Exercise 9B

Question 10:

ABCD is a rhombus in which diagonal $AC = 24$ cm and $BD = 18$ cm.

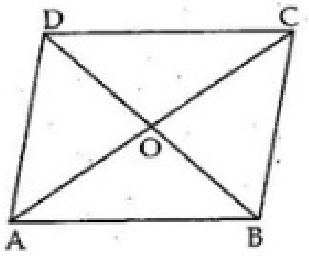
We know that in a rhombus, diagonals bisect each other at right angles.

So in ΔAOB

$$\angle AOB = 90^0$$

$$AO = \frac{1}{2}AC = \frac{1}{2} \times 24 = 12 \text{ cm}$$

and, $$BO = \frac{1}{2}BD = \frac{1}{2} \times 18 = 9 \text{ cm}$$



Now, by Pythagoras Theorem, we have

$$AB^2 = AO^2 + OB^2$$

$$\Rightarrow \quad AB^2 = 12^2 + 9^2$$

$$= 144 + 81 = 225$$

$$\Rightarrow \quad AB = \sqrt{225} = 15 \text{ cm}$$

So the length of each side of the rhombus is 15 cm.

Question 11:

Since diagonals of a rhomobus bisect each other at right angles.

So, $AO = OC = \frac{1}{2}AC = \frac{1}{2} \times 16 = 8\,cm.$

$\therefore$ In right ΔAOB,

$$AB^2 = AO^2 + OB^2$$

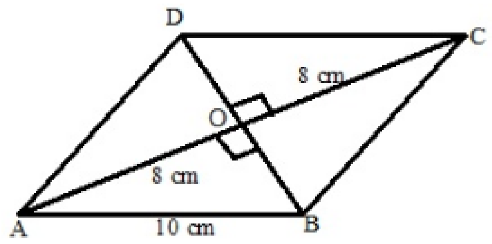
$\Rightarrow \quad 10^2 = 8^2 + OB^2$

$\Rightarrow \quad OB^2 = 100 - 64 = 36$

$\Rightarrow \quad OB = \sqrt{36} = 6\,cm.$

$\therefore \quad$ Length of the other diagonal $BD = 2 \times OB$

$$= 2 \times 6 = 12\,cm.$$



Area of $\Delta ABC = \frac{1}{2} \times AC \times OB$

$$= \frac{1}{2} \times 16 \times 6 = 48\ cm^2.$$

Area of $\Delta ACD = \frac{1}{2} \times AC \times OD$

$$= \frac{1}{2} \times 16 \times 6 = 48\ cm^2.$$

$\therefore$ Area of rhombus $ABCD = (\text{Area of } \Delta ABC + \text{Area of } \Delta ACD)$

$$= (48 + 48)cm^2 = 96\ cm^2.$$

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