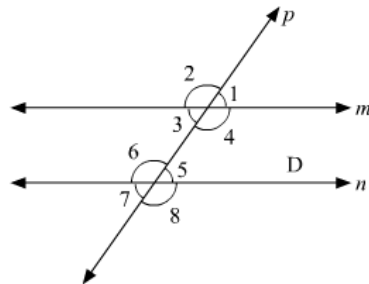




Lines and Angles Ex 8.4 Q20

Answer :

The figure is given as follows:



It is given that p is a transversal to lines m and n . Also,

$$\angle 2 = 120^\circ \text{ and } \angle 5 = 60^\circ.$$

We need to prove that $m \parallel n$

We have $\angle 2 = 120^\circ$.

Also, $\angle 2$ and $\angle 4$ are vertically opposite angles, thus, these two must be equal. That is,

$$\angle 4 = 120^\circ \text{ (i)}$$

Also, $\angle 5 = 60^\circ$.

Adding this equation to (i), we get :

$$\angle 4 + \angle 5 = 120^\circ + 60^\circ$$

$$\angle 4 + \angle 5 = 180^\circ$$

But these are the consecutive interior angles.

Theorem states: If a transversal intersects two lines in such a way that a pair of consecutive interior angles is supplementary, then the two lines are parallel.

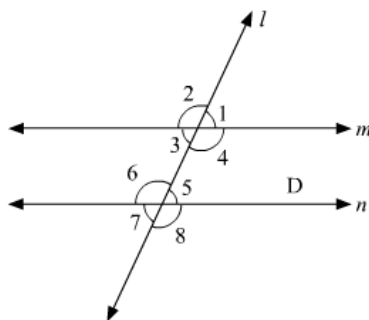
Thus, $m \parallel n$.

Hence, the lines are parallel to each other.

Lines and Angles Ex 8.4 Q21

Answer :

The figure is given as follows:



It is given that l is a transversal to lines m and n . Also,

$$\angle 4 = 110^\circ \text{ and } \angle 7 = 65^\circ.$$

We need check whether $m \parallel n$ or not.

We have $\angle 7 = 65^\circ$.

Also, $\angle 7$ and $\angle 5$ are vertically opposite angles, thus, these two must be equal. That is,

$$\angle 5 = 65^\circ \text{ (i)}$$

Also, $\angle 4 = 110^\circ$.

Adding this equation to (i), we get:

$$\angle 4 + \angle 5 = 110^\circ + 65^\circ$$

$$\angle 4 + \angle 5 = 175^\circ$$

But these are the consecutive interior angles which are not supplementary.

Theorem states: If a transversal intersects two lines in such a way that a pair of consecutive interior angles is supplementary, then the two lines are parallel.

Thus, m is not parallel to n .

*****END*****