

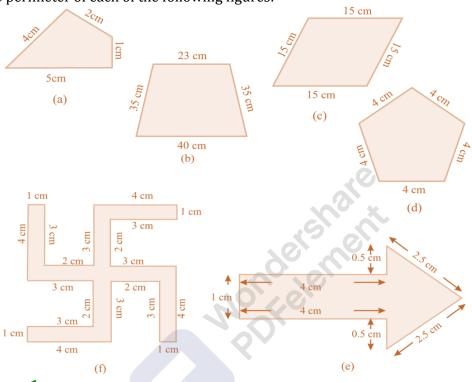
Mathematics

(Chapter – 10) (Mensuration) (Class - VI)

Exercise 10.1

Question 1:

Find the perimeter of each of the following figures:



Answer 1:

(a) Perimeter = Sum of all the sides

= 4 cm + 2 cm + 1 cm + 5 cm = 12 cm

(b) Perimeter = Sum of all the sides

= 23 cm + 35 cm + 40 cm + 35 cm = 133 cm

(a) Perimeter = Sum of all the sides

= 15 cm + 15 cm + 15 cm + 15 cm = 60 cm

(b) Perimeter = Sum of all the sides

= 4 cm + 4 cm + 4 cm + 4 cm + 4 cm = 20 cm

(c) Perimeter = Sum of all the sides

1 cm + 4 cm + 0.5 cm + 2.5 cm + 2.5 cm + 0.5 cm + 4 cm = 15 cm

(d) Perimeter = Sum of all the sides

28 Practice n+2cm = 4 cm + 1 cm + 3 cm + 2 cm + 3 cm + 4 cm + 1 cm + 3 cm + 2 cm + 3

cm + 4 cm + 1 cm + 3 cm + 2 cm + 3 cm + 4 cm + 1 cm + 3 cm + 2 cm

+ 3 cm = 52 cm



Question 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?

Answer 2:

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

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

Question 3:

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

Answer 3:

= 2 m 25 cm = 2.25 mLength of table top Breadth of table top = 1 m 50 cm = 1.50 mPerimeter of table top = $2 \times (length + breadth)$ $= 2 \times (2.25 + 1.50)$ $= 2 \times 3.75$ = 7.50 m

Thus, the perimeter of table top is 7.5 m.

Question 4:

Million Stars & Racilice Rain & Racilice What is the length of the wooden strip required to frame a photograph of length and breadth 32 cm and 21 cm respectively?

Answer 4:

Length of wooden strip = Perimeter of photograph Perimeter of photograph $= 2 \times (length + breadth)$

> = 2 (32 + 21) $= 2 \times 53 \text{ cm}$ = 106 cm

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



Question 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?

Answer 5:

Since the 4 rows of wires are needed.

Therefore the total length of wires is equal to 4 times the perimeter of rectangle.

Perimeter of field

= 2 x (length + breadth)

 $= 2 \times (0.7 + 0.5)$

 $= 2 \times 1.2$

= 2.4 km

 $= 2.4 \times 1000 \text{ m}$

= 2400 m

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

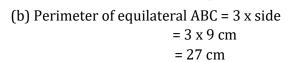
Question 6:

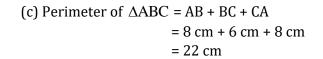
Find the perimeter of each of the following shapes:

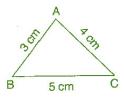
- (a) A triangle of sides 3 cm, 4 cm and 5 cm.
- (b) An equilateral triangle of side 9 cm.
- (c) An isosceles triangle with equal sides 8 cm each and third side 6 cm

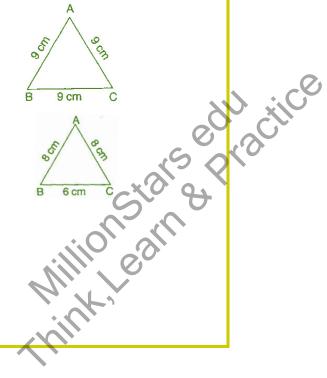
Answer 6:

(a) Perimeter of $\triangle ABC = AB + BC + CA$ = 3 cm + 5 cm + 4 cm= 12 cm













Question 7:

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

Langer 7:

Perimeter of triangle = Sum of all three sides

= 10 cm + 14 cm + 15 cm

= 39 cm

Thus, the perimeter of triangle is 39 cm.

Question 8:

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

Answer 8:

Perimeter of Hexagon = 6 x length of one side

$$= 6 \times 8 \text{ m}$$

$$= 48 \text{ m}$$

Thus, the perimeter of hexagon is 48 m.

Question 9:

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

Answer 9:

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

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

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

Thus, the side of square is 5 cm.

