used to frame these boards. How many boards will be framed using this strip? Find also the length of the aluminium strip required for the remaining boards.

Given, total display boards = 24

Length of one display boards = 1 m + 50 cm

$$= 1 \text{ m} + \frac{50}{100} \text{ m}$$

$$= 1.5 \text{ m}$$

Breadth of one display board = 1 m

$$\therefore \text{Perimeter of display board} = 2 \times (\text{length} + \text{Breadth})$$

$$= 2 \times (1.5 + 1) \text{ m} = 2 \times 2.5 \text{ m}$$

$$= 5 \text{ m}$$

Length of strip = 100 m

$$\begin{aligned} \text{Now, no. of boards will be framed} &= \frac{\text{Length of strip}}{\text{Perimeter of one board}} \\ &= \frac{100}{5} = 20 \end{aligned}$$

This means that out of 24 only 20 boards will be framed.

No. of boards left unframed = 24 - 20 = 4

$$\begin{aligned} \therefore \text{length of the strip required remaining boards} &= 4 \times \text{perimeter one board} \\ &= 4 \times 2 (1.5 + 1) \\ &= 4 \times 2 \times 2.5 \\ &= 20 \text{ m.} \end{aligned}$$

7. The length of a rectangular field is 18 m and breadth is 2 m. If a square field as the same perimeter as this rectangular field, find which field has the greater area.

Given, length of a rectangular field = 8 m

Breadth of a rectangular field = 2 m

$$\begin{aligned} \text{Now, perimeter of rectangular} &= 2 \times (\text{length} + \text{Breadth}) \\ &= 2 \times (8 + 2) = 2 \times 10 \\ &= 20 \text{ m} \end{aligned}$$

$$\begin{aligned} \therefore \text{Area of rectangular} &= \text{length} \times \text{breadth} \\ &= 8 \times 2 = 16 \text{ m}^2 \end{aligned}$$

According to the question.

Perimeter of square = perimeter of rectangular field

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

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

[Dividing both sides by 4]

$$\text{Side} = 5 \text{ m}$$

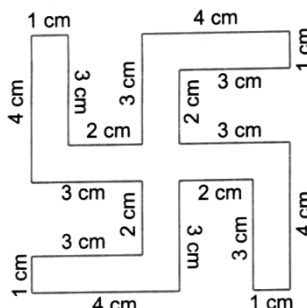
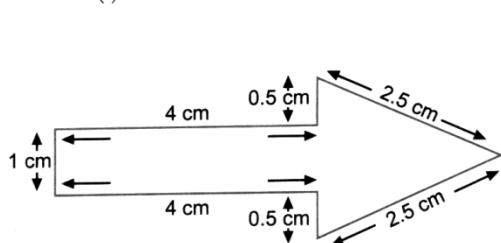
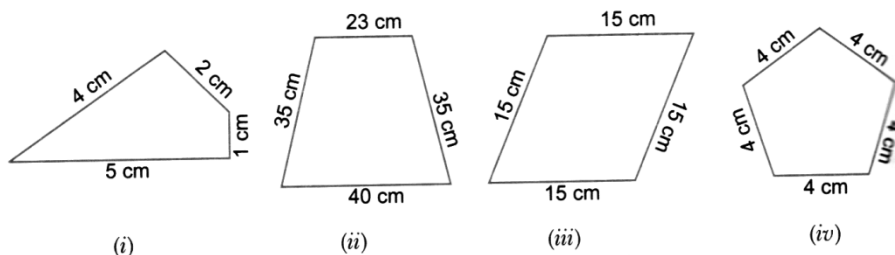
Now, area of square = side x side

$$= 5 \times 5 = 25 \text{ m}^2$$

Hence, the area of square field is greater than the area of rectangular field.

