



#### Exercise 17A

Question 5:

On dividing 150 m in the ratio 5 : 12 : 13, we get

$$\text{Length of one side} = \left(150 \times \frac{5}{30}\right) \text{ m} = 25 \text{ m}$$

$$\text{Length of the second side} = \left(150 \times \frac{12}{30}\right) \text{ m} = 60 \text{ m}$$

$$\text{Length of third side} = \left(150 \times \frac{13}{30}\right) \text{ m} = 65 \text{ m}$$

$$\text{Let } a = 25 \text{ m, } b = 60 \text{ m, } c = 65 \text{ m}$$

$$\text{Then, } s = \frac{1}{2}(25 + 60 + 65) \text{ m} = 75 \text{ m}$$

$(s - a) = 50 \text{ cm}$ ,  $(s - b) = 15 \text{ cm}$ , and  $(s - c) = 10 \text{ cm}$

$$\begin{aligned}\text{Area of the triangle} &= \sqrt{s(s-a)(s-b)(s-c)} \\ &= \sqrt{75 \times 50 \times 15 \times 10} \text{ m}^2 \\ &= 750 \text{ m}^2\end{aligned}$$

Hence, area of the triangle = 750 m<sup>2</sup>

Question 6:

On dividing 540 m in ratio 25 : 17 : 12, we get

$$\text{Length of one side} = \left(540 \times \frac{25}{54}\right) \text{ m} = 250 \text{ m}$$

$$\text{Length of second side} = \left(540 \times \frac{17}{54}\right) \text{ m} = 170 \text{ m}$$

$$\text{Length of third side} = \left(540 \times \frac{12}{54}\right) \text{ m} = 120 \text{ m}$$

$$\text{Let } a = 250 \text{ m, } b = 170 \text{ m and } c = 120 \text{ m}$$

$$\text{Then, } s = \frac{1}{2}(250 + 170 + 120) \text{ m} = 270 \text{ m}$$

Then,  $(s - a) = 29$  m,  $(s - b) = 100$  m, and  $(s - c) = 150$  m

$$\begin{aligned}\text{Area of the triangle} &= \sqrt{s(s-a)(s-b)(s-c)} \\ &= \sqrt{270 \times 29 \times 100 \times 150} \text{ m}^2 \\ &= 9000 \text{ m}^2\end{aligned}$$

The cost of ploughing 100 area is = Rs. 18. 80

$$\text{The cost of ploughing } 1 \text{ m}^2 \text{ is} = \text{Rs.} \left( \frac{18.80}{100} \right)$$

$$\begin{aligned}\text{The cost of ploughing } 9000 \text{ m}^2 \text{ area} &= \text{Rs.} \left( \frac{18.80}{100} \times 9000 \right) \\ &= \text{Rs. } 1692\end{aligned}$$

Hence, cost of ploughing = Rs 1692.

Question 7:

Let the length of one side be  $x$  cm

Then the length of other side =  $\{40 \times (17 + x)\}$  cm =  $(23 - x)$  cm

Hypotenuse = 17 cm

Applying Pythagoras theorem, we get

$$\begin{aligned}\text{Then, } x^2 + (23 - x)^2 &= 17^2 \Rightarrow x^2 - 23x + 120 = 0 \\ \Rightarrow (x - 15)(x - 8) &= 0 \\ \Rightarrow x &= 15 \text{ or } x = 8\end{aligned}$$

Base = 15 cm,

$$\text{height} = 40 - (17 + 15) = 40 - 32 = 8$$

$$\begin{aligned}\text{Area of triangle} &= \frac{1}{2} \times \text{Base} \times \text{Height} \\ &= \left( \frac{1}{2} \times 15 \times 8 \right) \text{ cm}^2 = 60 \text{ cm}^2\end{aligned}$$

Hence, area of the triangle =  $60 \text{ cm}^2$

Question 8:

Let the sides containing the right angle be  $x$  cm and  $(x \times 7)$  cm

$$\text{Then, its area} = \left[ \frac{1}{2} \times x \times (x - 7) \right] \text{ cm}^2$$

$$\text{But area} = 60 \text{ cm}^2$$

$$\therefore \frac{1}{2} \times (x - 7) = 60$$

$$\Rightarrow x^2 - 7x - 120 = 0$$

$$\Rightarrow x^2 - 15x + 8x - 120 = 0$$

$$\Rightarrow x(x - 15) + 8(x - 15) = 0$$

$$\Rightarrow (x - 15)(x + 8) = 0$$

$$\Rightarrow x = 15 \text{ [Neglecting } x = -8]$$

One side = 15 cm and other =  $(15 \times 7)$  cm = 8 cm

$$\begin{aligned}\text{Hypotenuse} &= \sqrt{(15)^2 + (8)^2} \text{ cm} = \sqrt{225 + 64} \text{ cm} \\ &= \sqrt{289} \text{ cm} = 17 \text{ cm}\end{aligned}$$

perimeter of triangle  $(15 + 8 + 17)$  cm = 40 cm

\*\*\*\*\* END \*\*\*\*\*