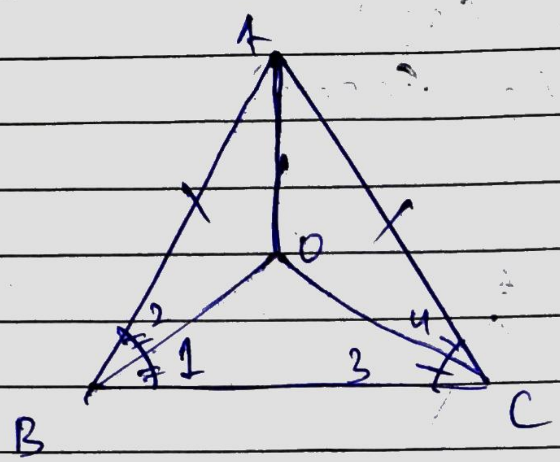
Ex 7.2

1.



Given :- $AB = AC$, bisectors of $\angle B$ & $\angle C$ meet at O.

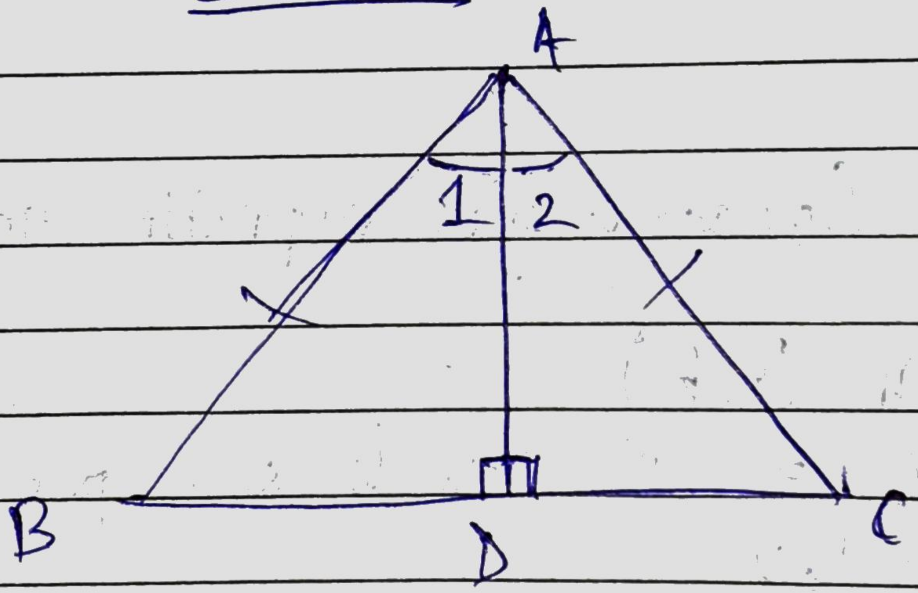
To prove :- ~~AO bisects $\angle A$~~ $OB = OC$, AO bisects $\angle A$.

Proof :- $\angle 1 = \angle 2$. (OB is the bisector of $\angle B$)
$\angle 3 = \angle 4$ (OC is the bisector of $\angle C$)
In ΔABC
$AB = AC$ (Given)
$\Rightarrow \angle C = \angle B$
$\Rightarrow \frac{1}{2} \angle C = \frac{1}{2} \angle B$

$\Rightarrow \angle 3 = \angle 1$

In ΔBOC
$\angle 1 = \angle 3$ (sides opposite to equal $\angle s$)
$\Rightarrow OC = OB$ (proved)

2.



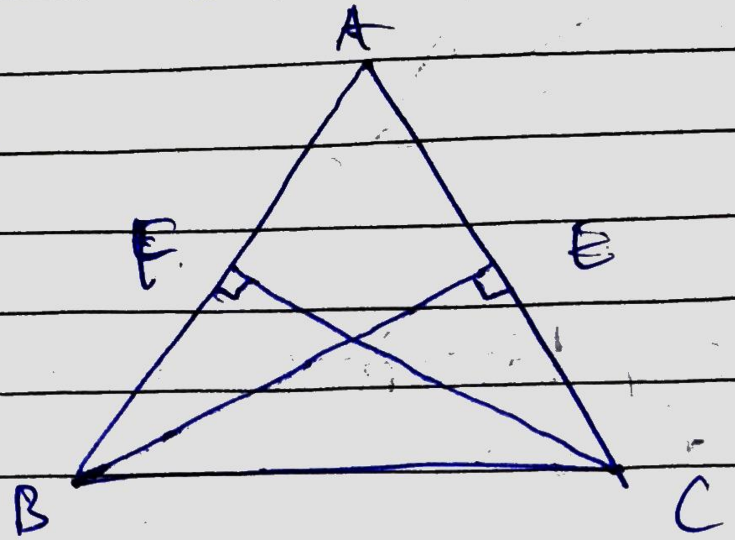
Ans- <u>Given</u>:- $AB = AC$, $AD \perp BC$.

<u>To prove</u>: i. $BD = CD$
ii. $\angle 1 = \angle 2$

<u>Proof</u>:- In $\triangle ABD$ & $\triangle ACD$
$AB = AC$ (given)
$AD = DA$ (common)
~~$\angle B = \angle C$ (angle~~
$\angle ADB = \angle ADC$ ($90°$)

$\therefore \triangle ABD \cong \triangle ACD$ by ~~SAS~~ RHS
$\therefore$ ~~$AB = AC$ (CPCT)~~
$BD = CD$ (CPCT)
$\angle 1 = \angle 2$

3.



Given :- In ΔABC,
$AB = AC$
BE & CF are altitude.

To prove :- $BE = CF$

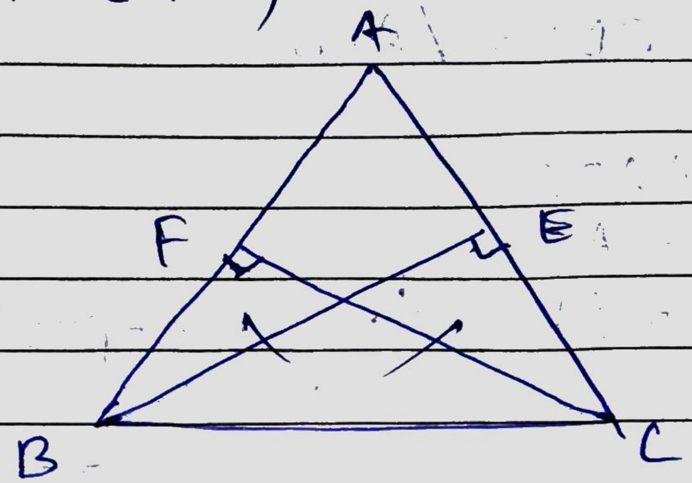
Proof :- In ΔBFC & ΔCEB
$\angle BFC = \angle CEB$ (90°)
$BC = CB$ (common)

In ΔABC
$AB = AC$
$\angle FBC = \angle ECB$ (Angles opposite to equal sides.

$\therefore \triangle BEC \cong \triangle CFB$ (AAS)

$\therefore BE = CF$ (CPCT)

4.



Ans. Given :- BE & CF are two equal altitude.

To prove :- i. $\triangle ABE \cong \triangle ACF$

ii. $AB = AC$

Proof :- In $\triangle ABE$ & $\triangle ACF$

$BE = CF$ (Given)

$\angle AEB = \angle AFC$ ($90°$)

$\angle A = \angle A$ (common)

$\therefore \triangle ABE \cong \triangle ACF$ (AAS)

$\therefore AB = AC$ (CPCT)

A