

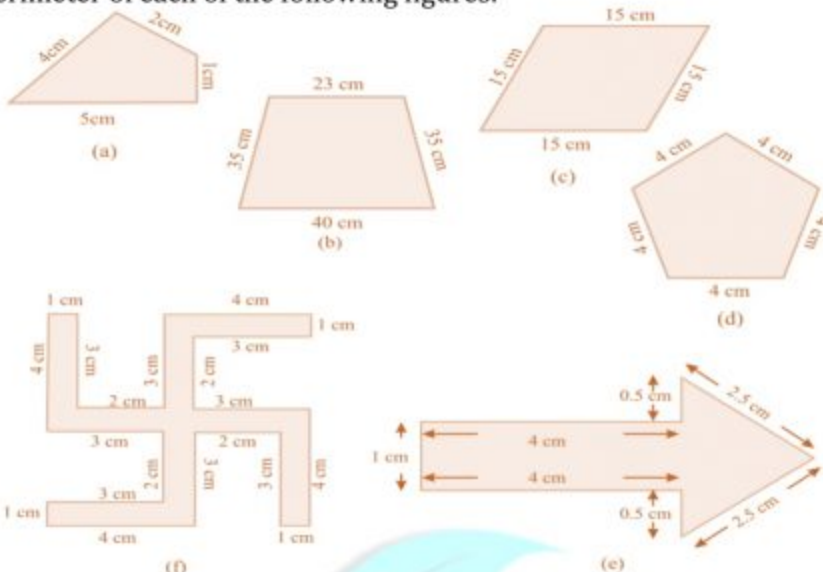
Mathematics

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

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:

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

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

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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:

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

Thus, the perimeter of table top is 7.5 m.

Question 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 4:

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

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.

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

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

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 $\triangle ABC = AB + BC + CA$
 $= 3 \text{ cm} + 5 \text{ cm} + 4 \text{ cm}$
 $= 12 \text{ cm}$



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(b) Perimeter of equilateral ABC = 3 x side
= 3 x 9 cm
= 27 cm



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



Question 7:

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

Answer 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 x 8 m
= 48 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 x side
 $\Rightarrow 20 = 4 \times \text{side}$
 $\Rightarrow \text{Side} = \frac{20}{4} = 5 \text{ cm}$

Thus, the side of square is 5 cm.

Question 10:

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

Answer 10:

Perimeter of regular pentagon = 100 cm
 $\Rightarrow 5 \times \text{side} = 100 \text{ cm}$
 $\Rightarrow \text{Side} = \frac{100}{5} = 20 \text{ cm}$

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 form:

(a) a square

(b) an equilateral triangle

(c) a regular hexagon?

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Answer 11:

Length of string = Perimeter of each figure

(a) Perimeter of square = 30 cm

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

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

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

(b) Perimeter of equilateral triangle = 30 cm

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

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

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

(c) Perimeter of hexagon = 30 cm

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

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

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

Question 12:

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

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

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

$$\Rightarrow 26 + x = 36$$

$$\Rightarrow x = 36 - 26$$

$$\Rightarrow x = 10 \text{ cm}$$

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 m

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

$$= 4 \times 250$$

$$= 1000 \text{ m}$$

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 m

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

Since, the cost of fencing park per meter = ₹ 12
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:

$$\begin{aligned}\text{Distance covered by Sweety} &= \text{Perimeter of square park} \\ \text{Perimeter of square} &= 4 \times \text{side} \\ &= 4 \times 75 = 300 \text{ m}\end{aligned}$$

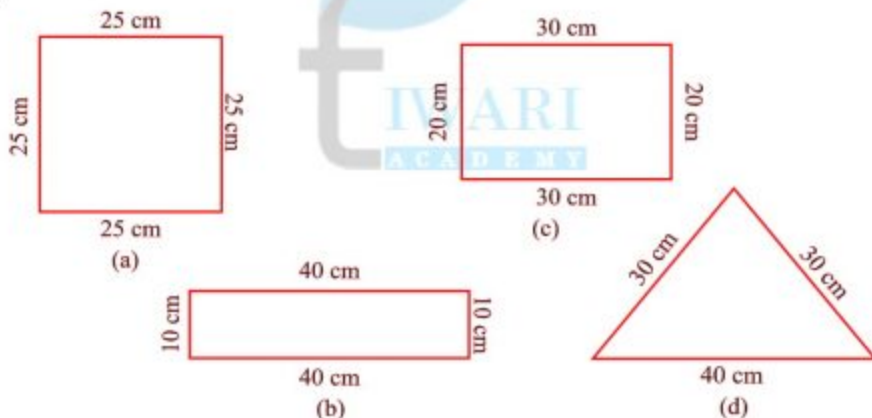
Thus, distance covered by Sweety is 300 m.

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

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

Question 16:

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



Answer 16:

$$\begin{aligned}\text{(a) Perimeter of square} &= 4 \times \text{side} \\ &= 4 \times 25 = 100 \text{ cm} \\ \text{(b) Perimeter of rectangle} &= 2 \times (\text{length} + \text{breadth}) \\ &= 2 \times (40 + 10) \\ &= 2 \times 50 \\ &= 100 \text{ cm} \\ \text{(c) Perimeter of rectangle} &= 2 \times (\text{length} + \text{breadth}) \\ &= 2 \times (30 + 20) \\ &= 2 \times 50 \\ &= 100 \text{ cm}\end{aligned}$$

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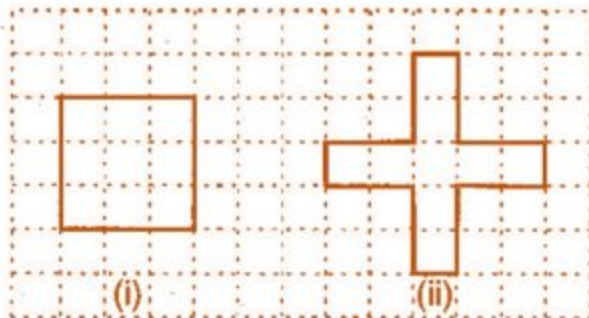
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- (d) Perimeter of triangle = Sum of all sides
= 30 cm + 30 cm + 40 cm
= 100 cm

Thus, all the figures have same perimeter.

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.