ODM EDUCATIONAL GROUP
Changing your Tomorrow

PERIOD 6

MATHEMATICS

CHAPTER NUMBER :~ 7
CHAPTER NAME :~ TRIANGLES

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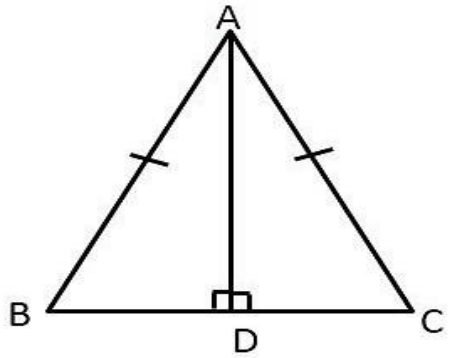
PREVIOUS KNOWLEDGE TEST

AD is an altitude of an isosceles triangle ABC in which AB = AC .
Show that

(i) AD bisects BC , (ii) AD bisects $\angle A$.

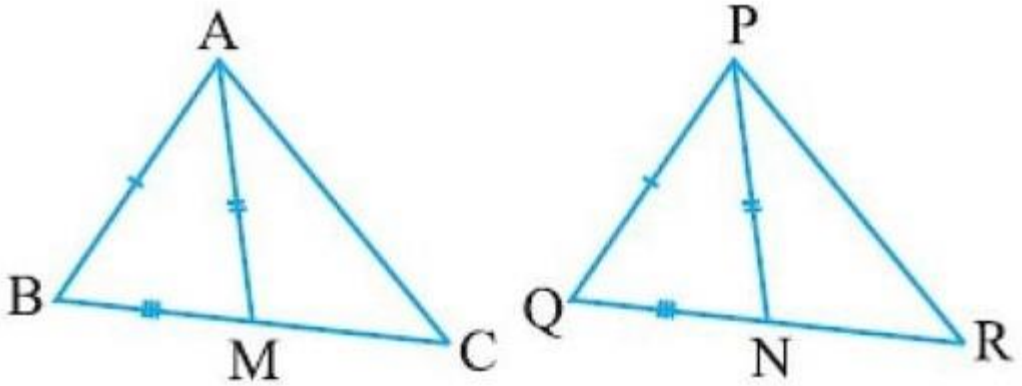


LEARNING OUTCOME:~

1.Students will be able to learn applications of Theorem 7.2 and 7.3.

Two sides AB and BC and median AM of one triangle ABC are respectively equal to sides PQ and QR and median PN of Δ PQR (see figure).Show that :

(i) Δ ABM ≅ Δ PQN



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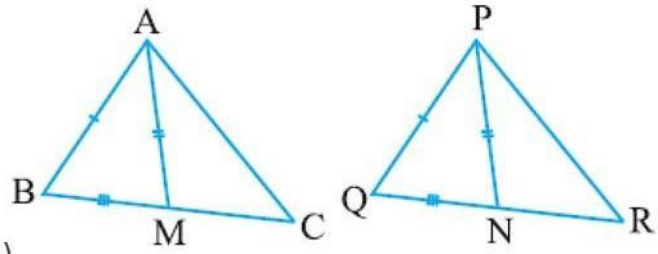


Given:

AB = PQ ...(1)

BC = QR ...(2)

& AM = PN ...(3)

Also, AM is the median of Δ ABC

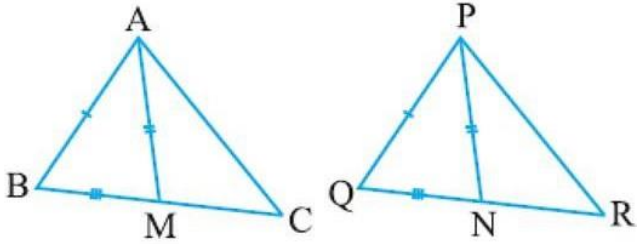
So, BM = CM = $\frac{1}{2}$ BC

Also, PN is the median of Δ PQR

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

To prove: Δ ABM ≅ Δ PQN

Proof



Since

$BC = QR$

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

$BM = QN$ ...(4)

In ΔABM & ΔPQN

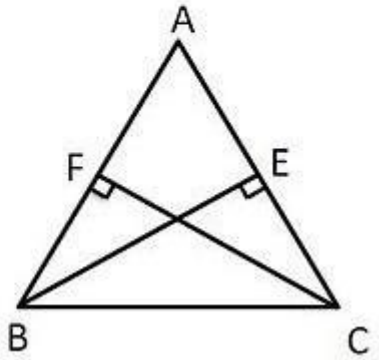
$AB = PQ$ *(From (1))*

$AM = PN$ *(From (3))*

$BM = QN$ *(From (6))*

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

BE and CF are two equal altitudes of a triangle ABC . Using RHS congruence rule , prove that the triangle ABC is isosceles .



