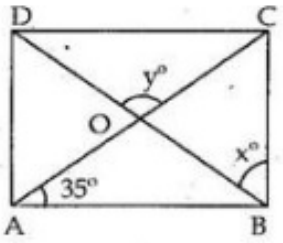
Exercise 9B

Question 12:



We know that diagonals of a rectangle are equal and bisect each other.

So, in ΔAOB

$AO = OB$

$\Rightarrow \quad \angle OAB = \angle OBA$ [base angles are equal]

i.e. $\angle OBA = 35^0$ [$\because \angle OAB = 35^0$, given]

$\angle AOB = 180^0 - 35^0 - 35^0 = 110^0$

and, $\angle DOC = y^0 = \angle AOB = 110^0$

[Vertically opp. angles]

Consider the right triangle, ΔABC, right angled at B.

So, $\angle ABC = 90^0$ [$\because$ ABCD is a rectangle]

Now, consider the ΔOBC

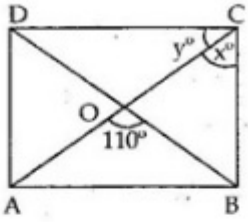
So, $\angle OBC = x^0 = \angle ABC - \angle OBA$

$= 90^0 - 35^0$

$= 55^0$

$\therefore x = 55^0$ and $y = 110^0$.

(ii) We know that diagonals of a rectangle are equal and bisect each other.



So, in ΔAOB, $OA = OB$

$\Rightarrow \quad \angle OAB = \angle OBA$

Again in ΔAOB,

$$\angle AOB + \angle OAB + \angle OBA = 180^0$$

$$\Rightarrow \quad 110^0 + \angle OAB + \angle OBA = 180^0$$

$$\Rightarrow \quad 2\angle OAB = 180^0 - 110^0 = 70^0$$

$$\Rightarrow \quad \angle OAB + \angle OBA = \frac{70}{2} = 35^0$$

Since $AB \parallel CD$ and AC is a transversal, $\angle DCA$ and $\angle CAB$ are alternate angles, and thus they are equal.

So, $\angle DCA = y^0 = \angle CAB$ and $\angle CAB = 35^0$ .....(1)

$$\Rightarrow y^0 = 35^0$$

Now consider the right triangle, ΔABC

$$\angle ACB = x^0 = 90^0 - \angle CAB$$

$$= 90^0 - 35^0 \qquad \text{[from (1)]}$$

$$= 55^0$$

$\therefore x = 55^0$ and $y = 35^0$.

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