Mensuration I Ex 20.3 Q10

Answer :

Let the height of the parallelogram be x cm.

Then the base of the parallelogram is $2x$ cm.

It is given that the area of the parallelogram = 512 cm^2

So,

Area of a parallelogram = Base x Height

$512\ cm^2 = 2x \times x$

$512\ cm^2 = 2x^2$

$\Rightarrow x^2 = \frac{512\ cm^2}{2} = 256\ cm^2$

$\Rightarrow x^2 = (16\ cm)^2$

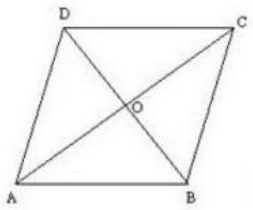
$\Rightarrow x = 16$ cm

Hence, base = $2x = 2 \times 16 = 32$ cm and height = $x = 16$ cm.

Mensuration I Ex 20.3 Q11

Answer :

Let $ABCD$ be the rhombus where diagonals intersect at O.



Then $AB = 15$ cm and $AC = 24$ cm.

The diagonals of a rhombus bisect each other at right angles.

Therefore, ΔAOB is a right-angled triangle, right angled at O such that

$OA = \frac{1}{2} AC = 12$ cm and $AB = 15$ cm.

By Pythagoras theorem, we have,

$(AB)^2 = (OA)^2 + (OB)^2$

$\Rightarrow (15)^2 = (12)^2 + (OB)^2$

$\Rightarrow (OB)^2 = (15)^2 - (12)^2$

$\Rightarrow (OB)^2 = 225 - 144 = 81$

$\Rightarrow (OB)^2 = (9)^2$

$\Rightarrow OB = 9$ cm

$\therefore BD = 2 \times OB = 2 \times 9$ cm $= 18$ cm

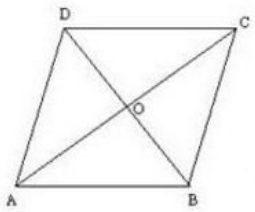
Hence,

Area of the rhombus $ABCD = \left(\frac{1}{2} \times AC \times BD\right) = \left(\frac{1}{2} \times 24 \times 18\right) = 216\ cm^2$

Mensuration I Ex 20.3 Q12

Answer :

Let *ABCD* be the rhombus whose diagonals intersect at *O*.



Then *AB* = 20 cm and *AC* = 24 cm.

The diagonals of a rhombus bisect each other at right angles.

Therefore Δ *AOB* is a right-angled triangle, right angled at *O* such that

$OA = \frac{1}{2}\,AC$ = 12 cm and *AB* = 20 cm

By Pythagoras theorem, we have,

$(AB)^2 = (OA)^2 + (OB)^2$

$\Rightarrow (20)^2 = (12)^2 + (OB)^2$

$\Rightarrow (OB)^2 = (20)^2 - (12)^2$

$\Rightarrow (OB)^2 = 400 - 144 = 256$

$\Rightarrow (OB)^2 = (16)^2$

$\Rightarrow OB = 16$ cm

$\therefore BD = 2 \times OB = 2 \times 16$ cm = 32 cm

Hence,

Area of the rhombus *ABCD* = $\left(\frac{1}{2} \times AC \times BD\right) = \left(\frac{1}{2} \times 24 \times 32\right) = 384\ \text{cm}^2$

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