III. Long Answer Type Questions

1. Find the perimeter of each of the following (Fig. 10.8)



- i. We have, Perimeter = sum of each side of figure
 $= 4 + 2 + 1 + 5 = 12 \text{ cm}$
- ii. We have, Perimeter = sum of each side of figure
 $= 35 + 23 + 35 + 40 = 133 \text{ cm}$
- iii. We have, Perimeter = sum of each side of figure
 $= 15 + 15 + 15 + 15 = 60 \text{ cm}$
- iv. We have, Perimeter = sum of each side of figure
 $= 4 + 4 + 4 + 4 + 4 = 20 \text{ cm}$
- v. We have, Perimeter = sum of each side of figure
 $= 1 + 4 + 0.5 + 2.5 + 2.5 + 0.5 + 4 = 15 \text{ cm}$
- vi. We have, Perimeter = sum of each side of figure
 $= 4 + 1 + 3 + 2 + 3 + 4 + 1 + 3 + 2 + 3 + 4 + 1 + 3 + 2 + 3 + 4 + 1 + 3 + 2 + 3$
 $= 52 \text{ cm}$

2. What is the perimeter of each of the following (Fig. 10.9)? What do you infer from the answers?

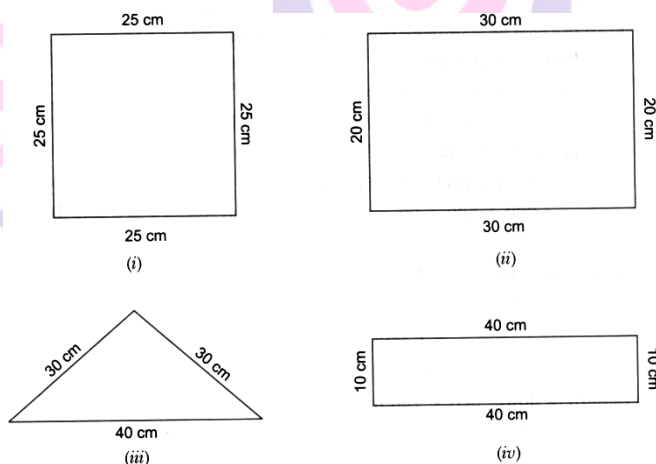


Fig. 10.9

- i. We have a square
 Perimeter of a square = $4 \times \text{side}$ [side = 25 cm]
 $= 4 \times 25 = 100 \text{ cm}$
- ii. Here, we have a rectangle
 So, Perimeter of a rectangle = $2 \times (\text{length} + \text{breadth})$
 $= 2 \times (30 + 20)$
 $= 2 \times (50) = 100 \text{ cm}$
- iii. In this figure, we have a triangle
 Perimeter of triangle = Sum of each side
 $= 30 + 30 + 40$
 $= 100 \text{ cm}$
- iv. In this figure, we have a rectangle
 Length = 40 cm
 Breadth = 10

$$\begin{aligned} \text{Perimeter} &= 2 \times (\text{length} + \text{breadth}) \\ &= 2 \times (40 + 10) \\ &= 2 \times (50) = 100 \text{ cm} \end{aligned}$$

Inference: All the figures have same perimeter i.e. 100 cm.

3. What is the length of outer boundary of the park shown in Fig. 10.10? What will be the total cost of fencing it at the rate of ₹ 20 per metre? There is a rectangular flower bed in the centre of the park. Find the cost of manuring the flower bed at the rate of ₹ 50 per square metre.

