

CLASS 6

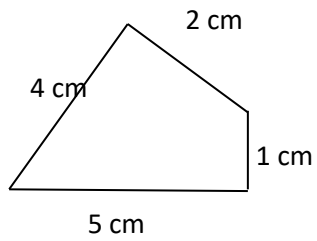
CHAPTER 10

MENSURATION

EXERCISE 10.1

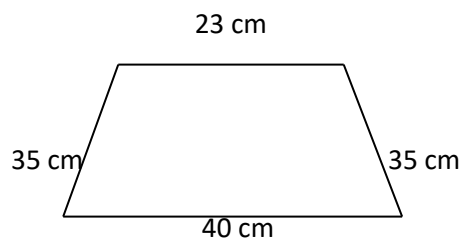
1. Find the perimeter of each of the following figures:

a)



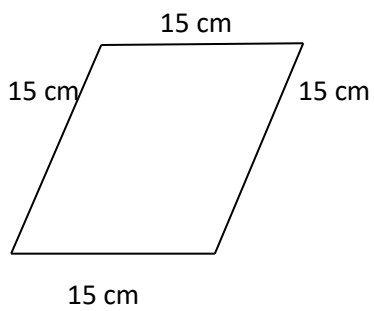
Answer: Perimeter = $4 + 2 + 5 + 1 = 12$ cm

b)



Answer: Perimeter = $23 + 35 + 40 + 35 = 133$ cm

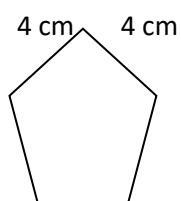
c)



Answer:

Perimeter = $15 + 15 + 15 + 15 = 60$ cm

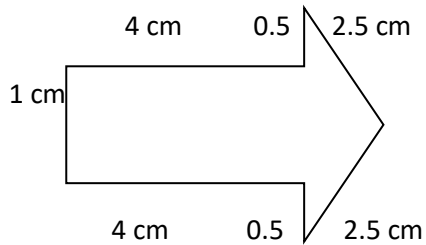
d)



4 cm 4 cm
4 cm

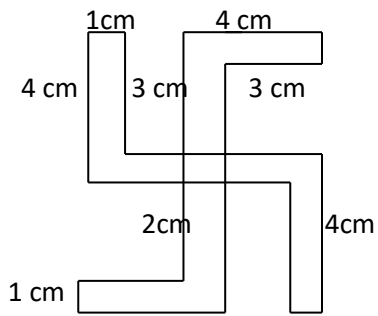
Answer: Perimeter = 4 + 4 + 4 + 4 + 4 = 20 cm

e)



Answer: Perimeter = 1 + 4 + 0.5 + 2.5 + 2.5 + 0.5 + 4 = 15 cm

f)



Answer:

Perimeter = 1 + 3 + 2 + 3 + 4 + 1 + 3 + 2 + 3 + 4 + 1 + 3 + 2 + 3 + 4 + 1 + 3 + 2 + 3 + 4 = 52 cm

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

Answer: Length of the tape required = Perimeter of the rectangular box = $2 \times (l + b) = 2 \times (40 + 10)$ cm
= $2 \times 50 = 100$ cm = 1 m

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

Answer;

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

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

Perimeter of the table top = $2 \times (l + b) = 2 \times (2.25 + 1.50) = 2 \times 3.75 = 7.50$ cm

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

Answer: Given length of the photograph = 32 cm

Breadth of the photograph = 21 cm

The length of the wooden strip required = Perimeter of the photograph = $2 \times (32 + 21)$ cm

= $2 \times 53 = 106$ cm

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

Answer:

Given length of the land = 0.7 km

Breadth of the land = 0.5 km

Perimeter = $2 \times (0.7 + 0.5) = 2 \times 1.2 = 2.4$ km

Length of the wire needed = $4 \times 2.4 = 9.6$ km

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

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

b) An equilateral triangle of side 9 cm

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

Answer:

a) Perimeter = $3 + 4 + 5 = 12$ cm

b) Perimeter = $9 + 9 + 9 = 27$ cm (All sides are equal)

c) Perimeter = $8 + 8 + 6 = 22$ cm (Two sides are equal)

