

$$\text{Area of original rectangle} = (2x - 5) \times x \text{ cm}^2$$

$$\text{Length is decreased by 3 cm} = 2x - 5 - 3 = 2x - 8 \text{ cm}$$

$$\text{Breadth increased by 2 cm} = x + 2 \text{ cm}$$

$$\text{Perimeter of the resulting rectangle} = 72 \text{ cm}$$

$$\Rightarrow 2(2x - 8 + x + 2) = 72$$

$$\Rightarrow 3x - 6 = 36$$

$$\Rightarrow 3x = 42 \Rightarrow x = 14$$

$$\text{Now, Area of original rectangle} = (2x - 5) \times x \text{ cm}^2$$

$$= \{2(14) - 5\} \times 14 \text{ cm}^2$$

$$= 23 \times 14 \text{ cm}^2 = 322 \text{ cm}^2 \quad \text{Ans.}$$

28. A streamer goes downstream and covers the distance between two ports in 5 hours while it covers the same distance upstream in 6 hours. If the speed of the stream is 1 km/h find the speed of the streamer in still water and the distance between two ports.

Solution : Let the speed of the streamer in still water be $x \text{ km/h}$

$$\text{Speed of the stream is } 1 \text{ km/h}$$

$$\text{The speed of streamer downstream} = (x + 1) \text{ km/h}$$

$$\text{The speed of streamer upstream} = (x - 1) \text{ km/h}$$

$$\text{Distance covered by streamer, downstream} = 5(x + 1) \text{ km}$$

$$\text{Distance covered by streamer, upstream} = 6(x - 1) \text{ km}$$

$$\text{According to question, } 5(x + 1) = 6(x - 1)$$

$$\Rightarrow 5x + 5 = 6x - 6$$

$$\Rightarrow 5x - 6x = -6 - 5$$

$$\Rightarrow -x = -11 \Rightarrow x = 11 \text{ km/h} \quad \text{Ans.}$$

$$\text{The distance between two ports} = 5(11 + 1) = 5(12) = 60 \text{ km} \quad \text{Ans.}$$

HOMEWORK

EXERCISE – 12.2

QUESTIONS NUMBERS: 20, 22, 26 and 29