Here, length of outer boundary

$$= \text{Perimeter of the park}$$

So, Perimeter of park

$$\begin{aligned} &= \text{Sum of each side of park} \\ &= 200 + 300 + 80 + 300 + 200 + 260 \\ &= 1,340 \text{ m} \end{aligned}$$

Now, rate of fencing = ₹ 20 per metre

Total cost of fencing = Perimeter \times Rate of fencing

$$= 1,340 \times ₹ 20 = ₹ 26,800$$

We are given (from Figure),

Length of flower bed = 100 m

Breadth of flower bed = 80 m

Area of flower bed = length \times breadth

$$= (100 \times 80) = 8000 \text{ sq m}$$

Rate of manuring flower bed = ₹ 50 per sq m

Cost of manuring flower bed = Rate of manuring \times Area of bed

$$= ₹ 50 \times 8000 = ₹ 4,00,000$$

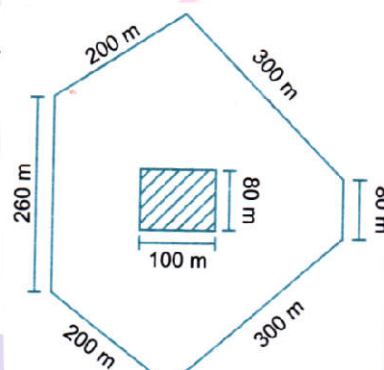


Fig. 10.10

4. Find the area of the following Fig. 10.11 by counting square

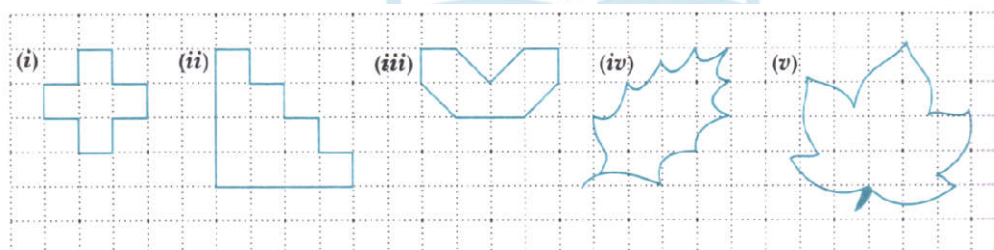


Fig. 10.11

- i. This figure contains 5 complete square so it's area is 5 sq units.
- ii. This figure contains 10 complete square so it's area is 10 sq units.
- iii. This figure contains 4 complete square and 4 half squares. So, it's area

$$= \left(4 + \frac{1}{2} \times 4 \right) \text{ sq units} = (4 + 2) = 6 \text{ sq units}$$

- iv. Here, the figure contains 2 complete squares, 3 more than half squares and 6 half squares.

$$\therefore \text{Area} = \left(2 + 3 + \frac{1}{2} \times 6 \right) = (5 + 3) = 8 \text{ sq units}$$

- v. Here, the figures contains 2 contains 7 complete squares and 6 more than half squares and 6

$$\text{Area} = (7 + 6) = 13 \text{ sq units}$$

5. Find the area of the rectangles whose side are:

(i). 3 cm and 4 cm

(ii) 12 m and 21 m

(iii) 2 cm and 3 cm

(iv) 2 m and 70 cm

(v) 3 m and 2 m 50 cm.

- i. Let

Length of rectangle = 4 cm

Width of rectangle = 3 cm

$$\begin{aligned} \therefore \text{Area of rectangle} &= \text{length} \times \text{width} \\ &= 4 \times 3 = 12 \text{ sq cm} \end{aligned}$$

- ii. Let

Length of rectangle = 21 cm

Width of rectangle = 12 cm

$$\begin{aligned} \therefore \text{Area of rectangle} &= \text{length} \times \text{width} \\ &= 21 \times 12 = 252 \text{ sq m} \end{aligned}$$

- iii. Let

Length of rectangle = 3 cm

Width of rectangle = 2 cm

$$\begin{aligned} \therefore \text{Area of rectangle} &= \text{length} \times \text{width} \\ &= 3 \times 2 = 6 \text{ sq cm} \end{aligned}$$

- iv. Let

Length of rectangle = 2 cm

Width of rectangle = 70 cm = 0.7

$$\begin{aligned} \therefore \text{Area of rectangle} &= \text{length} \times \text{width} \\ &= 2 \times 0.7 = 1.4 \text{ sq m} \end{aligned}$$

- v. Let

Length of rectangle = 3 cm

Width of rectangle = 2 cm

$$\begin{aligned} \therefore \text{Area of rectangle} &= \text{length} \times \text{width} \\ &= 3 \times 2.5 = 7.5 \text{ sq m} \end{aligned}$$

6. 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.

