Tender Heart High school, Sec-33B, Chandigarh

Class - V
Subject - Mathematics

Date - 28.10.24
Teacher - Ms. Sushma

Chapter-10
Perimeter and Area

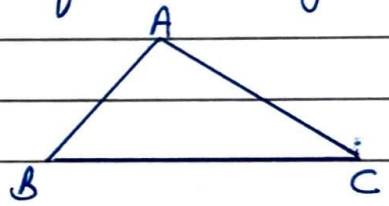
Perimeter of geometrical shapes :→

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

Perimeter of a triangle :→

= Sum of the length of the sides.

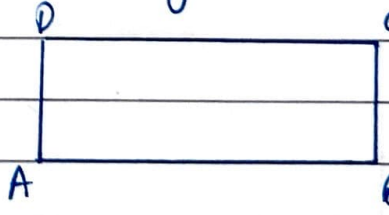
= AB + BC + CA



Perimeter of a rectangle

The opposite sides of a rectangle are equal.

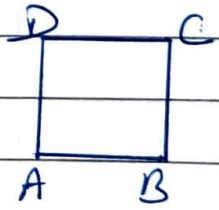
Perimeter of a rectangle = 2 x (length + Breadth)



Perimeter of a square :→

All the sides of a square are equal.

Perimeter of a Square = 4 x side.



Exercise 10.1

A. Find the perimeter of the triangles whose sides are as follows.

1. 4 cm, 5 cm, 6 cm.

Soln:→ Perimeter of the triangle = 4cm + 5cm + 6cm
= (4 + 5 + 6) cm
= 15 cm

2. 60 cm, 74 cm, 87 cm

Soln:→ Perimeter of the triangle = 60cm + 74cm + 87cm
= (60 + 74 + 87) cm
= 221 cm.

3. $5\frac{1}{2}$ m, $2\frac{1}{2}$ m, $4\frac{1}{2}$ m

Soln:→ Perimeter of the triangle $= \left(5\frac{1}{2} + 2\frac{1}{2} + 4\frac{1}{2}\right)$ m

$= \left(\frac{11}{2} + \frac{5}{2} + \frac{9}{2}\right)$ m

$= \left(\frac{11+5+9}{2}\right)$ m

$= \frac{25}{2}$ m $= 12\frac{1}{2}$ m

B. Find the perimeter of each rectangle.

1. $l = 6$cm, $b = 7$cm

Perimeter of rectangle $= 2(l+b) = 2(6+7)$
$= 2(13) = 26$ cm

2. $l = 12\,cm$, $b = 6\,cm$
Perimeter of the rectangle $= 2(l+b)$
$= 2(12+6)$
$= 2 \times 18 = 36\,cm$

C. Find the perimeter of each square whose side is given as follows.

1. 3cm

Soln:- Side of square = 3cm
Perimeter " " $= 4 \times$ side $\Rightarrow 4 \times 3 = 12\,cm$

2. 7cm

Soln:- Side of square = 7cm
Perimeter " " $= 4 \times$ side $= 4 \times 7 = 28\,cm$

Exercise 10.2

Solve these story sums.

1. Mr. Sharma walks around a park every morning. The length of the park is 220m and its breadth is 100m. How much distance does he walk every morning?

Soln:→ The length of the park = 220m
Breadth " " " = 100m
Distance covered by Mr. Sharma = Perimeter of the park $= 2(l+b)$
$= 2(220+100)$
$= 2(320) = 640\,m.$

2. Sanjana has created a rectangular playing field for her dog. The length of the field is 10m

and is breadth is 7 cm. What is the perimeter of the playing field?

Soln:→ The length of the field = 10 m
Breadth " " " = 7 m
Perimeter " " " = 2(l+b)
= 2 (10+7) = 2 x 17 = 34 m

Qus A square field has a side of length 90m. Find the length of the fence Aashish needs to make along its border.

soln:→ Length of side of a square = 90 m.
Length of the fence needed = Perimeter of a square field = 4 x Side
= 4 x 90 m
= 36 m
So, 30m length of the fence Aashish needs to make along its ~~a square field~~.

Area:→
The area of a closed figure is the surface covered by it.

Area of a rectangle = length x breadth

Area of a Square = side x side.

