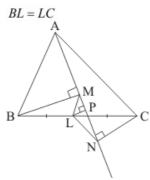


## Quadrilaterals Ex 14.4 Q18

## Answer:

In  $\triangle ABC$ , BM and CN are perpendiculars on any line passing through A. Also.



We need to prove that ML = NL

From point L let us draw  $LP \perp AN$ 

It is given that  $BM \perp AN$  ,  $LP \perp AN$  and  $CN \perp AN$ 

Therefore,

 $BM \parallel LP \parallel CN$ 

Since, L is the mid points of BC,

Therefore intercepts made by these parallel lines on MN will also be equal Thus,

MP = NP

Now in  $\Delta LMN$ ,

MP = NP

And  $LP \perp AN$  . Thus, perpendicular bisects the opposite sides.

Therefore,  $\Delta LMN$  is isosceles.

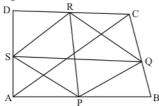
Hence ML = NL

Hence proved.

Quadrilaterals Ex 14.4 Q19

## Answer:

Figure can be drawn as:



Let ABCD be a quadrilateral such that P,Q, R and S are the mid-points of side AB,BC,CD and DA respectively.

In  $\Delta ABC$  , P and Q are the mid-points of AB and BC respectively.

Therefore,

$$PQ \parallel AC$$
 and  $PQ = \frac{1}{2}AC$ 

Similarly, we have

$$RS \parallel AC$$
 and  $RS = \frac{1}{2}AC$ 

Thus,

$$PQ \parallel RS$$
 and  $PQ = RS$ 

Therefore, PQRS is a parallelogram.

Since, diagonals of a parallelogram bisect each other.

Therefore, PR and QS bisect each other.

Hence proved.

