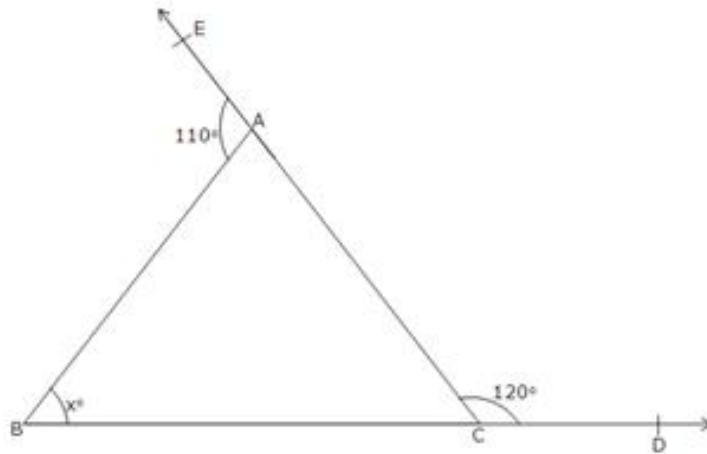




Exercise 4D

Question 17:

(i) $\angle EAB + \angle BAC = 180^\circ$ [Linear pair angles]



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

$$\Rightarrow \angle BAC = 180^\circ - 110^\circ = 70^\circ$$

Again, $\angle BCA + \angle ACD = 180^\circ$ [Linear pair angles]

$$\Rightarrow \angle BCA + 120^\circ = 180^\circ$$

$$\Rightarrow \angle BCA = 180^\circ - 120^\circ = 60^\circ$$

Now, in $\triangle ABC$,

$$\angle ABC + \angle BAC + \angle ACB = 180^\circ$$

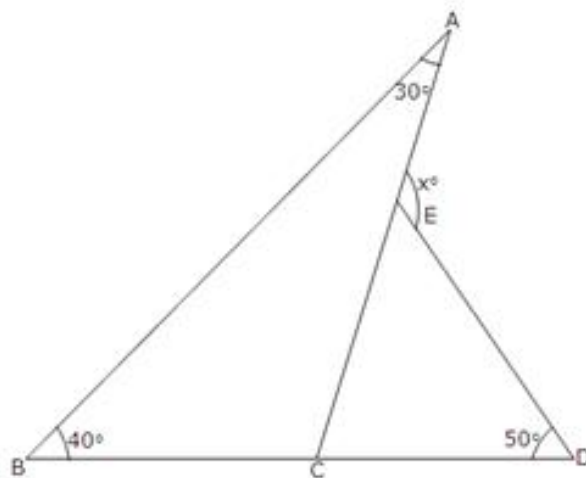
$$x^\circ + 70^\circ + 60^\circ = 180^\circ$$

$$\Rightarrow x + 130^\circ = 180^\circ$$

$$\Rightarrow x = 180^\circ - 130^\circ = 50^\circ$$

$$\therefore x = 50$$

(ii)



In $\triangle ABC$,

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\Rightarrow 30^\circ + 40^\circ + \angle C = 180^\circ$$

$$\Rightarrow 70^\circ + \angle C = 180^\circ$$

$$\Rightarrow \angle C = 180^\circ - 70^\circ = 110^\circ$$

Now $\angle BCA + \angle ACD = 180^\circ$ [Linear pair]

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

$$\Rightarrow \angle ACD = 180^\circ - 110^\circ = 70^\circ$$

In $\triangle ECD$,

$$\Rightarrow \angle ECD + \angle CDE + \angle CED = 180^\circ$$

$$\Rightarrow 70^\circ + 50^\circ + \angle CED = 180^\circ$$

$$\Rightarrow 120^\circ + \angle CED = 180^\circ$$

$$\angle CED = 180^\circ - 120^\circ = 60^\circ$$

Since $\angle AED$ and $\angle CED$ form a linear pair

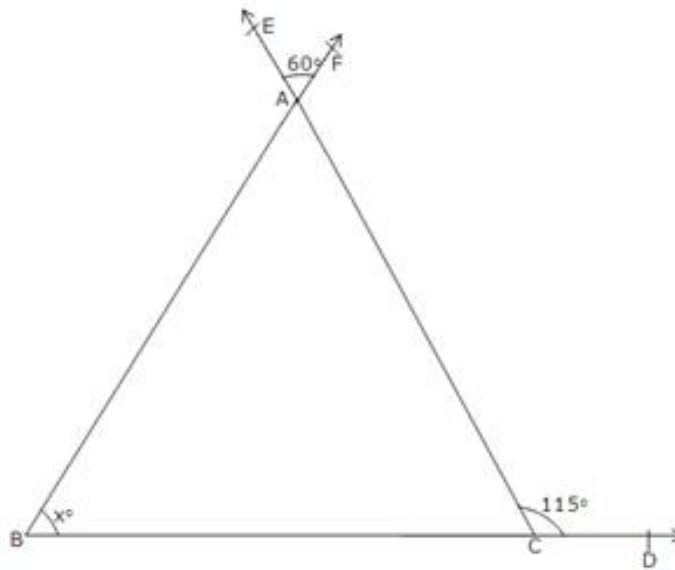
$$\text{So, } \angle AED + \angle CED = 180^\circ$$

$$\Rightarrow x^\circ + 60^\circ = 180^\circ$$

$$\Rightarrow x^\circ = 180^\circ - 60^\circ = 120^\circ$$

$$\therefore x = 120$$

(iii)



$\angle EAF = \angle BAC$ [Vertically opposite angles]

$$\Rightarrow \angle BAC = 60^\circ$$

In $\triangle ABC$, exterior $\angle ACD$ is equal to the sum of two opposite interior angles.

$$\text{So, } \angle ACD = \angle BAC + \angle ABC$$

$$\Rightarrow 115^\circ = 60^\circ + x^\circ$$

$$\Rightarrow x^\circ = 115^\circ - 60^\circ = 55^\circ$$

$$\therefore x = 55$$

***** END *****