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

$$4x-4y=64$$

$$x-y=16$$

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

And sum of the areas of square $=640\,\mathrm{m}^2$

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

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

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

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

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

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

$$2\left(x^2-16x-192\right)=0$$

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

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

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

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

$$(x-24)=0$$

$$x=24$$

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 $\boxed{24\,\mathrm{m}}$ and $\boxed{8\,\mathrm{m}}$ respectively.

Quadratic Equations Ex 8.11 Q8

Answer :

Let the side of the smaller square be *x* cm.
Perimeter of any square = (4 × 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,

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

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.

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