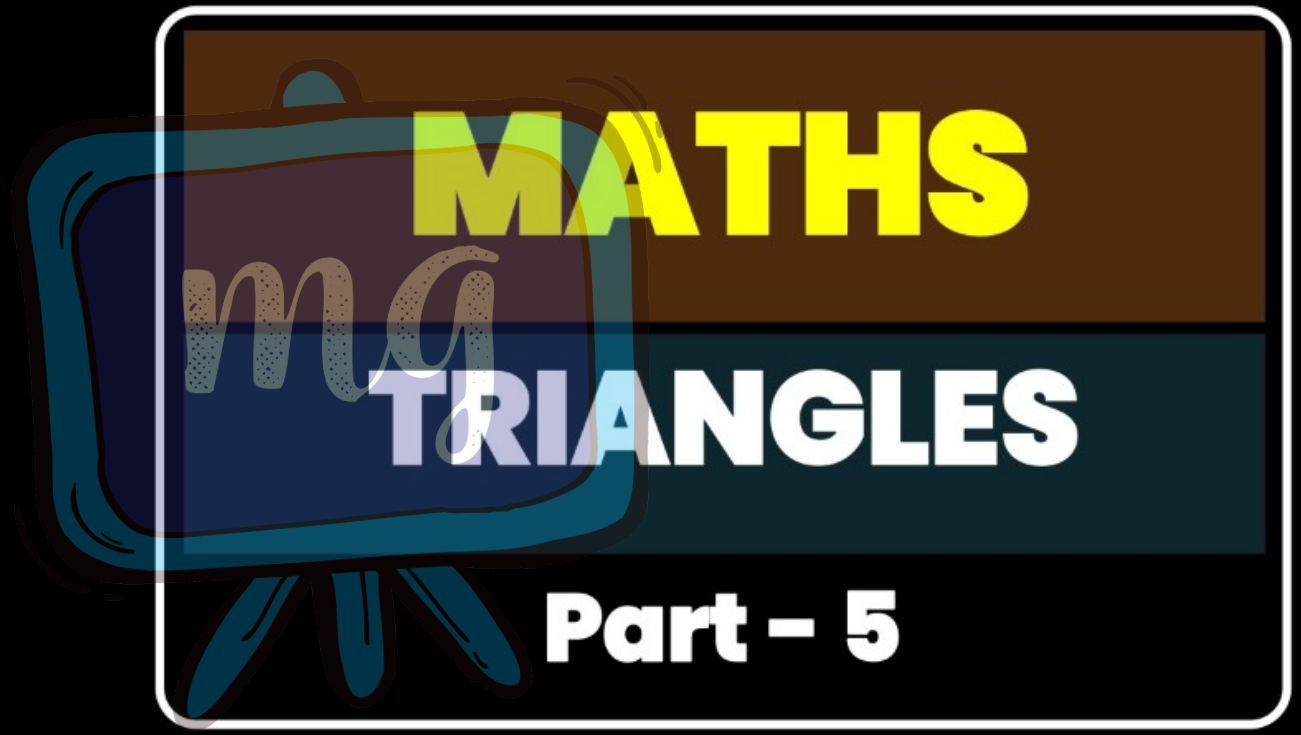
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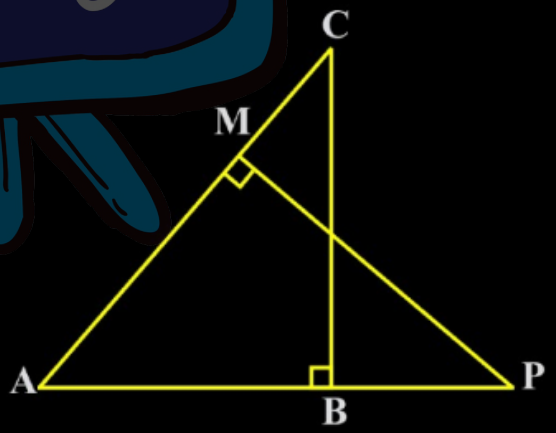
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Exercise : 6.3

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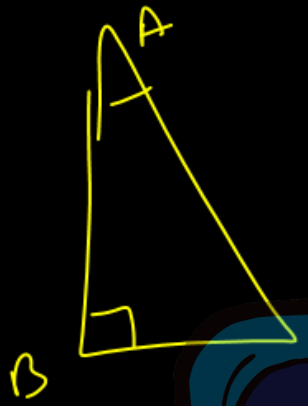
9. In Fig., ABC and AMP are two right triangles, right angled at B and M respectively. Prove that:

(i) $\Delta ABC \sim \Delta AMP$



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Given :- $\triangle ABC$ and $\triangle AMP$

