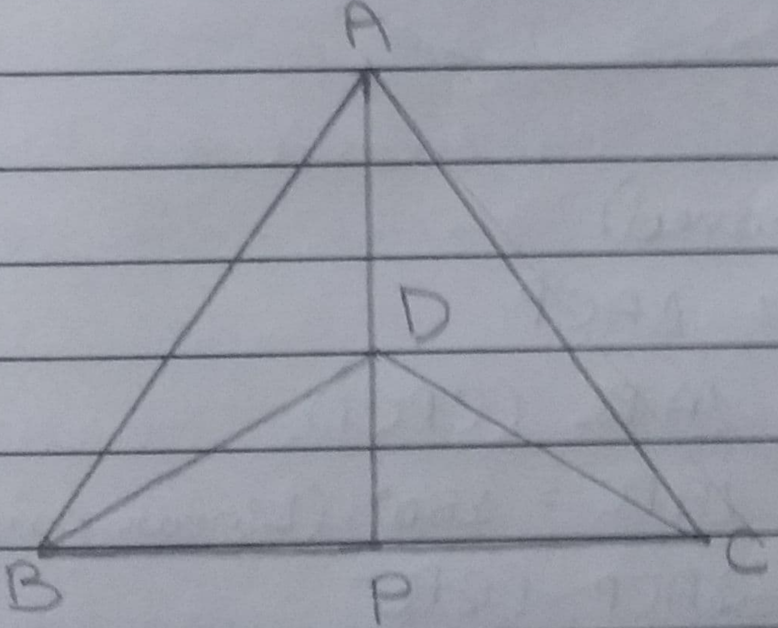
Ex 7.3

Q 1.

i) $\Delta ABD \cong \Delta ACD$



ii) $\Delta ABP \cong \Delta ACP$

Ans $\Delta ABD \cong \Delta ACD$ (SSS)

$\angle BAD = \angle CAD$ (CPCT)

In ΔABP and ΔACP, we have

$AB = AC$ (given)

$\angle BAP = \angle CAP$ $\left[\because \begin{array}{l} \angle BAD = \angle BAP \\ \angle CAD = \angle CAP \end{array}\right]$

$AP = AP$ (Common)

$\therefore \Delta ABP \cong \Delta ACP$ (SAS congruent)

$\Rightarrow BP = CP$ (CPCT)

iii) To prove:

$\angle BAD = \angle CAD$ and $\angle BDP = \angle CDP$

In ΔBDP and ΔCDP, we have

$BD = CD$

$\angle BDP = \angle CDP$ and

$BP = CP$ (CPCT)

$\therefore \Delta BDP \cong \Delta CDP$ (SAS congruent)

$\therefore \angle BDP = \angle CDP$ (CPCT)

iv) $AP \perp BC$

$BP = CP$ (Proved)

In $\Delta ABP \cong \Delta ACP$

$\therefore \angle APB = \angle APC$ (CPCT)

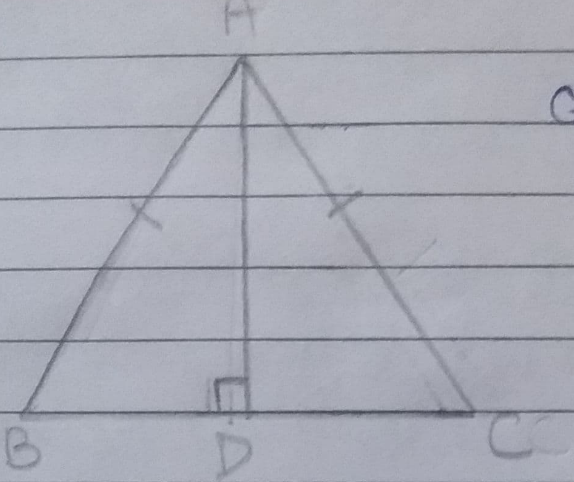
But $\angle APB + \angle APC = 180^\circ$ (Linear pair)

as. ~~∠ABP ≅ ∠ACP (CPC~~

$\therefore \angle APB = \angle APC = 90^\circ$

AP is perpendicular bisector of BC

2.



Given:
AD is an altitude
AB = BC

i) To prove: AD bisects BC

Proof: In $\triangle ABD$ and $\triangle ACD$,

ADB = ADC = 90° (Both 90°)

AB = AC (given)

AD = AD (common)

$\therefore$ $\triangle ABD \cong \triangle ACD$ (RHS congruence)

BD = CD (CPCT)

$\therefore$ AD bisects BC

ii) To prove: AD bisects $\angle A$

Proof: In $\triangle ABD$ and $\triangle ACD$,

ADB $\cong$ ADC (Proved in (i)) ~~above~~

$\angle BAD = \angle CAD$ (CPCT)

$\therefore$ AD besects $\angle A$