Ex - 7.2

1) i) $OB = OC$

$AB = AC$ (Given)

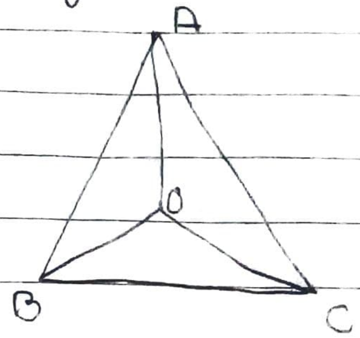
$\angle ACB = \angle ABC$ [Angle opposite to Equal side in Δ are equal]

$\frac{1}{2}\angle ACB = \frac{1}{2}\angle ABC$

$\angle OCB = \angle OBC$

In ΔOBC

$OB = OC$ [side opposite to equal angles in Δ are equal)



ii) In ΔOAB and ΔOAC

$AB = AC$ [Given]

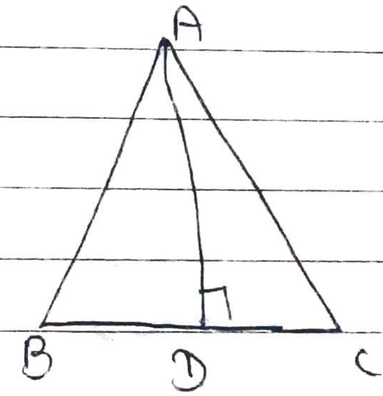
$OA = OA$ [common]

$OB = OC$ [Proved above]

$\Delta OAB \cong \Delta OAC$ [SSS]

$\angle OAB = \angle OAC$ [CPCT]

$\therefore$ OA bisects $\angle A$



2) In ΔADB and ΔADC

$AD = AD$ [common]

$\angle ADB = \angle ADC$ [$AD \perp BC$, Both $90°$]

$BD = CD$ [AD is bisector of BC]

$\Delta ADB \cong \Delta ADC$ [SAS]

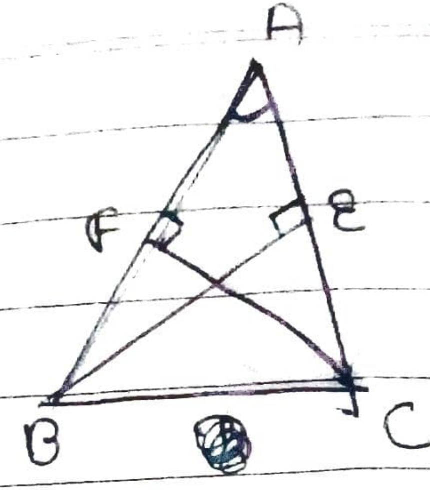
$AB = AC$ [By CPCT]

Therefore ΔABC is an isosceles Δ in which $AB = AC$

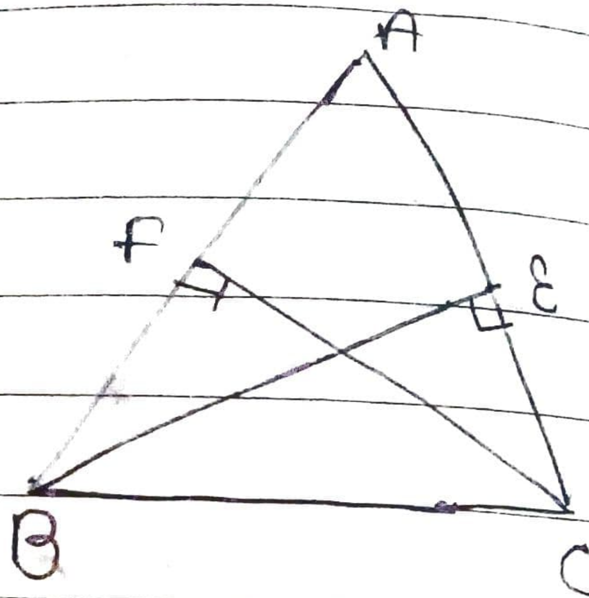
3) In ΔAEB and ΔAFC.

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

AB = AC [Given]
∠AEB = ∠AFC [Both 90°]
△AEB ≅ △AFC [ASA]
BE = CF [CPCT]



4) i) In △ABE and △ACF
∠A = ∠A (common)
∠AEB = ∠AFC [Both 90°]
BE = CF (Given]
△ABE ≅ △ACF [AAS]



ii) AB = AC [CPCT]
∴ ABC is an isosceles triangle.