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

Answer: Perimeter = $10 + 14 + 15 = 39$ cm

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

Answer:

Regular hexagon means all the six sides are equal.

$$\text{Perimeter} = 6 \times 8 = 48 \text{ m}$$

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

Answer:

$$\text{Given perimeter of the square} = 20 \text{ m}$$

$$\text{One side of the square} = 20 \div 4 = 5 \text{ m}$$

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

Answer:

$$\text{Given perimeter of a regular pentagon} = 100 \text{ cm}$$

(Regular pentagon means all the five sides are equal)

$$\text{So length of each side} = 100 \div 5 = 20 \text{ cm}$$

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

a) a square?

b) an equilateral triangle

c) a regular hexagon

Answer:

$$\text{a) Perimeter} = 30 \text{ cm}$$

$$\text{Length of each side of a square} = 30 \div 4 = 7.5 \text{ cm}$$

$$\text{b) Length of each side of an equilateral triangle} = 30 \div 3 = 10 \text{ cm}$$

$$\text{c) Length of each side of a regular hexagon} = 30 \div 6 = 5 \text{ cm}$$

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

Answer:

$$\text{Given perimeter of a triangle} = 36 \text{ cm}$$

$$\text{Sum of the two sides of a triangle} = 12 + 14 = 26 \text{ cm}$$

$$\text{Length of its third side} = 36 - 26 = 10 \text{ cm}$$

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

Answer:

$$\text{Perimeter of the square park} = 4 \times 250 = 1000 \text{ m}$$

$$\text{Cost of fencing} = 1000 \times 20 = \text{Rs } 20000$$

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

Answer:

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

$$\text{Cost of fencing a rectangular park} = 600 \times 12 = \text{Rs } 7200$$

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

Answer:

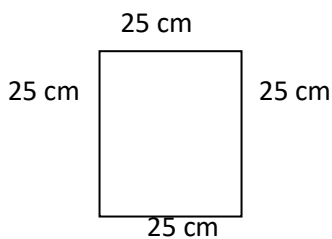
$$\text{Perimeter of a square park} = 4 \times \text{side} = 4 \times 75 = 300 \text{ m}$$

$$\text{Perimeter of a rectangular park} = 2 \times (60 + 45) = 2 \times 105 = 210 \text{ m}$$

Therefore, Bulbul covers less distance.

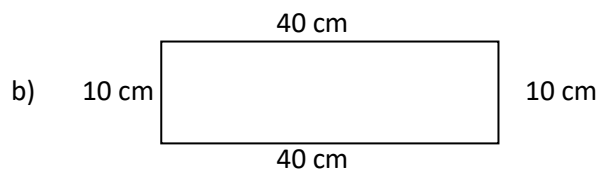
16. What is the perimeter of each of the following figures? What do you infer from the answers?

a)



Answer:

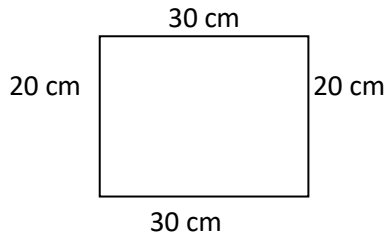
$$\text{Perimeter} = 25 \times 4 = 100 \text{ cm}$$



Answer:

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

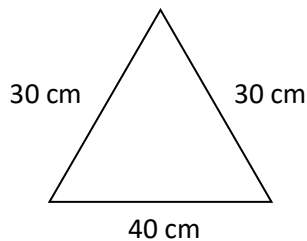
c)



Answer:

$$\text{Perimeter} = 30 + 20 + 30 + 20 = 100 \text{ cm}$$

d)



Answer:

$$\text{Perimeter} = 30 + 30 + 40 = 100 \text{ cm}$$

All the figures have same perimeter.