$\angle B = \angle M$

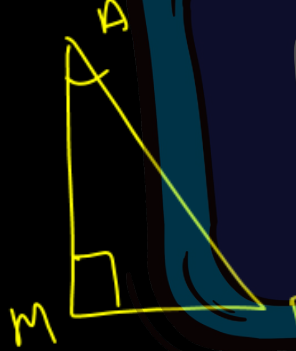
To Prove :- $\triangle ABC \sim \triangle AMP$

Sol. $\angle A = \angle A$ = {Common}

$\angle M = \angle B$ = given

$\triangle AMP \sim \triangle ABC$

By AA Similarity Rule



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(ii) $\frac{CA}{PA} = \frac{BC}{MP}$



$\triangle ABC \sim \triangle AMP$

In By CPST

$\frac{AB}{AM} = \frac{BC}{MP} = \frac{AC}{AP}$

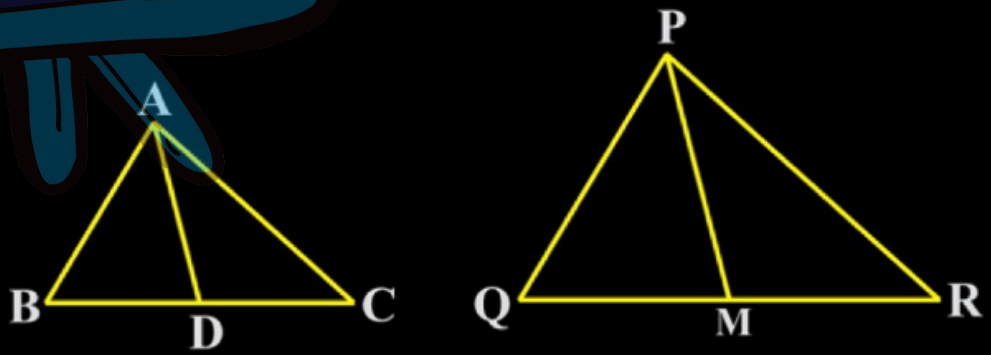
H.P.

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12. Sides AB and BC and median AD of a ΔABC are respectively proportional to sides PQ and QR and median PM of PQR (see Fig.). Show that $\Delta ABC \sim \Delta PQR$.



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Given: $\triangle ABC$ and $\triangle PQR$

$$\frac{AB}{PQ} = \frac{BC}{QR} = \frac{AD}{PM}$$

To prove:- $\triangle ABC \sim \triangle PQR$

Sol:- In $\triangle ABD$ and $\triangle PQM$

$$\frac{AB}{PQ} = \frac{BD}{QM} = \frac{BC/2}{QR/2} = \frac{AD}{PM}$$

By SSS $\triangle ABD \sim \triangle PQM$

Hence By CPST $\angle B = \angle Q$

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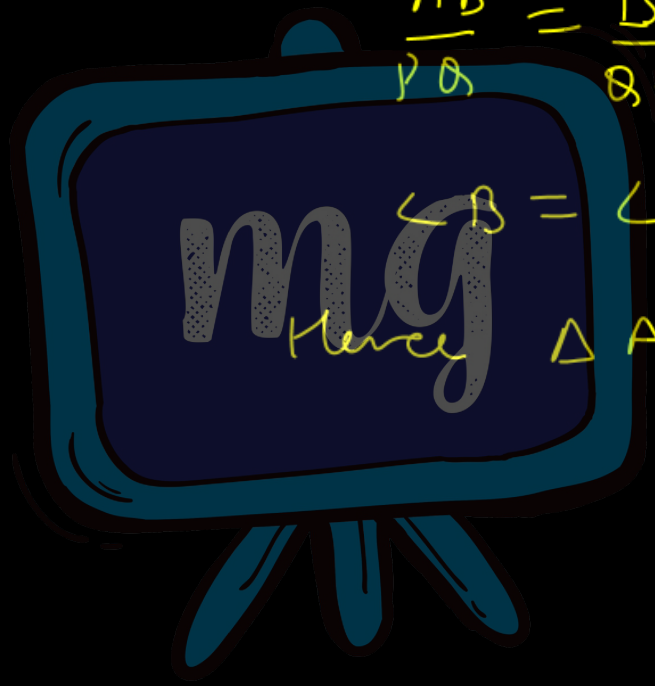
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In $\triangle ABC$ & $\triangle PQR$

$$\frac{AB}{PQ} = \frac{BC}{QR}$$

$$\angle B = \angle Q$$

Hence $\triangle ABC \sim \triangle PQR$.