Question 10:

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

Answer 10:

Perimeter of regular pentagon = 100 cm

$$\Rightarrow$$
 5 x side = 100 cm

$$\Rightarrow$$
 Side = $\frac{100}{5}$ = 20 cm

Thus, the side of regular pentagon is 20 cm.



Question 11:

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

- (a) a square
- (b) an equilateral triangle
- (c) a regular hexagon?

Answer 11:

Length of string = Perimeter of each figure

(a) Perimeter of square = 30 cm

$$\Rightarrow$$
 4 x side = 30 cm

$$\Rightarrow$$
 Side = $\frac{30}{4}$ = 7.5 cm

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

(b) Perimeter of equilateral triangle = 30 cm

$$\Rightarrow$$
 3 x side = 30 cm

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

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

(c) Perimeter of hexagon = 30 cm

$$\Rightarrow$$
 6 x side = 30 cm

$$\Rightarrow$$
 Side = $\frac{30}{6}$ = 5 cm

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

Question 12:

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

Answer 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

$$\Rightarrow$$
 26+x=36

$$\Rightarrow x = 36 - 26$$

$$\Rightarrow$$
 $x = 10$ cm

Thus, the length of third side is 10 cm.



Question 13:

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

Answer 13:

Side of square = 250 mPerimeter of square $= 4 \times side$ $= 4 \times 250$ = 1000 m

Since, cost of fencing of per meter = ₹ 20

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

Question 14:

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

Answer 14:

Length of rectangular park = 175 mBreadth of rectangular park = 125 m

Perimeter of park $= 2 \times (length + breadth)$

> $= 2 \times (175 + 125)$ $= 2 \times 300 = 600 \text{ m}$

Since, the cost of fencing park per meter = 7.2

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

Question 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?

Answer 15:

Distance covered by Sweety = Perimeter of square park

= Perimeter of rectangular park
= 2 x (length + breadth)
= 2 x (60 + 45)
= 2 x 105 = 210 m

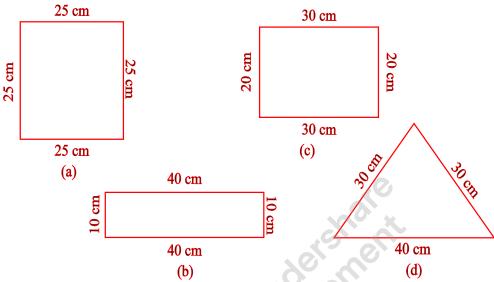
Thus, Bulbul covers the distance of 210 m and Bulbul covers less distance

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Question 16:

What is the perimeter of each of the following figures? What do you infer from the answer?



Answer 16:

$$= 4 \times 25 = 100 \text{ cm}$$

(b) Perimeter of rectangle =
$$2 \times (length + breadth)$$

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

$$= 2 \times 50$$

= 100 cm

(c) Perimeter of rectangle =
$$2 \times (length + breadth)$$

$$= 2 \times (30 + 20)$$

$$= 2 \times 50$$

$$= 30 \text{ cm} + 30 \text{ cm} + 40 \text{ cm}$$

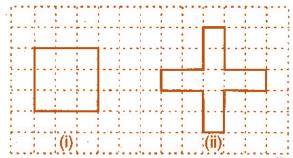
Thus, all the figures have same perimeter.

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Question 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.)

Answer 17:

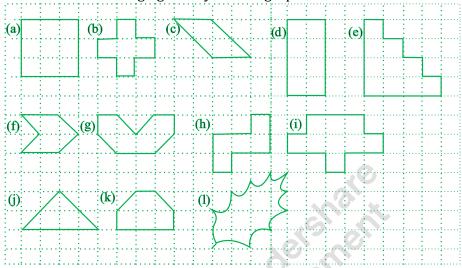
- (a) 6 m
- (b) 10 m
- (c) Second arrangement has greater perimeter.
- (d) Yes, if all the squares are arranged in row, the perimeter be 10 cm.

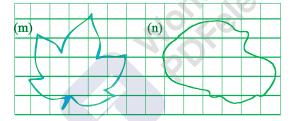


Exercise 10.2

Question 1:

Find the areas of the following figures by counting squares:





Answer 1:

- (a) Number of filled square = 9
 - \therefore Area covered by squares = 9 x 1 = 9 sq. units
- (b) Number of filled squares = 5
 - \therefore Area covered by filled squares = 5 x 1 = 5 sq. units
- (c) Number of full filled squares = 2

Number of half-filled squares = 4

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

Million Stars & Practice
Williams Realing Reproductive And Area covered by half-filled squares = $4 \times \frac{1}{2} = 2$ sq. units

 \therefore Total area = 2 + 2 = 4 sq. units



- (d) Number of filled squares = 8
- ∴ Area covered by filled squares $= 8 \times 1 = 8 \text{ sq. units}$
- (a) Number of filled squares = 10
 - \therefore Area covered by filled squares = 10 x 1 = 10 sq. units
- (b) Number of full filled squares = 2
 - Number of half-filled squares = 4
 - ... Area covered by full filled squares $= 2 \times 1 = 2 \text{ sq. units}$

