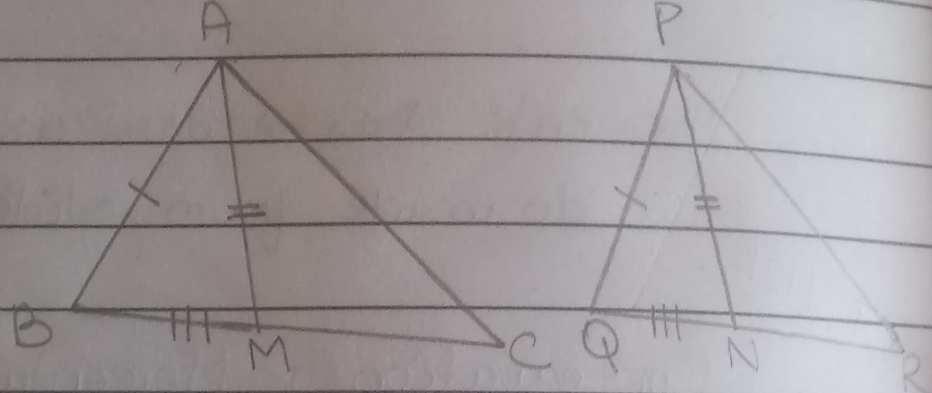
3. Given:

$AB = PQ$ — (1)

$BC = QR$ — (2)

$AM = PN$ — (3)



Also, AM is the median of ΔABC

So, $BM = CM = \frac{1}{2} BC$

Also, PN is the medium of ΔPQR

So, $QN = RN = \frac{1}{2} QR$

To prove: $\Delta ABM \cong \Delta PQN$

Proof:

Since

$BC = QR$

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

$BM = QN \quad - (4)$

In ΔABM & ΔPQN

$AB = PQ$ ~~(given)~~ (from (1))

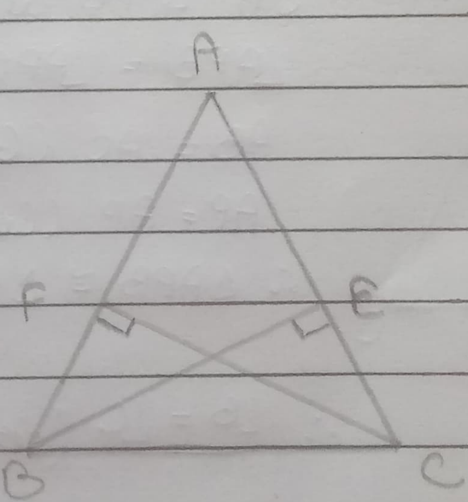
~~[illegible]~~

$AM = PN$ (from (3))

$BM = QN$ (from (6))

So, $\Delta ABM \cong \Delta PQN$ (SSS congruence rule)

4.



Given:

Given BE is a altitude,

So, $\angle AEB = \angle CEB = 90° \quad (1)$

Also, CF is altitude,

So, $\angle AFC = \angle BFC = 90° - (2)$

Also, $BE = CF - (3)$

To prove: ΔABC is isosceles

~~Proo~~

Proof:

In ΔBCF and ΔCBE

$\angle BFC = \angle CEB = 90°$ (Both 90°)

$BC = CB$ (Common)

$FC = EB$ (From (3))

$\Delta BCF \cong \Delta CBE$ (RHS congruence rule)

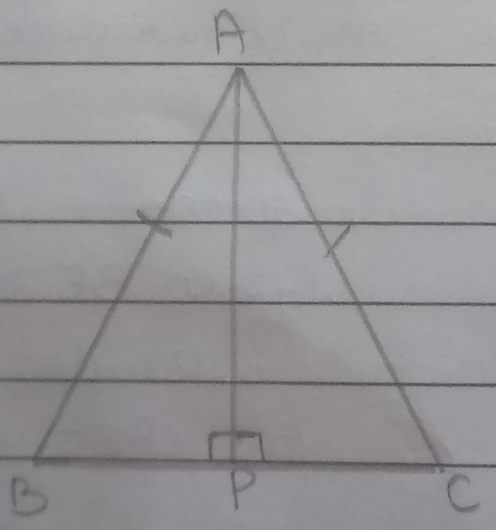
$\therefore \angle FBC = \angle ECB$ (CPCT)

So, $\angle ABC = \angle ACB$

$AB = AC$ (side opposite to equal angles is equal)

So, ΔABC is an isosceles triangle

5.



In ΔAPB and ΔAPC.

$\angle APB = \angle APC$ (Each 90°)

$AB = AC$ (Given)

$AP = AP$ (Common)

$\therefore \Delta APB \cong \Delta APC$ (Using RHS congruence rule)

$\therefore \angle B = \angle C$ (By using CPCT)