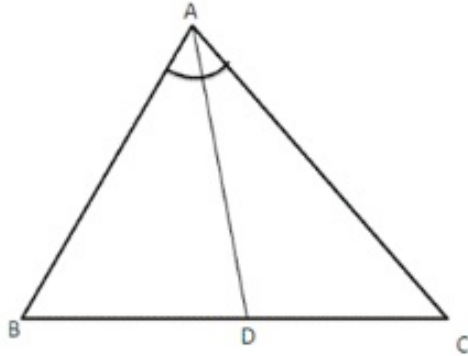




Exercise 5A

Question 39:



Given: ABC is a triangle in which AD is the bisector of $\angle A$.

Proof: (i) In $\triangle ACD$

$$\begin{aligned}\text{Exterior } \angle ADB &= \angle DAC + \angle ACD \\ &= \angle BAD + \angle ACD\end{aligned}$$

$$[\because \angle DAC = \angle BAD (\text{given})]$$

$$\therefore \angle ADB > \angle BAD$$

The side opposite to angle $\angle ADB$ is the longest side in $\triangle ADB$

$$\text{So, } AB > BD$$

(ii) Again in $\triangle ABD$

$$\begin{aligned}\text{Exterior } \angle ADC &= \angle ABD + \angle BAD \\ &= \angle ABD + \angle CAD\end{aligned}$$

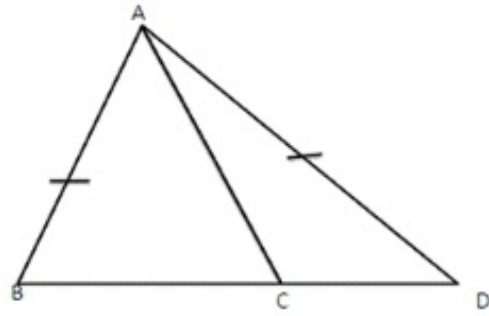
$$\therefore \angle ADC > \angle CAD$$

The side opposite to angle $\angle ADC$ is the longest side in $\triangle ACD$

$$\text{So, } AC > DC$$

Question 40:

Given : $\triangle ABC$ is which $AB=AC$ side BC of $\triangle ABC$ is produced to D .



To prove: $AD > AC$

Proof: In $\triangle ABC$

Ext. $\angle ACD = \angle B + \angle BAC$

$= \angle ACB + \angle BAC$ [$\because \angle B = \angle C$ as $AB=AC$]

$= \angle CAD + \angle CDA + \angle BAC$

[\because Ext. $\angle ACB = \angle CAD + \angle CDA$]

$\Rightarrow \angle ACD > \angle CDA$

So the side opposite to $\angle ACD$, is the longest.

$\therefore AD > AC$

|

***** END *****