Quadratic Equations Ex 8.11 Q1

Answer :

Let the breadth of the rectangle be $= x$ metres . Then

Perimeter $= 82$ metres

$$2(\text{length}+\text{breadth}) = 82$$

$$(\text{length}+x) = 41$$

$$\text{length}=41-x$$

And area of the rectangle

$$\text{length} \times \text{breadth} = 400$$

$$(41-x)x = 400$$

$$41x - x^2 = 400$$

$$x^2 - 41x + 400 = 0$$

$$x^2 - 25x - 16x + 400 = 0$$

$$x(x-25) - 16(x-25) = 0$$

$$(x-25)(x-16) = 0$$

$$(x-25) = 0$$

$$x = 25$$

or

$$(x-16) = 0$$

$$x = 16$$

Since perimeter is 82 meter. So breadth can't be 25 meter.

Hence, breadth $\boxed{16\,\text{metres}}$

Quadratic Equations Ex 8.11 Q2

Answer :

Let the breadth of the rectangular hall be $= x$ metres and the length $= (x+5)$ metres Then

And area of the rectangle

$$\text{length} \times \text{breadth} = 84$$

$$(x+5)x = 84$$

$$x^2 + 5x - 84 = 0$$

$$x^2 - 7x + 12x - 84 = 0$$

$$x(x-7) + 12(x-7) = 0$$

$$(x-7)(x+12) = 0$$

$$(x-7) = 0$$

$$x = 7$$

or

$$(x+12) = 0$$

$$x = -12$$

Sides of the rectangular hall never are negative.

Therefore, length

$$= (x+5)$$

$$= 7+5$$

$$= 12$$

Hence, breadth of the hall be $\boxed{7\text{metres}}$ and length be $\boxed{12\,\text{metre}}$

Quadratic Equations Ex 8.11 Q3

Answer :

Given that sides of the squares are $= x$ cm and $= (x+4)$ cm .Then

According to question,

Sum of the areas of square $= 656\,\text{cm}^2$

So,

$$x^2 + (x+4)^2 = 656$$

$$x^2 + x^2 + 8x + 16 = 656$$

$$2x^2 + 8x + 16 - 656 = 0$$

$$2x^2 + 8x - 640 = 0$$

$$2(x^2 + 4x - 320) = 0$$

$$x^2 + 4x - 320 = 0$$

$$x^2 - 16x + 20x - 320 = 0$$

$$x(x-16) + 20(x-16) = 0$$

$$(x-16)(x+20) = 0$$

$$(x-16) = 0$$

$$x = 16$$

or

$$(x+20) = 0$$

$$x = -20$$

Sides of the square never are negative.

Therefore the side of the other square is

$$= (x+4)$$

$$= 16+4$$

$$= 20$$

Hence, sides of the square be $\boxed{16\,\text{cm}}$ and $\boxed{20\,\text{cm}}$ respectively.

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