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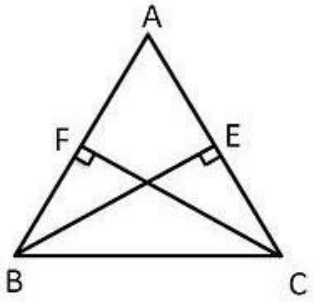


Given:

Given BE is a altitude,

So, $\angle AEB = \angle CEB = 90^\circ$ ...(1)

Also, CF is a altitude,

So, $\angle AFC = \angle BFC = 90^\circ$ ...(2)

Also, BE = CF ...(3)

To prove: Δ ABC is isoceles

Proof:

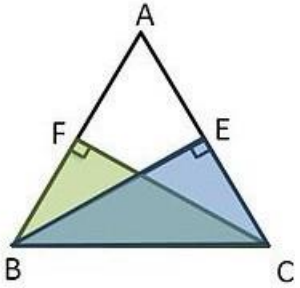
In ΔBCF and ΔCBE

$\angle BFC = \angle CEB = 90^\circ$ *(Both 90°)*

$BC = CB$ *(Common)*

$FC = EB$ *(From (3))*

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



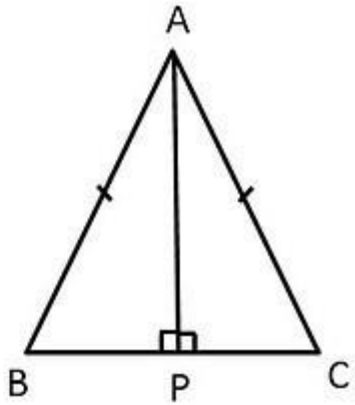
$\therefore \angle FBC = \angle ECB$ *(CPCT)*

So, $\angle ABC = \angle ACB$

$AB = AC$ *(Sides opposite to equal angles is equal)*

So, ΔABC is an isosceles triangle

ABC is an isosceles triangle with AB = AC . Draw AP ⊥ BC to show that $\angle B = \angle C$.



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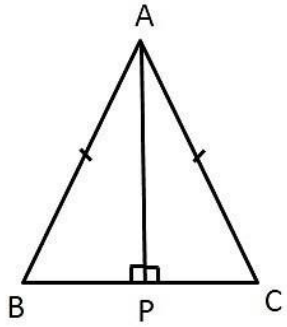


Given:

Since Δ ABC is isosceles

AB = AC ...(1)

Given AP ⊥ BC ,

So, $\angle APB = \angle APC = 90^{\circ}$ ...(2)

To prove: ∠ B = ∠ C

Proof:

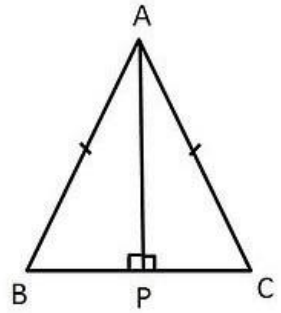
In ΔABP and ΔACP

$\angle APB = \angle APC = 90^\circ$ *(From (2))*

$AB = AC$ *(From (1))*

$AP = AP$ *(Common)*

$\Delta ABP \cong \Delta ACP$ *(RHS congruence rule)*

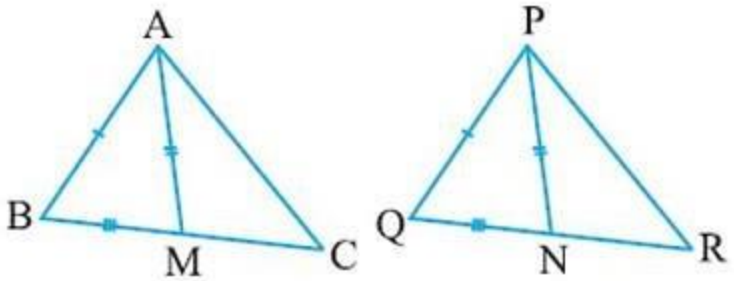


So, $\angle B = \angle C$ *(CPCT)*

Hence proved

Two sides AB and BC and median AM of one triangle ABC are respectively equal to sides PQ and QR and median PN of Δ PQR (see figure).Show that :

(ii) Δ ABC ≅ Δ PQR



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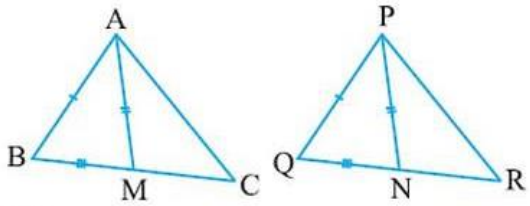

From part (i), Δ ABM ≅ Δ PQN

∠B= ∠Q (CPCT) ...(1)

In Δ ABC & Δ PQR

AB = PQ *(Given)*

∠B= ∠Q *(From (1))*

BC = QR *(Given)*

So, Δ ABC ≅ Δ PQR *(SAS congruence rule)*

HOMEWORK ASSIGNMENT

Exercise 7.3
Question number 3

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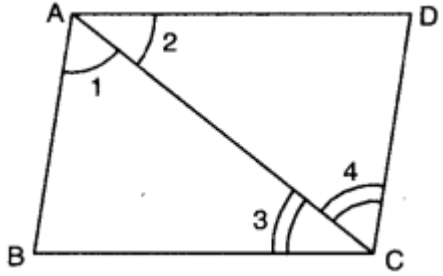
AHA

In the given figure, if $\angle 1 = \angle 2$ and $\angle 3 = \angle 4$, then prove that BC = CD.

Solution:



THANKING YOU

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