Units of Area:→
Area is always measured in Square units.

Exercise 10.3

Q1. Find the area of each rectangle.

1. $l = 8$ cm, $b = 5$ cm

Area of rectangle $= l \times b$
$= 8 \times 5$
$= 40\ cm^2$

2. $l = 16$ cm, $b = 9$ cm

Area of rectangle $= l \times b$
$= 16 \times 9$
$= 144\ cm^2$

Q. Find the area of each square whose side is as follows.

1. 5 cm.

Soln:- Area of square $= S \times S = (5 \times 5)\ cm^2$
$= 25\ cm^2$

2. 12 cm

Soln:- Area of Square $= 12\ cm \times 12\ cm$
$= 144\ cm^2$

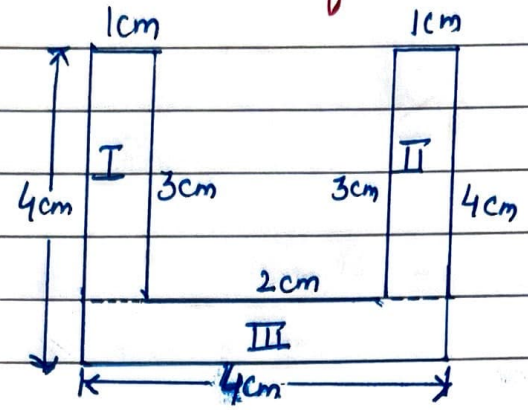
3. 13 cm

Soln:- Area of Square $= 13\ cm \times 13\ cm = 169\ cm^2$

Exercise 10.4

Find the area of each figure.

1.



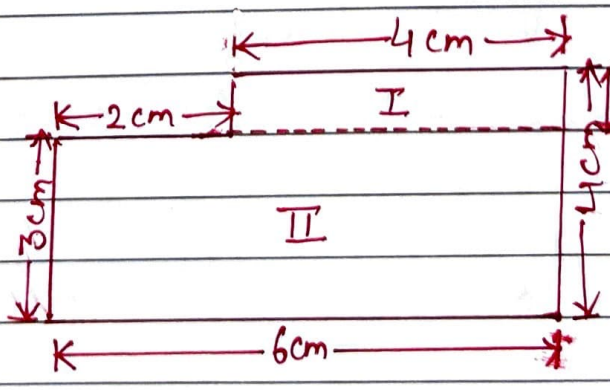
Area of rectangle I = $l \times b$
$= (3 \times 1)\ cm^2 = 3\ cm^2$

Area of rectangle II = $l \times b$
$= (3 \times 1)\ cm^2 = 3\ cm^2$

Area of rectangle III = $l \times b$
$= (4 \times 1)\ cm^2 = 4\ cm^2$

Total area of the figure = Area of I + Area of II + Area of III
$= (3 + 3 + 4)\ cm^2$
$= 10\ cm^2$

2.



Area of I → $4 \times 1 = 4\ cm^2$
Area of II → $6 \times 3 = 18\ cm^2$
Area of given figure = Area of I + Area of II
$= (4 + 18)\ cm^2$
$= 22\ cm^2$

Exercise 10.5
Story Sums.

Q1. Find the area of a wall of a classroom 4.5m high and 6m wide.

Soln:→ Length of a wall = 6m
Breadth " " " = 4.5m
Area " " " = $l \times b = (6 \times 4.5)\ m^2$
$= 27.0\ m^2$
$\therefore$ Area = $27\ m^2$

Q2. Find the area of the top of a square table whose each side is 80 cm.

Soln:- Length of side of Square = 80cm
Area of Square $= S \times S$
$= 80 \times 80$
$= 6400\ cm^2$

Q3. What will be the cost of mowing grass in a rectangular field of dimensions 240m by 120m at a rate of ₹10 per sq. m?

Soln:→ Dimensions of rectangular field is 240m, 120m
Area of rectangular field $= l \times b$
$= (240 \times 120)\ m^2$
$= 28800\ m^2$
Cost of mowing grass in 1 sq. m = ₹10
" " " " " $28800\ m^2$ $= 28800 \times 10$
$= ₹288000$

4. 5000 bricks are used to make a path. What is the area of the path, if the length and breadth of each brick are 22 cm and 10 cm respectively?