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

a) What is the perimeter of his arrangement?

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) Anveet wonders if there is a way of getting an even greater perimeter. Can you find a way of doing this?

Answer:

a) Side of square = $3 \times \frac{1}{2} = \frac{3}{2}$ m

$$\text{Perimeter of square} = 4 \times \frac{3}{2} = \frac{12}{2} = 6 \text{ m}$$

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

- c) The arrangement in the form of a cross has a greater perimeter.
d) If all the squares arranged in a row, then the perimeter will be 10 cm.

Exercise 10.3

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) 2m and 70 cm

Answer:

a) Area of a rectangle = length X breadth

Given length = 3 cm

Breadth = 4 cm

Area = $3 \times 4 = 12$ sq cm

b) Area = length X breadth = $12 \times 21 = 252$ sq cm

c) Area = $2 \times 3 = 6$ sq km

d) Area = length X breadth

length = 2m = 200 cm

breadth = 70 cm

Area = $200 \times 70 = 14000$ cm = 1.40 sq m

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

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

Answer:

Area of a square = side X side

a) Area = $10 \times 10 = 100$ sq cm

b) Area = $14 \times 14 = 196$ sq cm

c) Area = $5 \times 5 = 25$ sq m

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

a) 9 m and 6 m

b) 17 m and 3 m

c) 4 m and 14 m

Which one has the largest area and which one has the smallest?

Answer:

a) Area = length \times breadth = $9 \times 6 = 54$ sq m

b) Area = length \times breadth = $17 \times 3 = 51$ sq m

c) Area = length \times breadth = $4 \times 14 = 56$ sq m

It can be seen that (c) has the largest area and (b) has the smallest area.

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

Ans:

Given Area = 300 sq m

Length = 50 m

Width = Area \div length = $300 \div 50 = 6$ m

5. What is the cost of tiling a rectangular plot of land 500 m long and 200 m wide at the rate of Rs 8 per hundred sq m?

Answer:

Here we want to find out the area of the given plot.

Given length = 500 m

Breadth = 200m

Area = $500 \times 200 = 100000$ sq m

Cost of tiling per hundred sq m = Rs 8

Cost of tiling per 100000 sq m = $1000 \times 8 = 8000$ rupees

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

Answer:

Given length = 2m = 200 cm

Breadth = 1m 50 cm = 150 cm

Area = length \times breadth = $200 \times 150 = 30000$ sq cm = 3 sq m

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

Answer:

Given length = 4 m = 400 cm

Breadth = 3 m 50 cm = 350 cm

Area = length \times breadth = $400 \times 350 = 140000$ sq cm = 14 sq m

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:

First find the area of the floor.

Given length = 5 m and breadth = 4 m

Area = $5 \times 4 = 20$ sq m

Then find the area of the carpet.

Given side of the square carpet = 3 m

Area of the carpet = $3 \times 3 = 9$ sq m

Area of the floor that is not carpeted = $20 - 9 = 11$ sq m

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:

Given length of the land = 5 m

Breadth = 4 m

Area of the land = $5 \times 4 = 20$ sq m

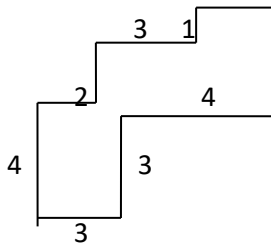
Area of the flower bed of side 1m = $1 \times 1 = 1$ sq m

Area of such 5 flower beds = $5 \times 1 = 5$ sq m

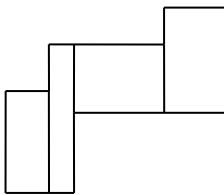
Area of the remaining part of the land = $20 - 5 = 15$ sq m

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

a)



Answer: The given figure can be split into rectangles as follows.



