



Mensuration-I area of a trapezium and a polygon Ex 20.1 Q1

Answer :

Given :

Base of a flooring tile that is in the shape of a parallelogram = $b = 24 \text{ cm}$

Corresponding height = $h = 10 \text{ cm}$

Now, in a parallelogram :

$$\text{Area (A)} = \text{Base (b)} \times \text{Height (h)}$$

$$\therefore \text{Area of a tile} = 24 \text{ cm} \times 10 \text{ cm} = 240 \text{ cm}^2$$

Now, observe that the area of the floor is 1080 m^2 .

$$1080 \text{ m}^2 = 1080 \times 1\text{m} \times 1\text{m}$$

$$= 1080 \times 100 \text{ cm} \times 100 \text{ cm} \quad \left(\text{Because } 1 \text{ m} = 100 \text{ cm} \right)$$

$$= 1080 \times 100 \times 100 \times \text{cm} \times \text{cm}$$

$$= 10800000 \text{ cm}^2$$

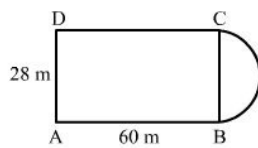
$$\therefore \text{Number of required tiles} = \frac{10800000}{240} = 45000$$

Hence, we need 45000 tiles to cover the floor.

Mensuration-I area of a trapezium and a polygon Ex 20.1 Q2

Answer :

The given figure has a rectangle with a semicircle on one of its sides.



Total area of the plot = Area of rectangle ABCD + Area of semicircle with radius $\left(r = \frac{28}{2} = 14\text{m} \right)$

$$\therefore \text{Area of the rectangular plot with sides 60m and 28m} = 60 \times 28 = 1680 \text{ m}^2$$

.. (i)

$$\begin{aligned} \text{And, area of the semicircle with radius 14m} &= \frac{1}{2} \pi \times (14)^2 = \frac{1}{2} \times \frac{22}{7} \times 14 \times 14 \\ &= 308\text{m}^2 \quad \dots \text{ (ii)} \end{aligned}$$

$$\therefore \text{Total area of the plot} = 1680 + 308 = 1988\text{m}^2 \quad \dots \left(\text{from (i) and (ii)} \right)$$

Mensuration-I area of a trapezium and a polygon Ex 20.1 Q3

Answer :

It is given that the playground is in the shape of a rectangle with two semicircles on its smaller sides.

Length of the rectangular portion is 36 m and its width is 24.5 m as shown in the figure below.



Thus, the area of the playground will be the sum of the area of a rectangle and the areas of the two semicircles with equal diameter 24.5 m.

Now, area of rectangle with length 36m and width 24.5m :

Area of rectangle = length \times width

$$= 36\text{m} \times 24.5 \text{ m}$$

$$= 882 \text{ m}^2$$

$$\text{Radius of the semicircle} = r = \frac{\text{diameter}}{2} = \frac{24.5}{2} = 12.25\text{m}$$

$$\therefore \text{Area of the semicircle} = \frac{1}{2} \pi r^2$$

$$= \frac{1}{2} \times \frac{22}{7} \times (12.25)^2$$

$$= 235.8 \text{ m}^2$$

\therefore Area of the complete playground = area of the rectangular ground + $2 \times$ area of a semicircle

$$= 882 + 2 \times 235.8$$

$$= 1353.6 \text{ m}^2$$

***** END *****