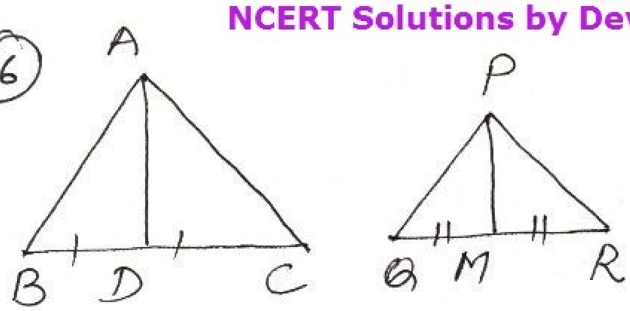
(16)



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

proof $\triangle ABC \sim \triangle PQR$

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

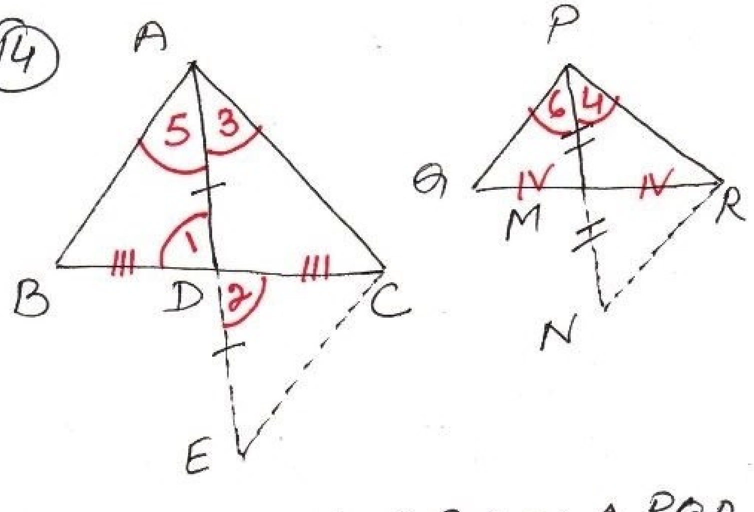
$\Rightarrow \frac{AB}{PQ} = \frac{\cancel{2}BD}{\cancel{2}QM}$ [D is midpt of BC, M is midpt of QR]

and $\angle B = \angle Q$

$\therefore \triangle ABD \sim \triangle PQM$ by SAS Sim.

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

(14)



to prove $\triangle ABC \sim \triangle PQR$

const. - Produce AD to E s.t. DE = AD, join EC

produce PM to N, s.t MN = PN join NR

proof AD = ED (by cond.)

$\angle 1 = \angle 2$ (vertically opposite $\angle$s)

BD = CD [$\because$ AD is median to side BC of $\triangle ABC$)

$\therefore \triangle ADB \cong \triangle EDC$ by SAA congruency

AB = EC (cpct)

Similarly PQ = NR

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

$\frac{EC}{NR} = \frac{AC}{PR} = \frac{2AD}{2PM}$ [$\because$ AB = EC, PQ = NR]

$\frac{EC}{NR} = \frac{AC}{PR} = \frac{AE}{PN}$ [$\because$ AD = DE, PM = MN]

$\therefore \triangle AEC \sim \triangle PNR$ by SSS Sim.

$\Rightarrow \angle 3 = \angle 4 \quad \ldots (i)$

Similarly $\angle 5 = \angle 6 \quad \ldots (ii)$

(i) + (ii) $\angle 3 + \angle 5 = \angle 4 + \angle 6$

$\Rightarrow \angle BAC = \angle QPR$

and $\frac{AB}{PQ} = \frac{AC}{PR}$

$\therefore \triangle ABC \sim \triangle PQR$ by SAS congruency