Area of first rectangle = $4 \times 2 = 8$ sq cm

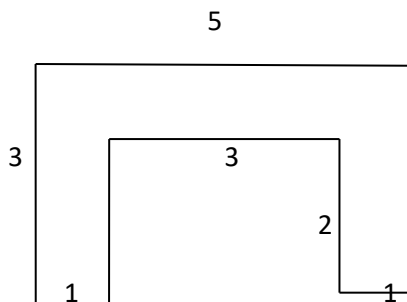
Area of second rectangle = $6 \times 1 = 6$ sq cm

Area of third rectangle = $3 \times 2 = 6$ sq cm

Area of fourth rectangle = $4 \times 2 = 8$ sq cm

Total area of the figure = $8 + 6 + 6 + 8 = 28$ sq cm

b)



Answer: The given figure can be split into rectangles as follows



Area of first rectangle = $3 \times 1 = 3$ sq cm

Area of second rectangle = $3 \times 1 = 3$ sq cm

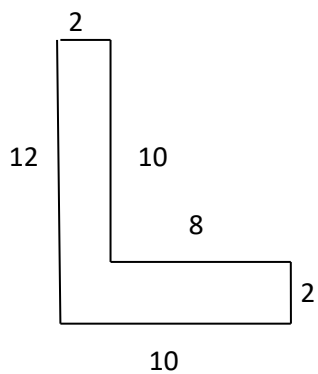
Area of third rectangle = $3 \times 1 = 3$ sq cm

Total area of the figure = $3 + 3 + 3 = 9$ sq cm

11. Split the following shapes into rectangles and find their areas.

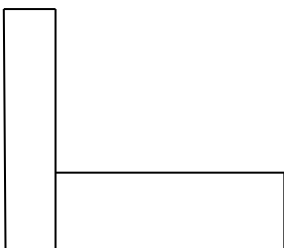
(The measures are given in centimeters)

a



Answer;

The given figure can be split into two rectangles as follows

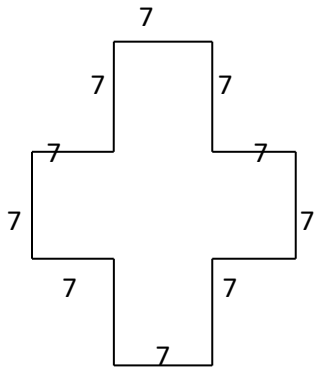


Area of first rectangle = $12 \times 2 = 24$ sq cm

Area of second rectangle = $8 \times 2 = 16$ sq cm

Total area of the figure = $24 + 16 = 40$ sq cm

b)



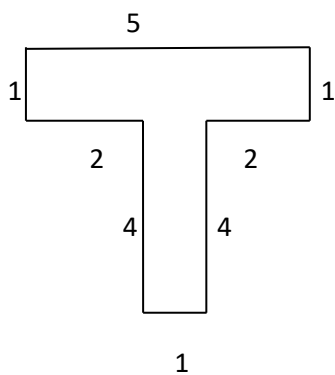
Answer:

The given figure can be split into 5 equal squares each of side 7 cm.

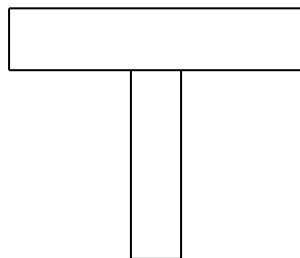
Area of a square = side \times side = $7 \times 7 = 49$ sq cm

Therefore, the required area = $49 \times 5 = 245$ sq cm

c)



Answer: The given figure can be split into two rectangles as follows



Area of the first rectangle = $5 \times 1 = 5$ sq cm

Area of the second rectangle = $4 \times 1 = 4$ sq cm

Total area of the figure = $5 + 4 = 9$ sq cm

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:

a) Total area of the rectangular region = $100 \times 144 = 14400$ sq cm

Area of one tile = $12 \times 5 = 60$ sq cm

Number of tiles required = $14400 \div 60 = 240$ tiles

b) Total area of the rectangular region = $70 \times 36 = 2520$ sq cm

Area of one tile = $12 \times 5 = 60$ sq cm

Number of tiles required = $2520 \div 60 = 42$ tiles

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