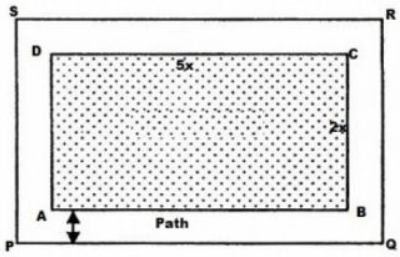
Mensuration I Ex 20.2 Q15

Answer :

We have,

Area of the path = 305 m^2



Let the length of the park be $5x$ m and the breadth of the park be $2x$ m

Thus,

Area of the rectangular park = $5x \times 2x = 10x^2$ m^2

Width of the path = 2.5 m

Outer length PQ = $5x$ m + 2.5 m + 2.5 m = $(5x + 5)$ m

Outer breadth QR = $2x$ + 2.5 m + 2.5 m = $(2x + 5)$ m

Area of $PQRS$ = $(5x + 5)$ m x $(2x + 5)$ m = $(10x^2 + 25x + 10x + 25)$ m^2= $(10x^2 + 35x + 25)$ m^2

$\therefore$ Area of the path = $[(10x^2 + 35x + 25) - 10x^2]$ m^2

$\Rightarrow 305 = 35x + 25$

$\Rightarrow 305 - 25 = 35x$

$\Rightarrow 280 = 35x$

$\Rightarrow x = 280 \div 35 = 8$

Therefore,

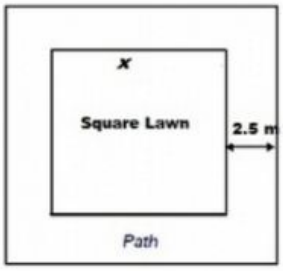
Length of the park = $5x = 5 \times 8 = 40$ m

Breadth of the park = $2x = 2 \times 8 = 16$ m

Mensuration I Ex 20.2 Q16

Answer :

Let the side of the lawn be x m.



Given that width of the path = 2.5 m

Side of the lawn including the path = $(x + 2.5 + 2.5)$ m = $(x + 5)$ m

So, area of lawn = (Area of the lawn including the path) − (Area of the path)

We know that the area of a square = $(\text{Side})^2$

$\therefore$ Area of lawn $(x^2) = (x + 5)^2 - 165$

$\Rightarrow x^2 = (x^2 + 10x + 25) - 165$

$\Rightarrow 165 = 10x + 25$

$\Rightarrow 165 - 25 = 10x$

$\Rightarrow 140 = 10x$

Therefore $x = 140 \div 10 = 14$

Thus the side of the lawn = 14 m

Hence,

The area of the lawn = $(14 \text{ m})^2 = 196 \text{ m}^2$

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