MATHEMATICS

Class-7th

Chapter-11

Perimeter and Area

Exercise-11.4

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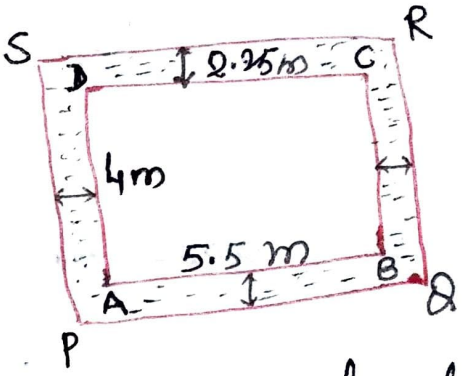
Mathematics

Class-VII Ch-11. Perimeter and Area:

"Ex - 11.4" IInd part:

Q.4. Let ABCD represents the rectangular floor of room and shaded region represents the verandah 2.25 m wide all along the outside of room.



$PQ = (2.25 + 5.5 + 2.25)\,m$

$= 10\,m.$

$PS = (2.25 + 4 + 2.25)\,m$

$= 8.5\,m.$

Now, Area of rectangle ABCD $= l \times b$

$= AB \times AD$

$= 5.5\,m \times 4\,m$

$= 22\,m^2.$

Area of rectangle PQRS $= l \times b$

$= PQ \times PS$

$= 10\,m \times 8.5\,m$

$= 85\,m^2.$

Now, Area of verandah = →

$= \left[\text{Ar. of rect. } PQRS\right] - \left[\text{Ar. of rectangle } ABCD\right]$

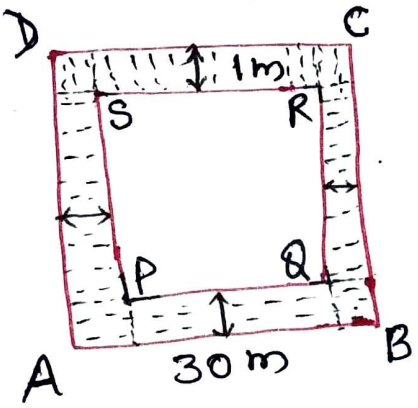
$= (85 - 22)\,m^2 = 63\,m^2$

Cost of cementing $1\,m^2$ of floor of verandah = ₹ 200.

So, cost of cementing $63\,m^2$ of floor of verandah = ₹ (200×63)

= ₹ 12,600 Ans.

Q.5. Sol.



Let ABCD represent the square garden of side 30m and shaded region represents the path 1m wide, built along inside the square garden.

So, Area of square ABCD $= (30m)^2 = 900\,m^2$.

$PQ = (30 - 1 - 1)\,m = 28\,m$.

$PS = (30 - 1 - 1)\,m = 28\,m$

$\therefore$ Area of square PQRS $= (28m)^2 = 784\,m^2$.

Now, Area of path = [Ar. of sq ABCD] − [Ar. of sq. PQRS]

$= (900 - 784)\ m^2$

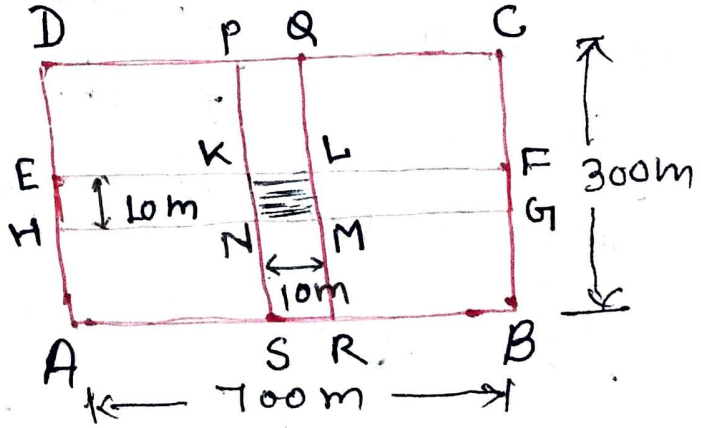
$= 116\ m^2.$

And, Cost of planting the grass in $1\ m^2$ of garden = ₹ 40.

