

Mathematics

(www.tiwariacademy.net)

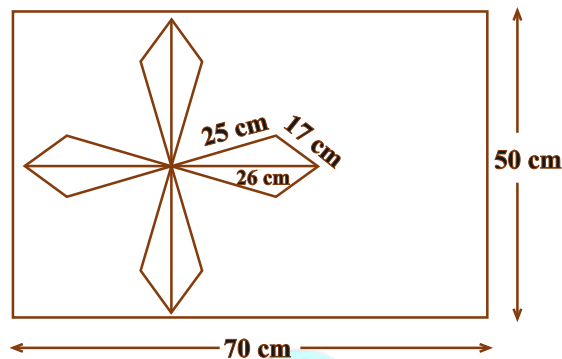
(Chapter – 12) (Heron's Formula)(Exemplar Problems)

(Class – IX)

Exercise 12.4

Question 8:

A design is made on a rectangular tile of dimensions 50 cm × 70 cm as shown in Fig. 12.7. The design shows 8 triangles, each of sides 26 cm, 17 cm and 25 cm. Find the total area of the design and the remaining area of the tile.



Answer 8:

Given, the dimension of rectangular tile is 50cm × 70cm.

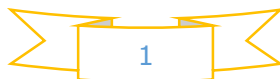
$$\therefore \text{Area of rectangular tile} = 50 \times 70 = 3500 \text{ cm}^2$$

The sides of a design of one triangle be

$$a = 25 \text{ cm, } b = 17 \text{ cm and } c = 26 \text{ cm.}$$

$$\text{Now, Semi- Perimeter, } s = \frac{a+b+c}{2} = \frac{25+17+26}{2} = \frac{68}{2} = 34 \text{ cm}$$

$$\begin{aligned} \therefore \text{Area of a } \Delta ABC &= \sqrt{s(s-a)(s-b)(s-c)} \quad [\text{By Heron's formula}] \\ &= \sqrt{34 \times 9 \times 17 \times 8} \\ &= \sqrt{17 \times 2 \times 3 \times 3 \times 17 \times 2 \times 2 \times 2} \\ &= 17 \times 3 \times 2 \times 2 = 204 \text{ cm}^2 \end{aligned}$$



Mathematics

(www.tiwariacademy.net)

(Chapter – 12) (Heron's Formula)(Exemplar Problems)

(Class – IX)

$$\therefore \text{Total area of eight triangles} = 204 \times 8 = 1632 \text{ cm}^2$$

$$\begin{aligned} \text{Now, area of the design} &= \text{Total area of eight triangles} \\ &= 1632 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Also, remaining area of the tile} &= \text{Area of the rectangle} - \text{Area of the design} \\ &= 3500 - 1632 = 1868 \text{ cm}^2 \end{aligned}$$

Hence, the total area of the design is 1632 cm^2 and the remaining area of the tile is 1868 cm^2 .