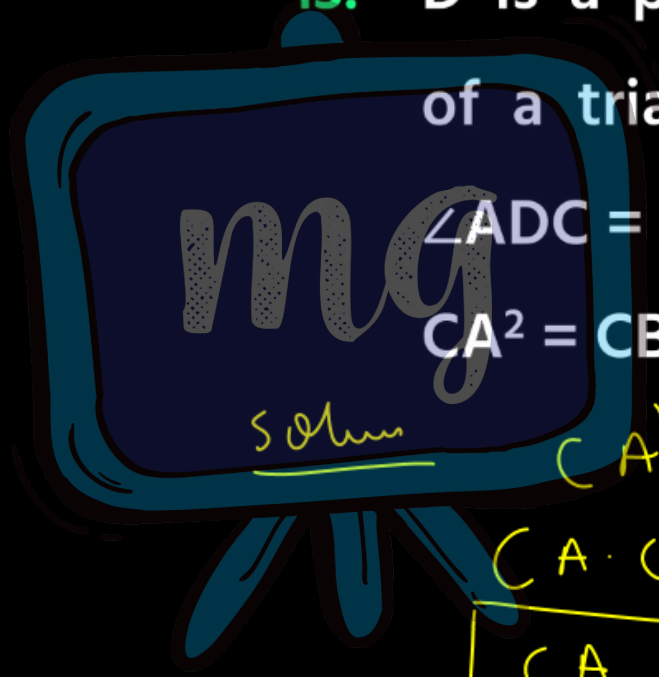


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13. D is a point on the side BC of a triangle ABC such that $\angle ADC = \angle BAC$. Show that $CA^2 = CB.CD$



Solution

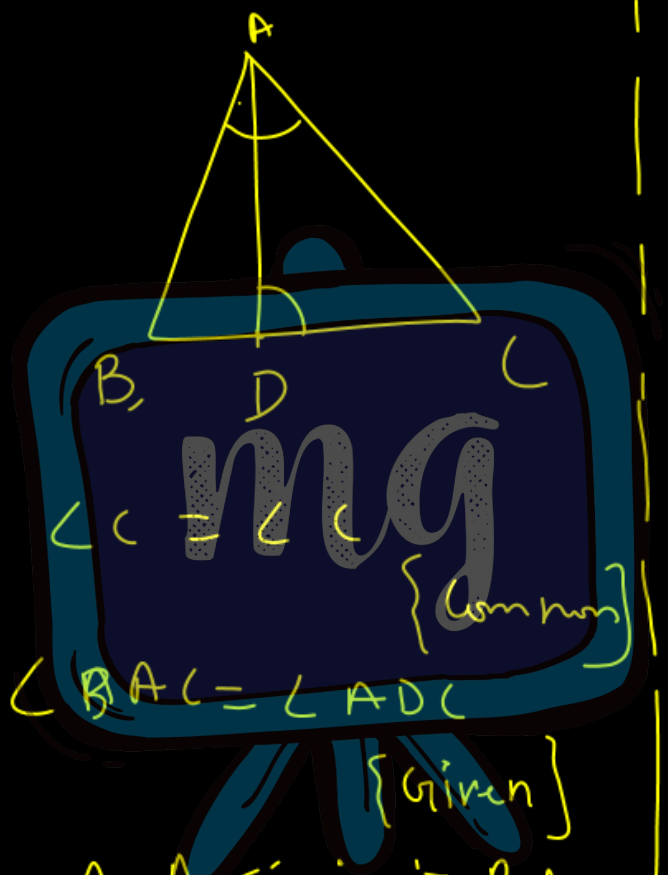
$CA^2 = CB \cdot CD$

$CA \cdot CA = CB \cdot CD$

$\frac{CA}{CB} = \frac{CD}{CA}$

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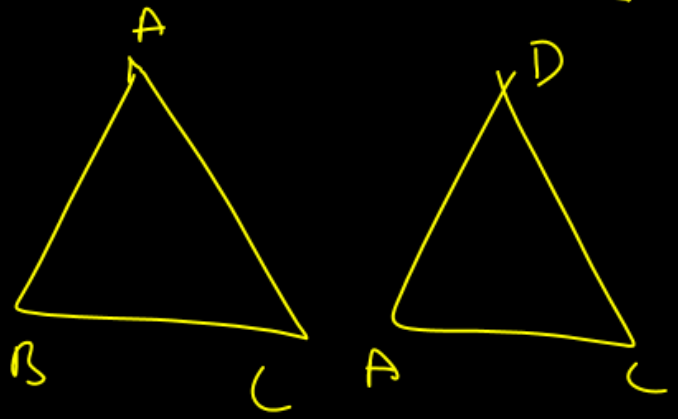
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A - A Similarity Rule.

$\triangle ABC \sim \triangle DAC$

Let's separate the $\triangle$'s accordingly.



