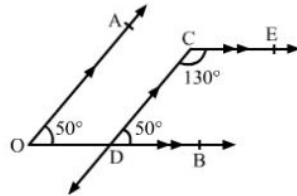




Exercise 14A



Q8

Answer :

Given : $AB \parallel CD$

$$\angle ABO = 50^\circ$$

$$\angle CDO = 40^\circ$$

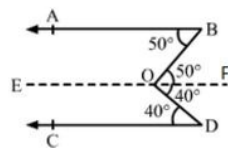
Construction : Through O, draw $EOF \parallel AB$.

$\angle ABO = \angle BOF = 50^\circ$ (alternate angles, when $AB \parallel EF$ and OB is a transversal)

$\angle FOD = \angle ODC = 40^\circ$ (alternate angles, when $CD \parallel EF$ and OD is a transversal)

$$\angle BOD = \angle BOF + \angle FOD$$

$$\angle BOD = 50^\circ + 40^\circ = 90^\circ$$



Q9

Answer :

Given : $AB \parallel CD$

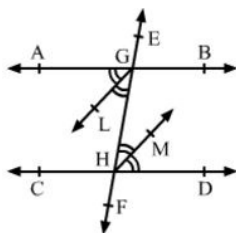
GL and HM are angle bisectors of $\angle AGH$ and $\angle GHD$, respectively.

$$\angle AGH = \angle GHD \text{ (alternate angles)}$$

$$\text{or } \frac{1}{2} \angle AGH = \frac{1}{2} \angle GHD$$

$$\text{or } \angle LGH = \angle GHM \text{ (given)}$$

Therefore, $GL \parallel HM$ as we know that if the angles of any pair of alternate interior angles are equal, then the lines are parallel.



Q10

Answer :

Given: $AB \parallel CD$

$$\angle ABE = 120^\circ$$

$$\angle ECD = 100^\circ$$

$$\angle BEC = x^\circ$$

Construction: $FEG \parallel AB$

Now, since $AB \parallel FEG$ and $AB \parallel CD$, $FEG \parallel CD$

$\therefore EFG \parallel AB \parallel CD$

$$\angle ABE = \angle BEG = 120^\circ \text{ (alternate angles)}$$

$$\text{or } x^\circ + y^\circ = 120^\circ \dots (i)$$

$$\angle DCE = \angle CEF = 100^\circ \text{ (alternate angles)}$$

$$\text{or } x^\circ + z^\circ = 100^\circ \dots (ii)$$

$$\text{Also, } x^\circ + y^\circ + z^\circ = 180^\circ \text{ (FEG is a straight line)} \dots (iii)$$

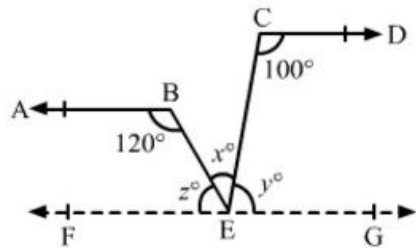
Adding (i) and (ii):

$$2x^\circ + y^\circ + z^\circ = 220^\circ$$

$$\text{or, } x^\circ + 180^\circ = 220^\circ \text{ (substituting (iii))}$$

$$x^\circ = 40^\circ$$

$$\therefore x = 40$$



Q11

Answer :

Given: $AB \parallel CD$

$AD \parallel BC$

$$\angle 1 + \angle 2 = 180^\circ \quad (AB \parallel CD \text{ and } AD \text{ is the transversal}) \dots (i)$$

$$\angle 2 + \angle 3 = 180^\circ \quad (AD \parallel BC \text{ and } AB \text{ is the transversal}) \dots (ii)$$

From (i) and (ii):

$$\angle 1 + \angle 2 = 180^\circ = \angle 2 + \angle 3$$

$$\angle 1 = \angle 3$$

$$\angle ADC = \angle ABC$$

***** END *****