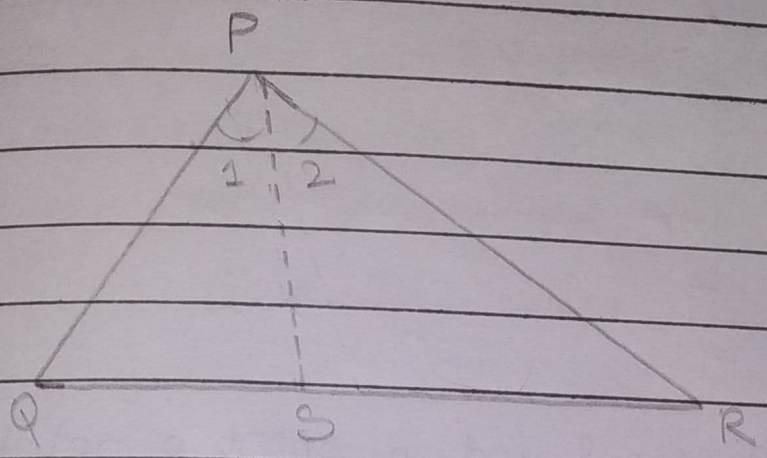
15/7/21

MATHS

Ex. 7.4

5)



Given: $PR > PQ$

PS bisects $\angle QPR$

$\angle QPS = \angle SPR$

$\Rightarrow \angle 1 = \angle 2$

To prove: $\angle PSR > \angle PSQ$

Proof: In $\triangle PQS$, Exterior $\angle PSR = \angle 1 + \angle Q$ (By exterior angle prop) ...(i)

In $\triangle PSR$, Exterior $\angle PSQ = \angle 2 + \angle R$ (By exterior angle prop) ...(ii)

Given In $\triangle PQR$

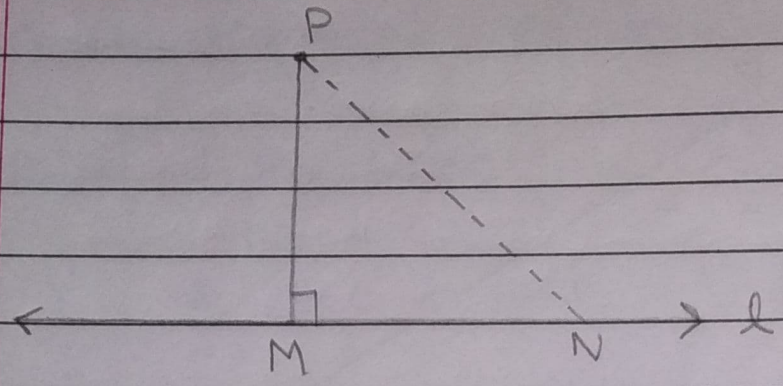
$PR > PQ$

$\angle Q > R$ [Angle opp. to longer side is greater]

$\angle Q + \angle 1 > \angle R + \angle 2$ [$\because \angle 1 = \angle 2$]

$\Rightarrow \angle PSR > \angle PSQ$ (Using I and II)

6.



Given :- A line l and a point p not lying on it
PM $\perp$ l and N is any point on l, other than M.

To prove :- PM < PN

Proof :- In ΔPMN, $\angle M = 90^\circ$ [PM $\perp l$]

$\angle P + \angle M + \angle N = 180^\circ$ (By angle sum prop of Δ)

$\Rightarrow \angle P + 90^\circ + \angle N = 180^\circ$

$\angle P + \angle N = 180^\circ$ ~~$- 90^\circ$~~ ~~$= 90^\circ$~~

$\Rightarrow \angle P + \angle N = 180^\circ - 90^\circ = 90^\circ$

$\Rightarrow$ ~~$\angle P$~~ $\angle P < 90^\circ$ and $\angle N < 90^\circ$

$\Rightarrow \angle P < \angle M$

$\angle N < \angle M$

$\Rightarrow$ PM < PN (side opp. to greater angle is longer)

Similarly, any ~~the~~ line segment other than PN will also be greater than PM.