

Exercise 10D

Question 40:

Let the breadth of a rectangle = x meter Then, length of rectangle = 3x meter

$$\Rightarrow$$
 x x 3x = 147 \Rightarrow 3x² = 147 \Rightarrow x² = 49

$$x = \sqrt{49} \Rightarrow x = \pm 7$$

$$\Rightarrow x = 7$$
 or $x = -7$

$x = 7 \cdot \text{breadth cannot be negative}$

Thus, breadth of rectangle = 7 mAnd length of rectangle = $(3 \times 7)\text{m}$ = 21 m

Question 41:

Let the breadth of hall = x meters Then, length of the hall = (x + 3) meters Area = length × breadth = 238 m^2

$$x \times (x + 3) = 238 \Rightarrow x^2 + 3x - 238 = 0$$

$$\Rightarrow x^2 + 17x - 14x - 238 = 0$$

$$\Rightarrow \times (\times + 17) - 14(\times + 17) = 0$$

$$\Rightarrow$$
 (× + 17)(× - 14) = 0

$$\Rightarrow x = -17$$
 or $x = 14$

$$x = 14[\cdot Breadth cannot be negative]$$

Thus, the breadth of hall is 14 cm And length of the hall is (14 + 3) = 17 cm

Ouestion 42:

Let the breadth of the rectangular plot be x meter

Then, Perimeter = 2(length + breadth) = 62 m

⇒ length + breadth = 31m

 \Rightarrow length = (31 - x) meters

Area = (31 - x)x sq. meter

Now,
$$(31-x)x = 228 \Rightarrow x^2 - 31x + 228 = 0$$

$$\Rightarrow$$
 $\times^2 - 19x - 12x - 228 = 0$

$$\Rightarrow \times (\times - 19) - 12(\times - 19) = 0$$

$$\Rightarrow$$
 (x - 19)(x - 12) = 0

$$x = 19$$
 or $x = 12$

Hence the length and breadth of rectangle is 19 m and 12 m.

Ouestion 43:

Let the side of square be x cm Then, length of the rectangle = 3x cm Breadth of the rectangle = (x - 4) cm Area of rectangle = Area of square x

$$3x(x-4) = x^2 \Rightarrow 3x^2 - 12x = x^2$$

$$\Rightarrow 2x^2 - 12x = 0$$

$$\Rightarrow 2x(x-6) = 0$$

$$\Rightarrow 2x = 0 \text{ or } x-6=0$$

$$x = 0 \text{ or } x=6$$

$$\Rightarrow x = 6 \text{ (Side of the square is never 0)}$$

Thus, side of the square = 6 cm And length of the rectangle = (3×6) = 18 cm Then, breadth of the rectangle = (6 - 4) cm = 2 cm

Ouestion 44:

Let the length = x meter

Area = length \times breadth = 180 m^2

Breadth =
$$\left(\frac{180}{x}\right)$$
m

$$\therefore x + \frac{180}{x} + \frac{180}{x} = 39$$

$$\Rightarrow x^2 - 39x + 360 = 0$$

$$\Rightarrow x^2 - 24x - 15x + 360 = 0$$

$$\Rightarrow x(x - 24) - 15(x - 24) = 0$$

$$\Rightarrow (x - 24)(x - 15) = 0$$

$$\Rightarrow x = 24 \text{ or } x = 15$$

If ength of the rectangle = 15 m

Then, Breadth =
$$\left(\frac{180}{15}\right)$$
m = 12m

Also, if length of rectangle = 24 m

:. Breadth =
$$\frac{181}{24}$$
 m = $\frac{15}{2}$ m = 7.5 m

********* END *******