So, the cost of planting the grass in $784\ m^2$ = ₹ (40×784)

= ₹ 31,360. Ans.

Q.6. Sol.



Let ABCD represent the rectangular park of length AB = 700 m width = 300 m

Let area of the rectangle EFGH →

and area of the rectangle PQRS represents the area of cross roads. But in doing this area of the square KLMN is taken twice which is to be subtracted.

Now, $PQ = 10m$, $PS = 300m$

$EH = 10m$, $EF = 700m$

and $KL = 10m$, $KN = 10m$.

$$\boxed{\text{Area of roads}} = \left[\text{ar. of rect. } PQRS\right] + \left[\text{ar. of rect. } EFGH\right] - \left[\text{ar. sq. of } KLMN\right]$$

$$= [(PQ \times PS) + (EH \times EF) - (KL \times KN)]$$

$$= [(10 \times 300) + (10 \times 700) - (10 \times 10)]\,m^2$$

$$= (3000 + 7000 - 100)\,m^2$$

$$= 9900\,m^2 \quad \left[1m^2 = \frac{1}{10{,}000}\,ha\right]$$

$$= \frac{9900}{10{,}000} \text{ hectare}$$

$$= 0.99 \text{ hectare}$$

Now. Area of park excluding roads =

(ar. of rectular park ABCD) - (ar. of cross roads) →

$= (700 \times 300 - 9900)\ m^2$

$= (210000 - 9900)\ m^2$

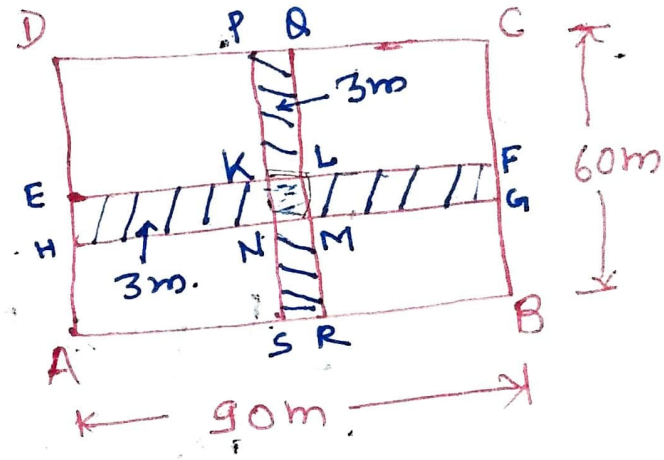
$= 200100\ m^2$

$= \frac{200100}{10,000}$ hectare

$= 20.01$ hectare. Ans.

Q.7. Sol.

Let ABCD is the rectangular field of length AB = 90m and breadth AD = 60m



Let the area of shaded portion i.e area of the rectangle PQRS and the area of rectangle EFGH represents the area of cross roads.

But doing this, area of square KLMN is taken twice which is to be subtracted.

Now, PQ = 3m, PS = 60m

EH = 3m, EF = 90m

And $KL = 3m$, $KN = 3m$

Area covered by the roads $= \begin{bmatrix} \text{ar. of} \\ \text{rect. PQRS} \end{bmatrix} + \begin{bmatrix} \text{ar. of} \\ \text{rect.} \\ \text{EFGH} \end{bmatrix} - \begin{bmatrix} \text{ar. of} \\ \text{square} \\ \text{KLMN} \end{bmatrix}$

$= PQ \times PS + EF \times EH - KL \times KN$

$= [(3 \times 60) + (90 \times 3) - (3 \times 3)]$

$= (180 + 270 - 9)\ m^2$

$= (450 - 9)\ m^2$

$= 441\ m^2$

Cost of constructing $1\ m^2$ of roads $= ₹\ 110$

Therefore, cost of constructing $441\ m^2$ of roads $= ₹\ (110 \times 441)$

$= ₹\ 48510$ Ans.