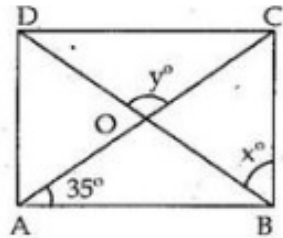




Exercise 9B

Question 12:



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

So, in $\triangle AOB$

$$AO = OB$$

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

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

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

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

[Vertically opp. angles]

Consider the right triangle, $\triangle ABC$, right angled at B.

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

Now, consider the $\triangle OBC$

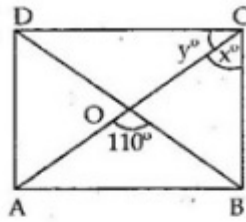
So, $\angle OBC = x^\circ = \angle ABC - \angle OBA$

$$= 90^\circ - 35^\circ$$

$$= 55^\circ$$

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

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



So, in $\triangle AOB$, $OA = OB$

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

Again in $\triangle AOB$,

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

$$\Rightarrow 110^\circ + \angle OAB + \angle OBA = 180^\circ$$

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

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

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

$$\text{So, } \angle DCA = y^\circ = \angle CAB \text{ and } \angle CAB = 35^\circ \dots (1)$$

$$\Rightarrow y^\circ = 35^\circ$$

Now consider the right triangle, $\triangle ABC$

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

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

$$= 55^\circ$$

$$\therefore x = 55^\circ \text{ and } y = 35^\circ.$$

***** END *****