By CPST

$$\frac{AB}{AD} = \boxed{\frac{BC}{AC} = \frac{AC}{CD}}$$

$$AC^2 = CB \cdot CD$$

H.P

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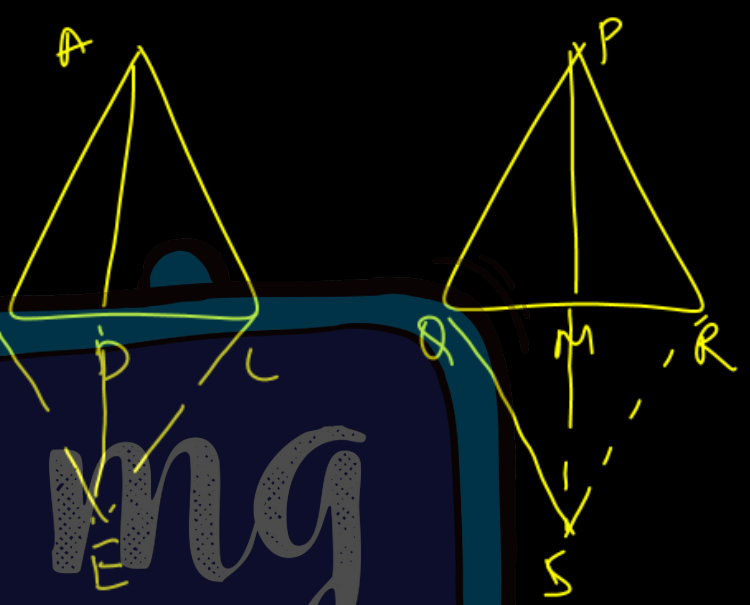
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14. Sides AB and AC and median AD of a triangle ABC are respectively proportional to sides PQ and PR and median PM of another triangle PQR. Show that Δ ABC ~ Δ PQR.

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Given :

$$\frac{AB}{PQ} = \frac{AC}{PR} = \frac{AD}{PM}$$

To Prove :-

$\triangle ABC \sim \triangle PQR$

Construction: Draw $DE = AD$ on $\triangle AEC$ and $\triangle PSR$ and join BE and CE

$AB = CE$ and $PQ = RS$ — (1)

Draw $MS = PM$ and Join $QS = RS$

$$\frac{AB}{PQ} = \frac{AC}{PR} = \frac{AD}{PM} = \frac{2AD}{2PM}$$ — (2)

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From eq (1) and (2)

$$\frac{CE}{RS} = \frac{AC}{PR} = \frac{AE}{PS}$$

$\triangle AEC \sim \triangle PSR$

$\angle DAC = \angle MPR$ — (3)

Similarly $\triangle ABE \sim \triangle PQS$

$\angle BAD = \angle QPM$

eq (3) + eq (4)

$\angle A = \angle P$

Now in $\triangle ABC$ and $\triangle PQR$

$$\frac{AB}{PQ} = \frac{AC}{PR}$$ Given.

$\angle A = \angle P$ { Proved

Hence $\triangle ABC \sim \triangle PQR$

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Exercise : 6.3

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16. If AD and PM are medians of triangles ABC and PQR, respectively where $\Delta ABC \sim \Delta PQR$, prove that

$$\frac{AB}{PQ} = \frac{AD}{PM}$$

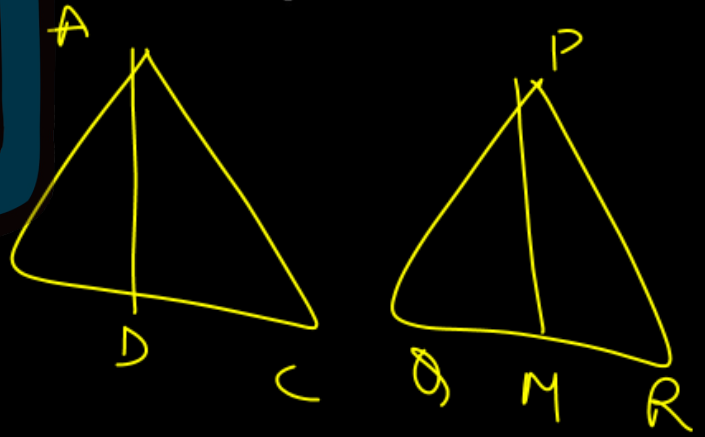
Given :- $\Delta ABC \sim \Delta PQR$

To prove :- $\frac{AB}{PQ} = \frac{AD}{PM}$

Sol :- In ΔABD & ΔPQM

$$\frac{AB}{PQ} = \frac{BC}{QR} = \frac{BC/2}{QR/2}$$

$$\frac{AB}{PQ} = \frac{BD}{QM}$$



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$\angle B = \angle Q$ $\{\triangle ABC \sim \triangle PQR\}$

Hence by SAS Similarity Rule

$\triangle ABD \sim \triangle PQM$

By CPST

$\frac{AB}{PQ} = \frac{AD}{PM}$

H.P.