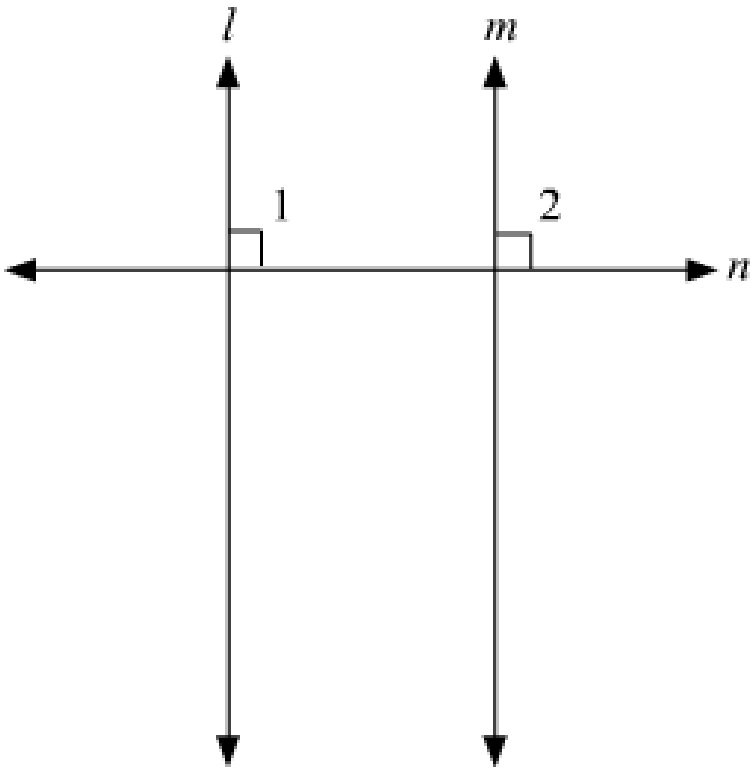
Lines and Angles Ex 8.4 Q9

Answer :

The figure can be drawn as follows:



Here, $l \perp n$ and $m \perp n$.

We need to prove that $l \parallel m$

It is given that $l \perp n$, therefore,

$\angle 1 = 90^0$ (i)

Similarly, we have $m \perp n$, therefore,

$\angle 2 = 90^0$ (ii)

From (i) and (ii), we get:

$\angle 1 = \angle 2$

But these are the pair of corresponding angles.

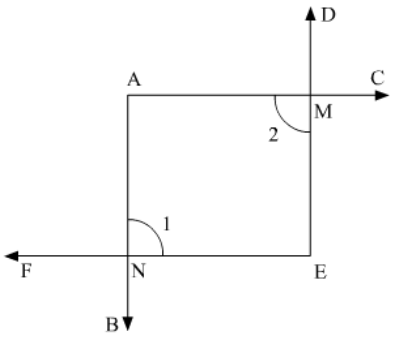
Theorem states: If a transversal intersects two lines in such a way that a pair of corresponding angles is equal, then the two lines are parallel.

Thus, $l \parallel m$.

Lines and Angles Ex 8.4 Q10

Answer :

The figure is given as follows:



It is given that two sides AB and AC of $\angle ABC$ are perpendicular to sides EF and DE of $\angle DEF$ respectively.

We need to prove that either $\angle BAC = \angle DEF$ or $\angle BAC + \angle DEF = 180^0$.

It's given that $AB \perp EF$, thus,

$$\angle 1 = 90^0$$

Similarly,

$$\angle 2 = 90^0$$

We know that, if opposite angles of a quadrilateral are equal, then it's a parallelogram.

Therefore,

AMEN is a parallelogram.

Also, we know that opposite angles of a parallelogram are equal.

Therefore,

$$\boxed{\angle BAC = \angle DEF}$$

By angle sum property of a quadrilateral, we have:

$$\angle BAC + \angle DEF + \angle 1 + \angle 2 = 360^0$$

$$\angle BAC + \angle DEF + 90^0 + 90^0 = 360^0$$

$$\angle BAC + \angle DEF + 180^0 = 360^0$$

$$\angle BAC + \angle DEF = 360^0 - 180^0$$

$$\boxed{\angle BAC + \angle DEF = 180^0}$$

Hence proved.

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