CHAPTER-15
PERIMETER AND AREA

Question 1.
A rectangular park is 55 m wide and 89 m long. Find the cost of fencing it at the rate of ₹ 22.50 per 1oo metres.
Solution:
Length 89 m and Breadth = 55 m
∵ Perimeter of a rectangle
= 2 × [Length + Breadth]
Perimeter of the rectangular park
= 2[89 m + 55 m] = 2[144 m] = 288 m
∵ Length of the wire = 288 m
∴ Cost of fencing
= [Perimeter] × [Cost of fencing]
= [288 m] × [₹22.50 per 100 metre]
= ₹ 288 × $\frac{225}{10} \times \frac{1}{100}$ = ₹ 64.80

Question 2.
Which has a greater perimeter: a square plot of side 75 m or a rectangular plot with sides 100 m and 65 m and by how much?
Solution:
∵ Perimeter of a square = 4 × Side
∴ Perimeter of the square plot = 4 × 75 m = 300 m
On the other hand, perimeter of rectangle = 2 × [Length + Breadth]
∴ Perimeter of the given rectangular plot = 2[100 m + 65 m] = 2[165 m] = 330 m
∵ 330 m > 300 m and 330 m – 300 m = 30 m
∴ The perimeter of the rectangular plot is more than square plot by 30 m.

Question 3.
What would be the cost of fencing a rectangular park whose length is 150 m and breadth is 120 m if the fence costs ₹ 40 per meter?
Solution:
The length of the fence is the perimeter of the rectangular park.
Given that the length of the rectangular park = 150 m and breadth = 120 m
∴ Perimeter = 2(l + b)
= 2(150 + 120)
= 2(270)
= 540 m
Now cost of fencing per meter = ₹ 40
Cost of fencing the rectangular park = ₹ 40 × 540 = ₹ 21600

Question 4.
A piece of string is 36 cm long. What will be the length of each side, if it is used to form:
(a) A square,
(b) A triangle with all sides of equal length, and

(c) A hexagon (a six-sided closed figure) with sides oil equal length?
Solution:
(a) Given, a piece of string is 36 cm long
∴ length of each side of the square = a
perimeter = 36
⇒ 4a = 36
⇒ a = 9 cm

(b) Length of each side of the triangle = 3a (Given)
perimeter = 36
⇒ 3a = 36
⇒ a = 12 cm

(c) Length of each side of hexagon = a
perimeter = 36
⇒ 36 = 6a
⇒ a = 6 cm

Question 5.
Find out the total distance Akshi has covered in 5 rounds.
Solution:
Distance covered by Akshi in 5 rounds = 5 × perimeter of PQRS
= 5 × 220
= 1100 m

Question 6.
Find out the total distance Toshi has covered in 7 rounds. Who ran a longer distance?
Solution:
Distance covered by Toshi in 7 rounds = 7 × 180 = 1260 m
∴ 1260 m > 1100 m
Hence Toshi ran the longer distance.

Question 7.
The area of a rectangular garden 25 m long is 300 sq m. What is the width of the garden?
Solution:
Given, area of rectangular garden = 300 sq.m
and length = 25 m
area of rectangular field = l × b
⇒ 300 = 25 × b
⇒ b = 12 m

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

Solution:
Here, length = 500 m and breadth = 200 m
Hence the area of the rectangular plot = length × breadth
= 500 × 200
= 1,00,000 m^2
Now cost of tilling a rectangular plot = $8/100$
Hence the cost of tilling 1,00,000 sq. m of rectangular plot = $8/100$ × 100000 = ₹ 8,000

Question 9.
A rectangular coconut grove is 100 m long and 50 m wide. If each coconut tree requires 25 sq m, what is the maximum number of trees that can be planted in this grove?
Solution:
Area of rectangular coconut grove = 100 × 50 = 5000 sq. m
Given each coconut tree requires 25 sq. m
then the maximum no. of trees that can be planted in this grove = $5000/25$ = 200

Question 10.
Explore and figure out how many pieces have the same area.
Solution:
There are two pieces (A and B) that have the same area.

Question 11.
How many times bigger is Shape D as compared to Shape C? What is the relationship between Shapes C, D, and E?
Solution:
Shape D is two times bigger than shape C. Clearly from the figure, the area of shapes C and E is equal to the area of shape D.

Question 12.
Which shape has more area: Shape D or F? Give reasons for your answer.
Solution:
Since the medium triangle and the square are each made up of two small tangram triangles, they each have an area 2x that of the small triangle. Hence both have the same area.

Question 13.
Which shape has more area: Shape F or G? Give reasons for your answer.
Solution:
Since the medium triangle and the rhomboid are each made up of two small tangram triangles, they each have an area 2x that of the small triangle. Hence both have the same area.

Question 14.
What is the area of Shape A as compared to Shape G? Is it twice as big? Four times

as big?
[Hint: In the tangram pieces, by placing the shapes over each other, we can find out that Shapes A and B have the same area, and Shapes C and E have the same area. You would have also figured out that Shape D can be exactly covered using Shapes C and E, which means Shape D has twice the area of Shape C or Shape E, etc.]
Solution:
Shape A has twice the area of shape G.

Question 15.
Give the dimensions of a rectangle whose area is the sum, of the areas of these two rectangles having measurements: 5 m × 10 m and 2 m × 7 m.
Solution:
Here, Area of rectangle 1 = 5 × 10 = 50 sq m
Area of rectangle 2 = 2 × 7 = 14 sq m
The Sum of the areas of these 2 rectangles = 50 + 14 = 64 sq m
Now, the total area of the rectangle = 64
Let's say the sides of the rectangle are Length = x and Width = y
Area of rectangle = x × y
Hence x × y = 64
xy = 64
Let's say x = 1, then y = $64/1$ = 64
if x = 2, then y = $64/2$ = 32
Hence the dimensions of the rectangle are (1 × 64), (2 × 32)

Question 16.
The area of a rectangular garden that is 50 m long is 1000 sq m. Find the width of the garden.
Solution:
Width of rectangular garden = area /length of garden
= $1000/50$
= 20 m