Exercise 12.3

Question 9:

A rhombus shaped sheet with perimeter 40 cm and one diagonal 12 cm, is painted on both sides at the rate of Rs 5 per m2. Find the cost of painting.

Answer 9:

Let ABCD be a rhombus having each side equal to x cm

i.e., AB = BC = CD = DA = x cm

Given, perimeter of rhombus = 40

$\therefore$ AB + BC + CD + DA = 40

$\Rightarrow$ x + x + x + x = 40

$\Rightarrow$ 4x = 40

$\Rightarrow$ $x = \frac{40}{4}$

$\therefore$ x = 10 cm

In ΔABC,

Let a = AB =10 cm, b = BC = 10 cm and c = AC = 12cm

Now, Semi – Perimeter ΔABC,

$$s = \frac{a+b+c}{2} = = \frac{10+10+12}{2} = \frac{32}{2} = 16cm$$

$\therefore Area\ of\ \Delta ABC = \sqrt{s(s-a)(s-b)(s-c)}$ [By Heron's formula]

$= \sqrt{16(16-10)(16-10)\ (16-12)}$

$= \sqrt{16 \times 6 \times 6 \times 4} = 4 \times 6 \times 2 = 48cm^2$

$\therefore Area\ of\ the\ rhombus$

$= 2$ (Area of ΔABC)

$= 2 \times 48$

$= 96\ cm^2$

$\because$ Cost of painting of the sheet of 1 cm^2 = Rs 5

$\therefore$ Cost of painting of the sheet of 96 cm^2 = 96×5 = Rs480

Hence, the cost of the painting of the sheet for both sides = 2×480 = Rs.480.