Perimeter and Area: Exercise 11.1

Q.1 The length and the breadth of a rectangular piece of land are 500 m and 300 m respectively. Find
(i) its area
(ii) the cost of the land, if 1 m^2 of the land costs ₹ 10,000.

Sol: **Given:** Dimension of rectangle piece of land, length = 500 m and breadth = 300 m.

(i) Area = length x breadth
= 500 x 300
= 150000 m^2

Thus, area of rectangle piece of land = 150000 m^2

(ii) Since, cost of the land for 1 m^2 = ₹ 10000
So, cost of the land for 150000 m^2 = 10000 × 150000
= ₹ 1500000000

Q.2 Find the area of a square park whose perimeter is 320 m.

Sol: **Given:** Perimeter of square park = 320 m
Since, Perimeter of square = 4 x (side)
320 = 4 x (side)
Side = 320/4
= 80 m
Thus, side of park = 80 m
Now, area of the square park = $(\text{side of park})^2$
= 80^2
= 6400 m^2
Thus, area of the square park is 6400 m^2.

Q.3 Find the breadth of a rectangular plot of land, if its area is 440 m^2 and the length is 22 m. Also find its perimeter.

Sol: **Given:** Dimension of rectangle plot, length = 22 m and area =440 m^2
Since, area of the rectangle = Length × Breadth
440 = 22 × Breadth
Breadth = 440/22
Breadth = 20 m
Thus, breadth of rectangle plot = 20 m
Now, Perimeter of the rectangle = 2(Length + Breadth)
= 2 (22 + 20)
= 84 m
Thus, perimeter of the rectangular plot = 84 m

Q.4 The perimeter of a rectangular sheet is 100 cm. If the length is 35 cm, find its breadth. Also find the area.

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Sol: **Given:** Dimension of rectangle sheet, length = 100 cm and perimeter = 100 cm.
Since, Perimeter of the rectangle = 2 (Length + Breadth)
100 = 2 (35 + Breadth)
(100/2) = 35 + Breadth
50 – 35 = Breadth
Breadth = 15 cm
Thus, breadth of rectangle sheet = 15 cm
Now, Area of the rectangle = Length × Breadth
= 35 × 15
= 525 cm^2
Thus, Area of the rectangular sheet = 525 cm^2

Q.5 The area of a square park is the same as of a rectangular park. If the side of the square park is 60 m and the length of the rectangular park is 90 m, find the breadth of the rectangular park.
Sol: **Given:** Side of square park = 60 m
Length of rectangle park = 90 m
Since, Area of the square park = Area of the rectangular park
$(\text{Side of park})^2$ = length of rectangle park x breadth of rectangle park
$(60)^2$ = 90 x breadth of rectangle park
Breadth of rectangle park = 3600/90
= 40 m
Thus, Breadth of rectangle park is 40 m.

Q.6 A wire is in the shape of a rectangle. Its length is 40 cm and breadth is 22 cm. If the same wire is rebent in the shape of a square, what will be the measure of each side? Also find which shape encloses more area?
Sol:
Given: Dimension of shape made by wire, length = 40 cm and breadth = 22 cm.
Since, same wire is rebent in the shape of a square.
So, Perimeter of the rectangle = Perimeter of the Square
2 x (Length + Breadth) = 4 × side
2 x (40 + 22) = 4 × side
2 x (62) = 4 × side
124 = 4 × side
Side = 124/4
Side = 31 cm
So, Area of the rectangle = (Length × Breadth)
= 40 × 22
= 880 cm^2
Thus, area of rectangle shaped made by wire = 880 cm^2
Now, Area of square = $(\text{side})^2$
= 31^2
= 31 × 31
= 961 cm^2
Thus, area of square shaped made by wire = 880 cm^2
From above calculation, square shaped wire encloses more area.

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Q.7 The perimeter of a rectangle is 130 cm. If the breadth of the rectangle is 30 cm, find its length. Also find the area of the rectangle.

Sol: **Given:** Dimension of rectangle, breadth = 30 cm and perimeter = 130 cm

Since, perimeter of rectangle = 2 (Length + Breadth)

$130 = 2 (\text{length} + 30)$

$130/2 = \text{length} + 30$

$\text{Length} = 65 - 30$

$\text{Length} = 35 \text{ cm}$

Then, length of the rectangle = 35 cm

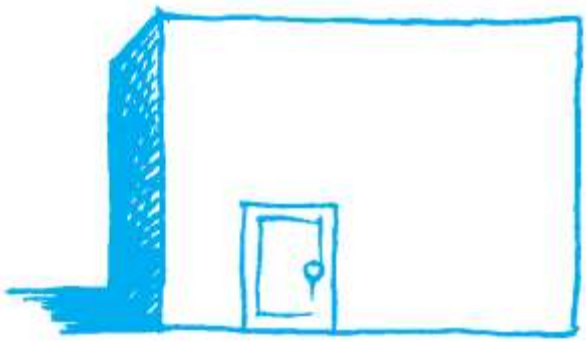
Now, Area of the rectangle = Length × Breadth

$= 35 \times 30$

$= 1050 \text{ cm}^2$

Thus, area of the rectangle = 1050 cm^2

Q.8 A door of length 2 m and breadth 1 m is fitted in a wall. The length of the wall is 4.5 m and the breadth is 3.6 m (Fig). Find the cost of white washing the wall, if the rate of white washing the wall is ₹ 20 per m^2.



Sol: **Given:** Dimension of door, length =2 m and breadth = 1 m

And Dimension of wall, length = 4.5 m and breadth = 3.6 m

So, Area to be white washed = Area of wall – area of door

$= (4.5 \times 3.6) - (2 \times 1)$

$= 16.2 - 2$

$= 14.2 \text{ m}^2$

Since, cost of white washing 1 m^2 area = ₹ 20

So, cost of whit washing 14.2 m^2 area = 14.2 × 20

= ₹ 284

Thus, the cost of whit washing 14.2 m^2 area = ₹ 284