(i). 100 cm and 144 cm

(ii) 70 cm and 36 cm

Length of tile = 12 cm

Breadth of tile = 5 cm

$$\begin{aligned} \therefore \text{Area of tile} &= \text{length} \times \text{breadth} \\ &= 12 \times 5 = 60 \text{ sq cm} \end{aligned}$$

i. Length of tile = 100 cm

Breadth of tile = 144 cm

$$\begin{aligned} \therefore \text{Area of tile} &= \text{length} \times \text{breadth} \\ &= 100 \times 144 = 14400 \text{ sq cm} \end{aligned}$$

$$\begin{aligned} \text{Tiles needed for region} &= \frac{\text{Area of region}}{\text{Area of tile}} \\ &= \frac{14400}{60} = 240 \end{aligned}$$

ii. Length of tile = 70 cm

Breadth of tile = 36 cm

$$\begin{aligned} \therefore \text{Area of tile} &= \text{length} \times \text{breadth} \\ &= 70 \times 36 = 2520 \text{ sq cm} \end{aligned}$$

$$\begin{aligned} \text{Tiles needed for region} &= \frac{\text{Area of region}}{\text{Area of tile}} \\ &= \frac{2520}{60} = 42 \end{aligned}$$

7. The length of a rectangular field is 8 m and breadth is 2 m. If a square field has the same perimeter as this rectangular field, find which field has the greater area and by how much?

Length of rectangular field = 8 m

Breadth of field = 2 m

Also, Perimeter of rectangular field = Perimeter of square field

$$\therefore 2 \times (\text{length} + \text{breadth}) = 4 \times \text{side}$$

$$2 \times (8 + 2) = 4 \times \text{side}$$

$$2 \times (10) = 4 \times \text{side}$$

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

$$\text{Side} = 5 \text{ m}$$

$$\begin{aligned} \text{Now, Area of rectangular field} &= \text{length} \times \text{breadth} \\ &= 8 \times 2 = 16 \text{ sq m} \end{aligned}$$

$$\text{and, Area of square field} = \text{side} \times \text{side} = 5 \times 5 = 25 \text{ sq m}$$

$$\therefore \text{Area of square field is more than that of rectangular field } 25 - 16 = 9 \text{ sq m}$$

8. The perimeter of a square garden is 48. A small flower bed covers 18 sq m area inside this garden. What is the area of the garden that is not covered by the flower bed? What fraction part of the garden is covered by flower bed? Find the ratio of the area covered by the flower bed and the remaining area.

$$\text{Perimeter of square garden} = 48 \text{ m}$$

$$\text{So, perimeter of square} = 4 \times \text{side}$$

$$\therefore 4 \times \text{side} = 48$$

$$\text{Side} = \frac{48}{4} = 12 \text{ m}$$

Now, Area of square garden = side \times side = $12 \times 12 = 144 \text{ sq m}$.

and area of flower bed = 18 sq m

\therefore Area of garden not covered by flower bed

$$= \text{Area of garden} - \text{Area of flower bed}$$

$$= 144 - 18 = 126 \text{ sq m}$$

So, ratio of the area covered by the flower bed and the remaining area is $18 : 126 = 1 : 7$.

