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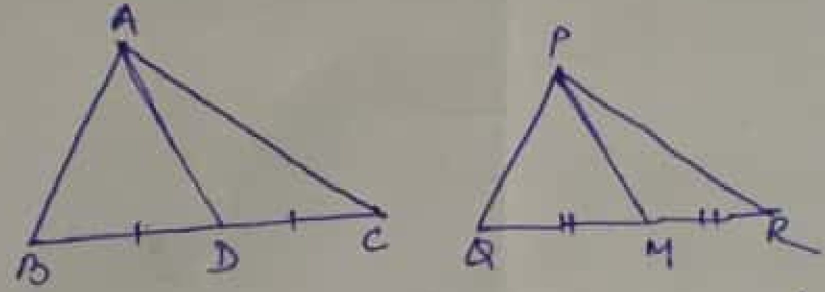
Date :- 13/09/2020 class - X Sub - Mathematics

12. Sides AB and BC and median AD of a $\triangle ABC$ are respectively proportional to sides PQ and QR and median PM of $\triangle PQR$. Show that $\triangle ABC \sim \triangle PQR$.



Given :- In $\triangle ABC$ and $\triangle PQR$ AD and PM are medians such that $\frac{AB}{PQ} = \frac{BC}{QR} = \frac{AD}{PM}$

To Prove $\triangle ABC \sim \triangle PQR$

Proof $\triangle ABD$ and $\triangle PQM$

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

D and M are the mid points BC and QR. respectively.

$\therefore \frac{AB}{PQ} = \frac{AD}{PM} = \frac{\cancel{2}BD}{\cancel{2}QM}$

$= \frac{AB}{PQ} = \frac{AD}{PM} = \frac{BD}{QM}$ (by S-S-S)

$\triangle ABD \sim \triangle PQM$

$\angle B = \angle Q$ (By C.P.S.T.)

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

$\angle B = \angle Q$ (Above proved)

$\frac{AB}{PQ} = \frac{BC}{QR}$ (given)

$\triangle ABC \sim \triangle PQR$ (by S-A-S)

Proved

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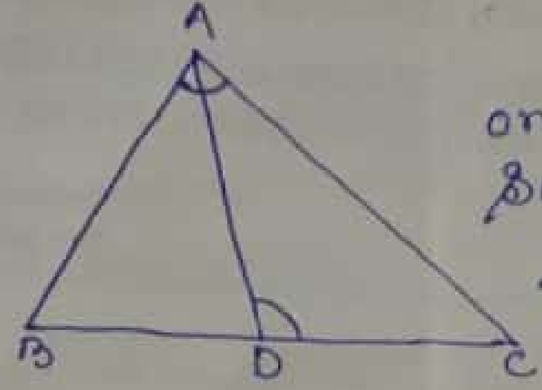
Q 13. D is a point on the side BC of $\triangle ABC$ Such that $\angle ADC = \angle BAC$ Show that $CA^2 = CB \cdot CD$



<u>Given</u>:- D is a point on the side BC of $\triangle ABC$. Such that $\angle ADC = \angle BAC$

<u>To Prove</u> $CA^2 = CB \times CD$

<u>Proof</u> $\triangle ADC$ and $\triangle BAC$

$\angle C = \angle C$ (common)

$\angle ADC = \angle BAC$ (Given)

$\triangle ADC \sim \triangle BAC$ (by A-A)

$\frac{AD}{BA} = \frac{DC}{AC} = \frac{AC}{BC}$ (by C.P.S.T)

$\Rightarrow \frac{DC}{AC} = \frac{AC}{BC}$

$\Rightarrow AC \times AC = DC \times BC$

$\Rightarrow AC^2 = CB \times CD$

$\therefore CA^2 = CB \cdot CD$ <u>Proved</u>

14. Sides AB and AC and median AD of a $\triangle ABC$ are respectively to sides PQ and PR and median PM of another $\triangle PQR$. Show that $\triangle ABC \sim \triangle PQR$.

(16.) If AD and PM are medians of $\triangle ABC$ and $\triangle PQR$ respectively where $\triangle ABC \sim \triangle PQR$ Show that $\frac{AB}{PQ} = \frac{AD}{PM}$