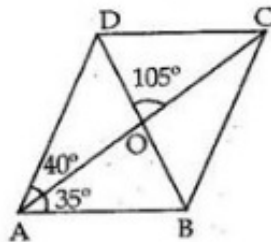




Exercise 9B

Question 4:

ABCD is a parallelogram



(i) $\angle AOB = \angle COD = 105^\circ$
[vertical opposite angle]

Now in $\triangle AOB$, we have

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

$$\Rightarrow 35^\circ + 105^\circ + \angle ABO = 180^\circ$$

$$\Rightarrow 140^\circ + \angle ABO = 180^\circ$$

$$\Rightarrow \angle ABO = 180^\circ - 140^\circ = 40^\circ.$$

(ii) Since $AB \parallel DC$ and BD is a transversal

So, $\angle ABD = \angle CDB$ [alternate angles]

$$\Rightarrow \angle CDO = \angle CDB = \angle ABD = \angle ABO = 40^\circ$$

$$\therefore \angle ODC = 40^\circ$$

(iii) As $AB \parallel CD$ and AC is a transversal

So, $\angle ACB = \angle DAC = 40^\circ$

[alternate opposite angles]

(iv) $\angle CBD = \angle B - \angle ABO$

But, $\angle A + \angle B + \angle C + \angle D = 360^\circ$

[\because ABCD is a parallelogram]

$$\Rightarrow 2\angle A + 2\angle B = 360^\circ$$

$$\Rightarrow 2 \times (40^\circ + 35^\circ) + 2\angle B = 360^\circ$$

$$\Rightarrow 150^\circ + 2\angle B = 360^\circ$$

$$\Rightarrow 2\angle B = 360^\circ - 150^\circ = 210^\circ$$

$$\Rightarrow \angle B = \frac{210^\circ}{2} = 105^\circ$$

and $\angle CBD = \angle B - \angle ABO$

$$= 105^\circ - 40^\circ = 65^\circ$$

$$\angle CBD = 65^\circ$$

***** END *****