9. By splitting the following (Fig. 10.12) into rectangles, find their areas (the measures are given in centimetres).

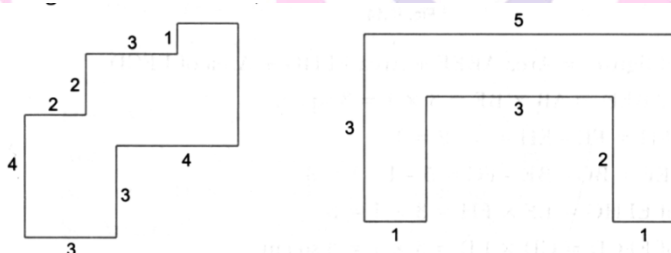


Fig. 10.12

i. By splitting the figure into four rectangles, we get

Area of figure = Area AJIY + Area YWCB + Area of DWUE + Area FUHG

$$\text{Area AJIY} = \text{AJ} \times \text{JI} = 3 \times 3 = 9$$

$$\text{Now, } \text{BY} = \text{AB} - \text{YA} = 4 - 3 = 1$$

$$\text{So, Area YWCB} = \text{BY} \times \text{BC} = 1 \times 2 = 2$$

$$\text{Next, } \text{DW} = \text{DC} + \text{CW} = 2 + 1 = 3$$

$$\text{Therefore, Area DWUE} = \text{DW} \times \text{DE} = 3 \times 3 = 9$$

$$\text{Similarly, } \text{UH} = \text{IH} - \text{IU} = 4 - 2 = 2$$

$$\text{GH} = \text{FU} \text{ and } \text{FU} = \text{EU} + \text{FE}$$

$$= \text{DW} + \text{FE} = 3 + 1 = 4$$

$$\text{Area FUHG} = \text{UH} \times \text{GH} = 2 \times 4 = 8$$

$$\therefore \text{Area of figure} = 9 + 2 + 9 + 8 = 28 \text{ units}$$

$$= 28 \text{ sq m}$$

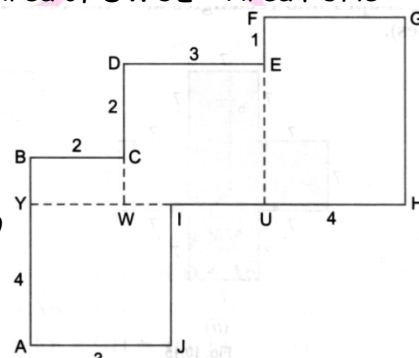


Fig. 10.13

ii. By splitting the Fig. (10.14) into 3 rectangles, we get

Area of figure = Area ABEF + Area EFHG + Area of EFCD

$$\text{Area ABEF} = \text{AB} \times \text{BE} = 3 \times 1 = 3 \text{ sq cm}$$

$$\text{Now, } \text{FH} = \text{FE} - \text{EH} = 3 - 2 = 1$$

$$\text{EF} = \text{BC} - \text{BE} - \text{FC} = 5 - 1 - 1 = 3$$

$$\text{Area of EFHG} = \text{EF} \times \text{FH} = 3 \times 1 = 3$$

$$\text{Area of EFCD} = \text{CD} \times \text{ED} = 3 \times 1 = 3 \text{ sq cm}$$

$$\therefore \text{Area of figure} = 3 + 3 + 3 = 9$$

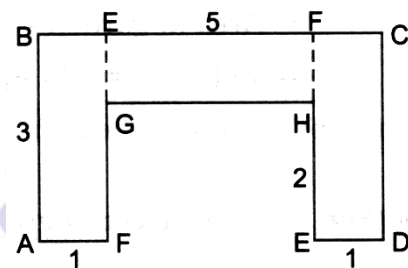
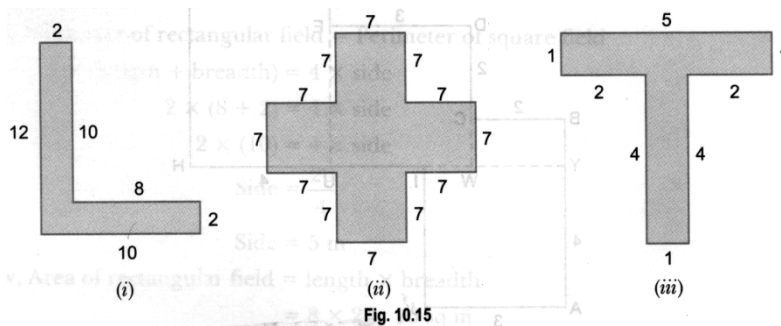


