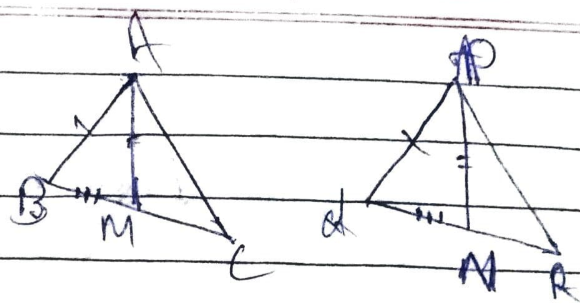
14.07.21 Ch - 7 Triangles

Ex - 7.3

3 Ans)



Given,

AB = PQ

BC = QR

AM = PN

Prove :- (i) $\triangle ABM \cong \triangle PQN$

(ii) $\triangle ABC \cong \triangle PQR$

Proof :- (i) $\frac{1}{2}$ BC = BM
$\frac{1}{2}$ QR = QN (Since AM and PN are medians)

Also,

BC = QR

So,

$\frac{1}{2}$ BC = $\frac{1}{2}$ QR

$\Rightarrow$ BM = QN

In $\triangle ABM$ and $\triangle PQN$,

AM = PN (given)

AB = PQ (given)

BM = QN (proved)

$\therefore \triangle ABM \cong \triangle PQN$ (SSS)

(ii) In $\triangle ABC$ and $\triangle PQR$

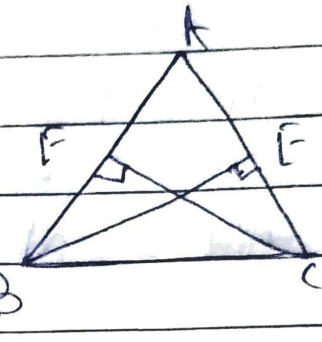
AB = PQ (given)

BC = QR (given)

$\angle ABC = \angle PQR$ (CPCT)

So,

$\Delta ABC \cong \Delta PQR$ ~~SSA~~ (SAS)



Ans It is given that BE and CF are two equal altitudes of ΔABC

Prove that :- ΔABC is an isosceles triangle

Proof :- Now,

In ΔBEC and ΔCFB,

$BEC = CFB = 90^\circ$ (same altitudes)
$BC = CB$ (common)
$BE = CF$ (common)

So,

$\Delta BEC \cong \Delta CFB$ (RHS)

Also,

$\angle C = \angle B$ (CPCT)

Therefore,

$AB = AC$ as sides opposite to the equal angles is always equal.

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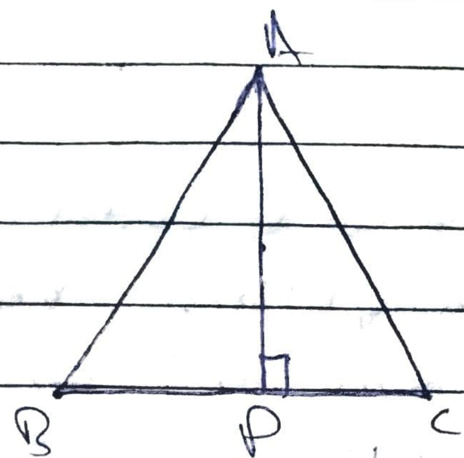

5 Ans) It is given that AB = AC

Prove :- ∠B = ∠C .

Proof :- In △ABP and △ACP

∠APB = ∠APC = 90° (AP is altitude).
AB = AC (given)
AP = AP (common)

So,
△ABP ≅ △ACP (RHS)

So, ∠B = ∠C (CPCT)