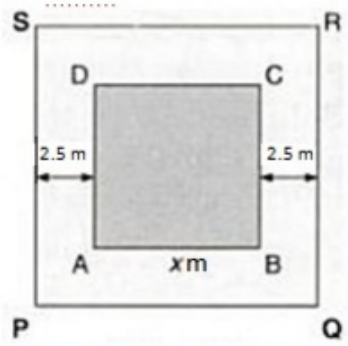
Exercise 20B



Let a side of the lawn (AB) be x m.

Area of the square lawn = x^2

Length, PQ = (x m + 2.5 m + 2.5 m) = (x + 5) m

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

Area of the path = Area of PQRS − Area of the square lawn (ABCD)

⇒ $165 = x^2 + 10x + 25 - x^2$

⇒ $165 = 10x + 25$

⇒ $165 - 25 = 10x$

⇒ $140 = 10x$

∴ $x = 140 \div 10 = 14$

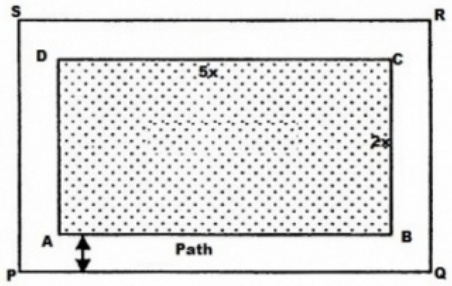
∴ Side of the lawn = 14 m

∴ Area of the lawn = $(\text{Side})^2 = (14 \text{ m})^2 = 196$ m^2

Q10

Answer :

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.

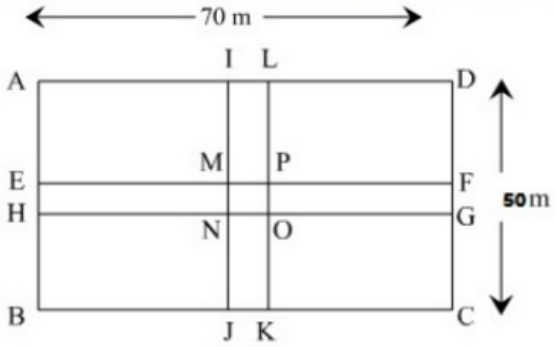
∴ Area of the rectangular park = $5x \times 2x = 10x^2$ m^2
Width of the path = 2.5 m
Outer length, PQ = $5x$ m + 2.5 m + 2.5 m = $(5x + 5)$ m
Outer breadth, QR = $2x$ + 2.5 m + 2.5 m = $(2x + 5)$ m
Area of $PQRS$ = $(5x + 5) \times (2x + 5) = (10x^2 + 25x + 10x + 25) = (10x^2 + 35x + 25)$ m^2
∴ Area of the path = $[(10x^2 + 35x + 25) - 10x^2]$ m^2
⇒ $305 = 35x + 25$
⇒ $305 - 25 = 35x$
⇒ $280 = 35x$
⇒ $x = 280 \div 35 = 8$

∴ Length of the park = $5x = 5 \times 8 = 40$ m
Breadth of the park = $2x = 2 \times 8 = 16$ m

Q11

Answer :

Let $ABCD$ be the rectangular park.
Let $EFGH$ and $IJKL$ be the two rectangular roads with width 5 m.



Length of the rectangular park, AD = 70 m
Breadth of the rectangular park, CD = 50 m
∴ Area of the rectangular park = Length × Breadth = 70 m × 50 m = 3500 m^2
Area of road $EFGH$ = 70 m × 5 m = 350 m^2
Area of road $IJKL$ = 50 m × 5 m = 250 m^2

Clearly, area of $MNOP$ is common to both the two roads.

∴ Area of $MNOP$ = 5 m × 5 m = 25 m^2

Area of the roads = Area ($EFGH$) + Area ($IJKL$) − Area ($MNOP$)
= (350 + 250) m^2 − 25 m^2 = 575 m^2
It is given that the cost of constructing the roads is Rs. 120/m^2.

Cost of constructing 575 m^2 area of the roads = Rs. (120 × 575)
= Rs. 69000

Q12

Answer :

Let ABCD be the rectangular field and PQRS and KLMN be the two rectangular roads with width 2 m and 2.5 m, respectively.

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