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

- \therefore Total area = 2 + 2 = 4 sq. units
- (c) Number of full filled squares = 4

Number of half-filled squares

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

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

- \therefore Total area = 4 + 2 = 6 sq. units
- (d) Number of filled squares
 - \therefore Area covered by filled squares = 5 x 1 = 5 sq. units
- (e) Number of filled squares = 9
 - \therefore Area covered by filled squares = 9 x 1 = 9 sq. units
- (f) Number of full filled squares = 2

Number of half-filled squares = 4

 \therefore Area covered by full filled squares = 2 x 1 = 2 sq. units

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Williams Represented to the start of the star And Area covered by half-filled squares = $A \times \frac{1}{4} = 2$ sq. units

- \therefore Total area = 2 + 2 = 4 sq. units
- (g) Number of full filled squares = 4

Number of half-filled squares = 2

 \therefore Area covered by full filled squares = 4 x 1 = 4 sq. units

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

- \therefore Total area = 4 + 1 = 5 sq. units
- (h) Number of full filled squares = 3

Number of half-filled squares = 10

 \therefore Area covered by full filled squares = 3 x 1 = 3 sq. units

And Area covered by half-filled squares = $100 \times \frac{1}{2} = 5 \text{ sq. units}$

- \therefore Total area = 3 + 5 = 8 sq. units
- (i) Number of full filled squares = 7

Number of half-filled squares = 14

 \therefore Area covered by full filled squares = 7 x 1 = 7 sq. units

And Area covered by half-filled squares = 1/4 x $\frac{1}{2}$ = 7 sq. units

- \therefore Total area = 7 + 7 = 14 sq. units
- (j) Number of full filled squares = 10

Number of half-filled squares = 16

 \therefore Area covered by full filled squares = 10 x 1 = 10 sq. units

And Area covered by half-filled squares = 1/6 x $\frac{1}{2}$ = 8 sq. units

 \therefore Total area = 10 + 8 = 18 sq. units



Exercise 10.3

Question 1:

Find the areas of the rectangles whose sides are:

(a) 3 cm and 4 cm

(b) 12 m and 21 m

(c) 2 km and 3 km

(d) 2 m and 70 cm

Answer 1:

- (a) Area of rectangle = length x breadth
 - $= 3 \text{ cm x } 4 \text{ cm} = 12 \text{ cm}^2$
- (b) Area of rectangle = length x breadth
 - $= 12 \text{ m} \times 21 \text{ m} = 252 \text{ m}^2$
- (c) Area of rectangle = length x breadth
 - $= 2 \text{ km x } 3 \text{ km} = 6 \text{ km}^2$
- (d) Area of rectangle = length x breadth
 - $= 2 \text{ m} \times 70 \text{ cm} = 2 \text{ m} \times 0.7 \text{ m} = 1.4 \text{ m}$

Question 2:

Find the areas of the squares whose sides are:

(a) 10 cm

(b) 14 cm

(c) 5 cm

Answer 2:

- (a) Area of square = side x side = $10 \text{ cm} \times 10 \text{ cm} = 100 \text{ cm}^2$
- (b) Area of square = side x side = $14 \text{ cm} \times 14 \text{ cm} = 196 \text{ cm}^2$
- (c) Area of square = side x side = $5 \text{ m x } 5 \text{ m} = 25 \text{ m}^2$

Question 3:

The length and the breadth of three rectangles are as given below:

- (a) 9 m and 6 m
- (b) 17 m and 3 m
- (c) 4 m and 14 m

Answer 3:

Thus, the rectangle (c) has largest area, and rectangle (b) has smallest area.



Question 4:

The area of a rectangle garden 50 m long is 300 m², find the width of the garden.

Answer 4:

Length of rectangle = 50 m and Area of rectangle = 300 m^2

Area of rectangle = length x breadth

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

Thus, the breadth of the garden is 6 m.

Question 5:

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?

Answer 5:

Length of land = 500 m and Breadth of land = 200 m

Area of land = length x breadth = $500 \text{ m} \times 200 \text{ m} = 1,00,000 \text{ m}^2$

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

Question 6:

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

Answer 6:

Length of table = 2 m

Breadth of table = 1 m 50 cm = 1.50 m

Area of table = length x breadth

 $= 2 \text{ m} \times 1.50 \text{ m} = 3 \text{ m}^2$

Question 7:

Millions are edulacitice value of the control of th A room us 4 m long and 3 m 50 cm wide. How many square meters of carpet is needed to cover the floor of the room?

