



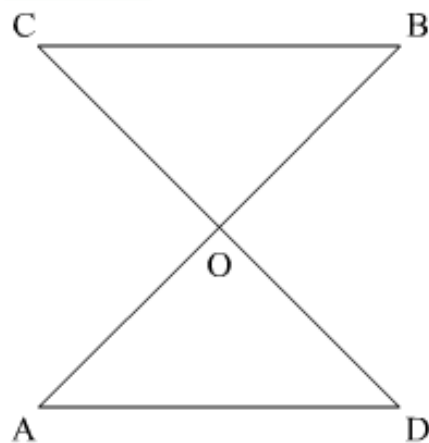
Congruent Triangles Ex 10.2 Q2

Answer :

It is given that

$$BC = AD$$

$$BC \parallel AD$$



We have to prove that the lines AB and CD bisect at O .

If we prove that $\triangle AOD \cong \triangle BOC$, then

We can prove AB and CD bisect at O .

Now in $\triangle AOD$ and $\triangle BOC$

$$AD = BC \text{ (Given)}$$

$$\angle OBC = \angle OAD \text{ (Since } AD \parallel BC \text{ and } AB \text{ is transversal)}$$

$$\text{And } \angle OCB = \angle ODA \text{ (since } AD \parallel BC \text{ and } CD \text{ is transversal)}$$

So by ASA congruence criterion we have,

$$\triangle AOD \cong \triangle BOC, \text{ so}$$

$$OA = OB$$

$$OD = OC$$

Hence AB and CD bisect each other at O .

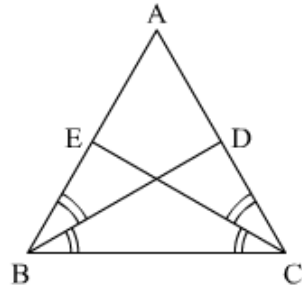
Congruent Triangles Ex 10.2 Q3

Answer :

It is given that

BD is bisector of $\angle B$ and CE is bisector of $\angle C$.

And $\triangle ABC$ is isosceles with $AB = AC$



We have to prove that

$$BD = CE$$

It will be sufficient to prove $\triangle BEC \cong \triangle CDB$ to show that $BD = CE$

Now in these two triangles $\triangle BEC$ & $\triangle CDB$

Since $AB = AC$, so

$$\angle B = \angle C$$

Now as BD and CE are bisectors of the $\angle B$ and $\angle C$ respectively, so

$$\angle DBC = \angle ECB, \text{ and}$$

$$BC = BC$$

So by ASA congruence criterion we have

$$\triangle BEC \cong \triangle CDB$$

Hence $\boxed{EC = BD}$ Proved.

***** END *****