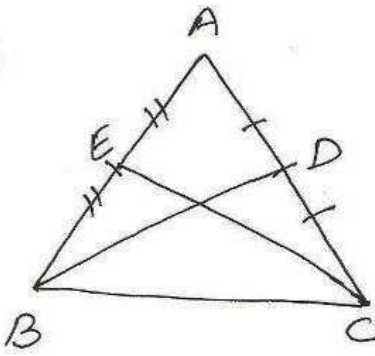


①



NCERT Exemplar Sols. by Dev Anoop (Bathinda)

$$\begin{aligned} L1 + L3 &= 180 \dots \textcircled{1} \\ L2 + L4 &= 180 \dots \textcircled{2} \end{aligned} \left. \begin{array}{l} \text{Linear pair} \\ \text{axiom} \end{array} \right\}$$

From ①, ②

$$\cancel{L1} + L3 = \cancel{L2} + L4 \quad [\because L1 = L2]$$

$$\Rightarrow L3 = L4$$

to show $BD = CE$

proof In $\triangle ABD$ and

$$\begin{aligned} &\triangle ACE \\ AB &= AC \text{ (given)} \\ \angle A &= \angle A \end{aligned}$$

$$AD = AE \left[\begin{array}{l} AB = AC \\ \frac{1}{2} AB = \frac{1}{2} AC \\ AE = AD \\ \therefore D \text{ is midpt.} \\ \text{of } AC, E \text{ is} \\ \text{midpt. of } AB \end{array} \right]$$

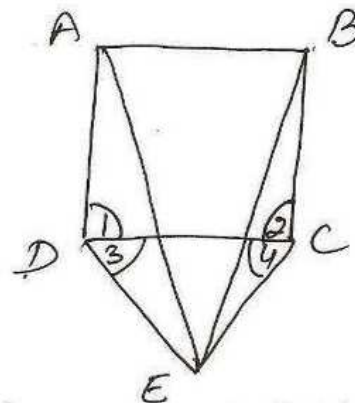
$\therefore \triangle ABD \cong \triangle ACE$ by SAS property
 $BD = CE$ (C.P.C.T)

In $\triangle ABD$ and $\triangle ACE$

$$\begin{aligned} AD &= AE \text{ (given)} \\ L3 &= L4 \text{ (proved)} \\ BD &= CE \text{ (given)} \end{aligned}$$

$\therefore \triangle ABD \cong \triangle ACE$ by SAS prop.

③



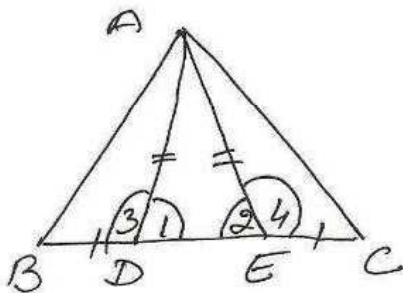
To show $\triangle ADE \cong \triangle BCE$
Proof $DE = CE$ (Sides of equilateral \triangle)

$$\angle ADE = \angle BCE \left\{ \begin{array}{l} L1 = L2 = 90^\circ \\ L3 = L4 = 60^\circ \\ L1 + L3 = L2 + L4 \\ \Rightarrow \angle ADE = \angle BCE \end{array} \right.$$

$$AD = BC \text{ (Sides of Sq.)}$$

$\therefore \triangle ADE \cong \triangle BCE$ by SAS property

②



to show $\triangle ABD \cong \triangle ACE$

proof In $\triangle ADE$

$$\begin{aligned} AD &= AE \text{ (given)} \\ L2 &= L1 \text{ (Isos. } \triangle \text{ prop)} \end{aligned}$$