Fig. 10.14

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



i. By splitting the Fig. (10.16) into two rectangles, we get

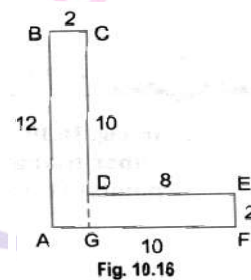
Area of figure = Area ABCG + Area DEFG

$$\begin{aligned} \text{Now, } DG &= CG - CD \\ &= 12 - 10 = 2 \text{ sq cm} \end{aligned}$$

$$\begin{aligned} \text{Area ABCG} &= AB \times BC \\ &= 12 \times 2 = 24 \text{ sq cm} \end{aligned}$$

$$\begin{aligned} \text{Area DEFG} &= DE \times EF \\ &= 8 \times 2 = 16 \text{ sq cm} \end{aligned}$$

$$\text{Area of figure } 24 + 16 = 40 \text{ sq cm}$$



ii. By splitting the Fig. (10.17) into two rectangles, we get

Area of figure = Area of ABGH + Area DEJK - Area CFI

$$\text{Now, } BG = BC + CF + FG = 7 + 7 + 7 = 21 \text{ cm}$$

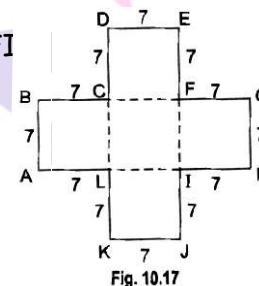
$$\text{Area ABGH} = BG \times AB = 21 \times 7 = 147 \text{ sq cm}$$

$$\text{Here, } KD = KL + LC + CD = 7 + 7 + 7 = 21 \text{ cm}$$

$$\text{Area DEJK} = KD \times DE = 21 \times 7 = 147 \text{ sq cm}$$

$$\text{Area of CLIF} = CF \times FI = 7 \times 7 = 49 \text{ sq cm}$$

$$\text{So, Area of figure} = 147 + 147 - 49 = 245 \text{ sq cm}$$



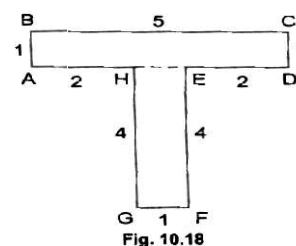
iii. By splitting the Fig. (10.18) into two rectangles, we get

Area of figure = Area of ABCD + Area EFGH

$$\text{Area ABCD} = AB \times CD = 5 \times 1 = 5 \text{ sq cm}$$

$$\text{Area EFGH} = EF \times GH = 4 \times 1 = 4 \text{ sq cm}$$

$$\text{Area of figure} = 5 + 4 = 9 \text{ sq cm}$$



I. High Order Thinking Skills

1. A magazine charges Rs. 300 per 10 sq cm area for advertisement. A company decided to order a half page advertisement. If each page of the magazine is 15 cm x 24 cm, what amount will be company has to pay for it?

Firstly, find the area of full magazine by using length \times breadth. Also, find area of half page and to get required cost, we multiply the area of half page by rate of advertising
i.e. $\text{₹} \frac{300}{10}$ [\therefore rate = ₹ 300 per 10 sq m]

Given, length of each page of the magazine = 24 cm and breadth of each page of the magazine = 15 cm

$$\begin{aligned} \therefore \text{Area of the full page of the magazine} &= \text{Length} \times \text{Breadth} \\ &= 24 \text{ cm} \times 15 \text{ cm} \\ &= 360 \text{ sq cm} \end{aligned}$$

\therefore Company decided to order the half page of advertisement.

$$\begin{aligned} \therefore \text{Area of half page of the magazine} &= \frac{360}{2} \\ &= 180 \text{ sq cm} \end{aligned}$$

Given, cost of per 10 sq m = ₹ 300

$$\begin{aligned} \text{Cost of 1 sq m} &= \text{₹} \frac{300}{10} \\ \text{Cost of 180 sq m} &= \frac{300}{10} \times 180 \\ &= 300 \times 18 \\ &= \text{₹} 5400 \end{aligned}$$

Hence, the company will pay ₹ 5400 for it.

