



Quadratic Equations Ex 8.11 Q7

Answer :

Let the sides of the squares are x m and y m. Then

According to question,

Sum of the difference of their perimeter = 64 m

$$4x - 4y = 64$$

$$x - y = 16$$

$$y = x - 16 \dots (1)$$

And sum of the areas of square = 640 m^2

$$x^2 + y^2 = 640 \dots (2)$$

Putting the value of x in equation (2) from equation (1)

$$x^2 + (x - 16)^2 = 640$$

$$x^2 + x^2 - 32x + 256 = 640$$

$$2x^2 - 32x + 256 - 640 = 0$$

$$2x^2 - 32x - 384 = 0$$

$$2(x^2 - 16x - 192) = 0$$

$$x^2 - 16x - 192 = 0$$

$$x^2 - 24x + 8x - 192 = 0$$

$$x(x - 24) + 8(x - 24) = 0$$

$$(x - 24)(x + 8) = 0$$

$$(x - 24) = 0$$

$$x = 24$$

or

$$(x + 8) = 0$$

$$x = -8$$

Sides of the square never are negative.

Therefore, putting the value of x in equation (1)

$$y = (x - 16)$$

$$= 24 - 16$$

$$= 8$$

Hence, sides of the square be $\boxed{24 \text{ m}}$ and $\boxed{8 \text{ m}}$ respectively.

Quadratic Equations Ex 8.11 Q8

Answer :

Let the side of the smaller square be x cm.

Perimeter of any square = $(4 \times \text{side of the square})$ cm.

It is given that the difference of the perimeters of two squares is 16 cm.

Then side of the bigger square = $\frac{16+4x}{4} = (4 + x)$ cm.

According to the question,

$$\begin{aligned}x^2 + (4 + x)^2 &= 400 \\ \Rightarrow x^2 + 16 + x^2 + 8x &= 400 \\ \Rightarrow 2x^2 + 8x - 384 &= 0 \\ \Rightarrow x^2 + 4x - 192 &= 0 \\ \Rightarrow x^2 + 16x - 12x - 192 &= 0 \\ \Rightarrow x(x + 16) - 12(x + 16) &= 0 \\ \Rightarrow (x - 12)(x + 16) &= 0 \\ \Rightarrow x - 12 = 0 \text{ or } x + 16 = 0 \\ \Rightarrow x = 12 \text{ or } x = -16\end{aligned}$$

Since, side of the square cannot be negative.

Thus, the side of the smaller square is 12 cm.

and the side of the bigger square is $(4 + 12) = 16$ cm.

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