

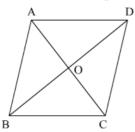
Herons Formula Ex 12.2 Q7

Answer:

We assume ABCD be the given rhombus having

$$AB = BC = CD = DA$$

BD and AC be the diagonals of rhombus



We need to find cost of painting both sides

Perimeter of rhombus ABCD, say P is 32 m

$$P = AB+BC+CD+DA$$

$$32 = 4AB$$

$$AB = \frac{32}{4}$$

$$AB = 8 \text{ m}$$

We know that BD and AC diagonals of rhombus and $AO = \frac{1}{2}AC$ and $BO = \frac{1}{2}BD$. So,

side = $\frac{1}{2}\sqrt{BD^2 + AC^2}$ (Diagonals in rhombus intersect at right angle)

$$BD = 24 \text{ m}$$
; $AC = h$; side $= AB = 8 \text{ m}$

$$8 = \frac{1}{2} \sqrt{\left(10\right)^2 + \left(h\right)^2}$$

$$8 \times 2 = \sqrt{(10)^2 + (h)^2}$$

Taking square of both sides, we get

$$(16)^2 = \left(\sqrt{(10)^2 + (h)^2}\right)^2$$

$$256 = 100 + (h)^2$$

$$(h)^2 = 256 - 100$$

$$h = \sqrt{156}$$

$$h = 2\sqrt{39}$$

Area of rhombus, say A7

$$A_1 = \frac{1}{2} (BD \times AC)$$

$$A_1 = \frac{1}{2} \left(10 \times 2\sqrt{39} \right)$$

$$A_1 = 20\sqrt{39} \text{ m}^2$$

Area of both sides of rhombus;

$$A_2 = 2A_1$$
$$= 2 \times 10\sqrt{39}$$

Cost of painting = Rate × Area of both sides of rhombus

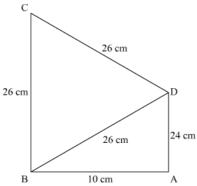
$$=5 \times 20\sqrt{39}$$

= Rs.624.49

Herons Formula Ex 12.2 Q8

Answer:

We assume ABCD be the quadrilateral having sides AB, BC, CD, DA, diagonal BD and angle $BAD=90^{\circ}$ where BCD forms an equilateral triangle having equal sides.



We need to find area of ABCD

In triangle BAD, we have

$$BD^2 = BA^2 + AD^2$$
. So

$$BA = \sqrt{26^2 - 24^2}$$

 $=10 \,\mathrm{cm}$

Area of right angled triangle ABD, say A 1 is given by

$$A_1 = \frac{1}{2} (Base \times Height)$$

Where.

Base = BA = 10 cm; Height = AD = 24 cm

$$A_1 = \frac{1}{2} \left(10 \times 24 \right)$$

$$A_1 = 120 \text{ cm}^2$$

Area of equilateral triangle BCD, say A2 having sides a, b, c is given by

$$A_2 = \frac{\sqrt{3}}{4}a^2$$
, where

$$a = BC = CD = BD = 26$$
 cm

$$A_2 = \frac{\sqrt{3}}{4} (26)^2$$

$$A_2 = \frac{1169.48}{4}$$

$$A_2 = 292.37 \text{ cm}^2$$

Area of quadrilateral ABCD, say A

A =Area of triangle BAD + Area of triangle BCD

$$A = A_1 + A_2$$

$$A = 120 + 292.37$$

$$A = 412.37 \text{ cm}^2$$

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