L Answer 7:

Length of room = 4 m

Breadth of room = 3 m 50 cm = 3.50 m

Area of carpet = length x breadth

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



Question 8:

A floor is 5 m long and 4 m wide. A square carpet of sides 3 m is laid on the floor. Find the area of the floor that is not carpeted.

Answer 8:

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

Area of floor = length x breadth

 $= 5 \text{ m x } 4 \text{ m} = 20 \text{ m}^2$

Now, Side of square carpet = 3 m

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

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

Question 9:

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

Answer 9:

Side of square bed = 1 m

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

 \therefore Area of 5 square beds = 1 x 5 = 5 m²

Now, Length of land = 5 m

Breadth of land = 4 m

Area of land = length x breadth

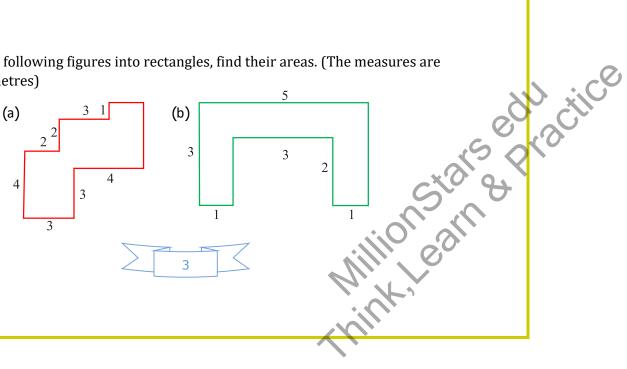
 $= 5 \text{ m x } 4 \text{ m} = 20 \text{ m}^2$

Area of remaining part = Area of land - Area of 5 flower beds

 $= 20 \text{ m}^2 - 5 \text{ m}^2 = 15 \text{ m}^2$

Question 10:

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





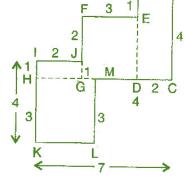
Answer 10:

(a) Area of HKLM = $3 \times 3 = 9 \text{ cm}^2$ Area of IJGH = $1 \times 2 = 2 \text{ cm}^2$

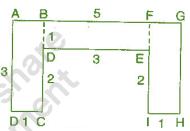
Area of FEDG = $3 \times 3 = 9 \text{ cm}^2$

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

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

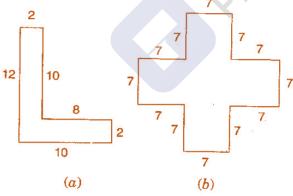


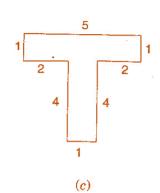
(b) Area of ABCD = $3 \times 1 = 3 \text{ cm}^2$ Area of BDEF = $3 \times 1 = 3 \text{ cm}^2$ Area of FGHI = $3 \times 1 = 3 \text{ cm}^2$ Total area of the figure = $3 + 3 + 3 = 9 \text{ cm}^2$



Question 11:

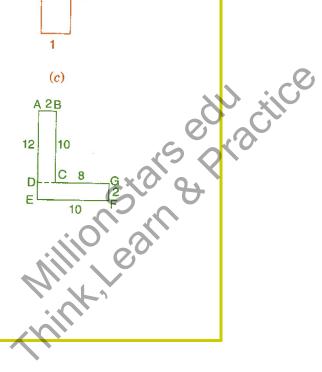
Split the following shapes into rectangles and find their areas. (The measures are given in centimetres)





Answer 11:

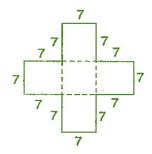
(a) Area of rectangle ABCD = $2 \times 10 = 20 \text{ cm}^2$ Area of rectangle DEFG = $10 \times 2 = 20 \text{ cm}^2$ Total area of the figure = $20 + 20 = 40 \text{ cm}^2$



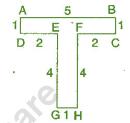
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(b) There are 5 squares each of side 7 cm. Area of one square = $7 \times 7 = 49 \text{ cm}^2$ Area of 5 squares = $49 \times 5 = 245 \text{ cm}^2$



(c) Area of rectangle ABCD = $5 \times 1 = 5 \text{ cm}^2$ Area of rectangle EFGH = $4 \times 1 = 4 \text{ cm}^2$ Total area of the figure = $5 + 4 \text{ cm}^2$



Question 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

Answer 12:

(a) Area of region = $100 \text{ cm} \times 144 \text{ cm} = 14400 \text{ cm}^2$ Area of one tile = $5 \text{ cm} \times 12 \text{ cm} = 60 \text{ cm}^2$

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

Thus, 240 tiles are required.

(b) Area of region = $70 \text{ cm x } 36 \text{ cm} = 2520 \text{ cm}^2$ Area of one tile = $5 \text{ cm x } 12 \text{ cm} = 60 \text{ cm}^2$

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

Thus, 42 tiles are required.