Soln:→ No. of bricks used to make a path = 5000

Length of the brick = 22 cm
Breadth " " " = 10 cm
Area " " " = $l \times b$
$= 22 \times 10 = 220\ cm^2$

Area of the path = No. of bricks × Area of 1 brick
$= 5000 \times 220$
$= 1100000\ cm^2$

5. Find the cost of levelling a badminton court 13.2 m long and 5.8 m broad at a rate of ₹ 80 per sq. m.

Soln:→ Length of badminton court = 13.2 m
Breadth " " " = 5.8 m
Area " " " = $l \times b$
$= 13.2 \times 5.8$
$= 76.56\ m^2$

$$\begin{array}{r} 132 \\ \times\ 58 \\ \hline 1056 \\ 660\times \\ \hline 7656 \end{array}$$

Cost of levelling 1 sq m = ₹ 80
" " " $76.56\ m^2$ = 80×76.56
= ₹ 6124.80

$$\begin{array}{r} 7658 \\ \times\ \ 8 \\ \hline 61248 \end{array}$$

Qu: A rectangular field has an area of 440 sq m. If its length is 22 m, find its breadth.

Soln:→ Area of a rectangular field = 440 Sq m.
Breadth of a " " = Area ÷ Breadth
= 440 ÷ 22
= 20 m.

Exercise 10.7

Answer these questions.

1. Harsh and Varsha bought a 40 cm long thread each. Harsh made a rectangle of length 12 cm and breadth 8 cm with it and Varsha made a square of side 10 cm. Which shape has more area?

Soln:→ Length of a thread = 40 cm.
Length of a rectangle = 12 cm
Breadth " " " = 8 cm
Area " " " = $l \times b = 12 \times 8 = 96 cm^2$
Side of a square = 10 cm
Area " " " = $S \times S = 10 \times 10 = 100 cm^2$

It is clear that, square has more area than rectangle.

2. How many rectangles can you make with an 8 cm thread? Is it possible to make a square with the same thread? If yes, find its side.

Soln:→ 1 rectangle can be made with an 8 cm long thread.

Yes, it is possible to make a square with an 8 cm long thread.

Here,

Perimeter of square = 8cm

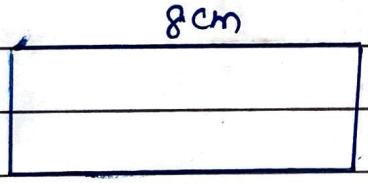
$4 \times \text{side} = 8$

$\text{side} = 8 \div 4$

$\text{side} = 2\text{cm}.$

Q3. How many rectangles can you make with an 18 cm thread?

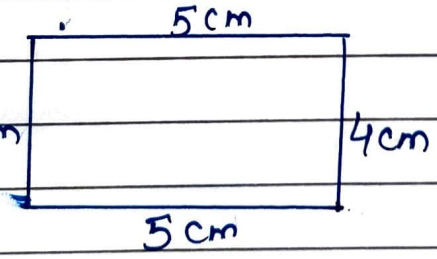
Soln:→ 1)



Perimeter = 8cm + 1cm + 8cm + 1cm

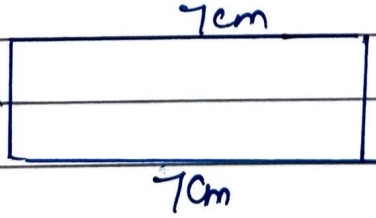
= 18cm

2)



Perimeter = 5cm + 4cm + 5cm + 4cm = 18cm

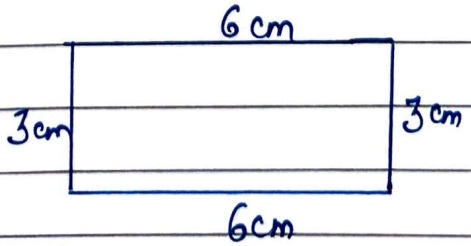
3)



Perimeter = 7cm + 2cm + 7cm + 2cm

= 18cm

4)



Perimeter = 6cm + 3cm + 6cm + 3cm = 18cm

∴ 4 rectangles can be made.