2. **Perimeter of a square and a rectangle is same. If a side of the square is 15 cm and one side of the rectangle is 18 cm. Find the area of the rectangle.**

Given, a side of a square = 15 cm

$$\begin{aligned} \text{We know that, the perimeter of a square} &= 4 \times \text{Side of a square} \\ &= 4 \times 15 \text{ cm} = 60 \text{ cm} \end{aligned}$$

Here, Length of a rectangle = 18 cm

$$\begin{aligned} \therefore \text{Perimeter of a rectangle} &= 2 \times (\text{Length} + \text{Breadth}) \\ &= 2 (18 + \text{Breadth}) \end{aligned}$$

According to the question,

$$\therefore \text{Perimeter of a square} = \text{Perimeter of a rectangle}$$

$$\therefore 60 = 2 (18 + \text{Breadth})$$

$$\frac{60}{2} = (18 + \text{Breadth})$$

$$\Rightarrow 18 + \text{Breadth} = 30$$

$$\therefore \text{Breadth} = 30 - 18 = 12 \text{ cm}$$

$$\begin{aligned} \text{Now, area of the rectangle} &= \text{Length} \times \text{Breadth} \\ &= 18 \times 12 = 216 \text{ sq cm} \end{aligned}$$

Hence, the area of the rectangle is 216 sq cm.

Value Based Questions

- The cost of constructing a boundary wall of a square field at ₹ 25 per meter is ₹ 1600. Find the length of each side of the field.
 - If the side of an equilateral triangle is 8 cm, then find its area.

i. Since, Total cost = ₹ 1600

And rate of construction = ₹ 25 per meter.

$$\begin{aligned}\text{Thus, length of boundary} &= \left(\frac{\text{Total cost}}{\text{rate/m}}\right) \\ &= \left(\frac{1600}{25}\right)m = 64\text{ m}\end{aligned}$$

Since, perimeter = 4 × side

$$\text{Then } 64 = 4 \times \text{side}$$

$$\text{Or } \text{side} = \frac{64}{4} = 16\text{ m}$$

Hence, length of each side of square field = 16 m

ii. Since side of an equilateral triangle = 8 cm

$$\begin{aligned}\text{Then } \text{area} &= \frac{\sqrt{3}}{4} \times \text{side}^2 \\ &= \frac{\sqrt{3}}{4} \times 8^2 \\ &= \frac{\sqrt{3}}{4} \times 64 \\ &= 16\sqrt{3}\text{ cm}^2\end{aligned}$$

2. i. Find the area a rectangular plot of land whose length and breadth are 15.4 m and 6.5 m respectively.

ii.. Find the perimeter of a rectangular plot by above question.

i. Since, length of the plot = 15.4 m and breadth = 6.5 m

$$\begin{aligned}\text{Then, area of plot} &= l \times b \\ &= 15.4\text{ m} \times 6.5\text{ m} \\ &= 100.10\text{ m}^2\end{aligned}$$

ii. Since, $l = 15.4\text{ m}$ and $b = 6.5\text{ m}$

$$\begin{aligned}\text{Then, perimeter of the plot} &= 2(l + b) \\ &= 2(15.4 + 6.5)\text{ m} \\ &= 2 \times 21.9\text{ m} \\ &= 43.8\text{ m}\end{aligned}$$



Next Generation School