

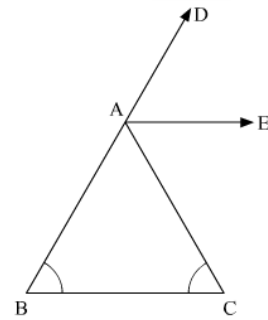


### Triangles and Its Angles Ex 9.2 Q11

**Answer :**

In the given problem,  $AE$  bisects  $\angle CAD$  and  $\angle B = \angle C$

We need to prove  $AE \parallel BC$



As,  $\angle CAD$  is bisected by  $AE$

$$\angle CAD = 2\angle CAE = 2\angle DAE \quad \dots\dots\dots(1)$$

Now, using the property, "an exterior angle of a triangle is equal to the sum of the two opposite interior angles", we get,

$$\angle CAD = \angle B + \angle C$$

$$\angle CAD = 2\angle C \quad (\angle B = \angle C)$$

$$2\angle CAE = 2\angle C \quad (\text{using 1})$$

$$\angle CAE = \angle C$$

$$\angle CAE = \angle ACB$$

Hence, using the property, if alternate interior angles are equal, then the two lines are parallel, we get,

$$\angle CAE = \angle ACB$$

Thus,  $\boxed{AE \parallel BC}$

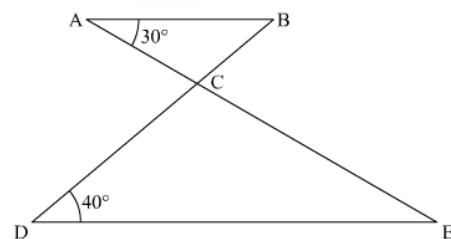
Hence proved.

### Triangles and Its Angles Ex 9.2 Q12

**Answer :**

In the given problem,  $AB \parallel DE$

We need to find  $\angle ACD$



Now,  $AB \parallel DE$  and  $AE$  is the transversal, so using the property, "alternate interior angles are equal", we get,

$$\angle BAE = \angle AED$$

$$\angle AED = 30^\circ$$

Further, applying angle sum property of the triangle

In  $\triangle DCE$

$$\angle DCE + \angle D + \angle E = 180^\circ$$

$$\angle DCE + 40^\circ + 30^\circ = 180^\circ$$

$$\angle DCE + 70^\circ = 180^\circ$$

$$\angle DCE = 180^\circ - 70^\circ$$

$$\angle DCE = 110^\circ$$

Further,  $ACE$  is a straight line, so using the property, "the angles forming a linear pair are supplementary", we get,

$$\angle ACD + \angle DCE = 180^\circ$$

$$\angle ACD + 110^\circ = 180^\circ$$

$$\angle ACD = 180^\circ - 110^\circ$$

$$\angle ACD = 70^\circ$$

Therefore,  $\boxed{\angle ACD = 70^\circ}$ .

\*\*\*\*\* END \*\*\*\*\*