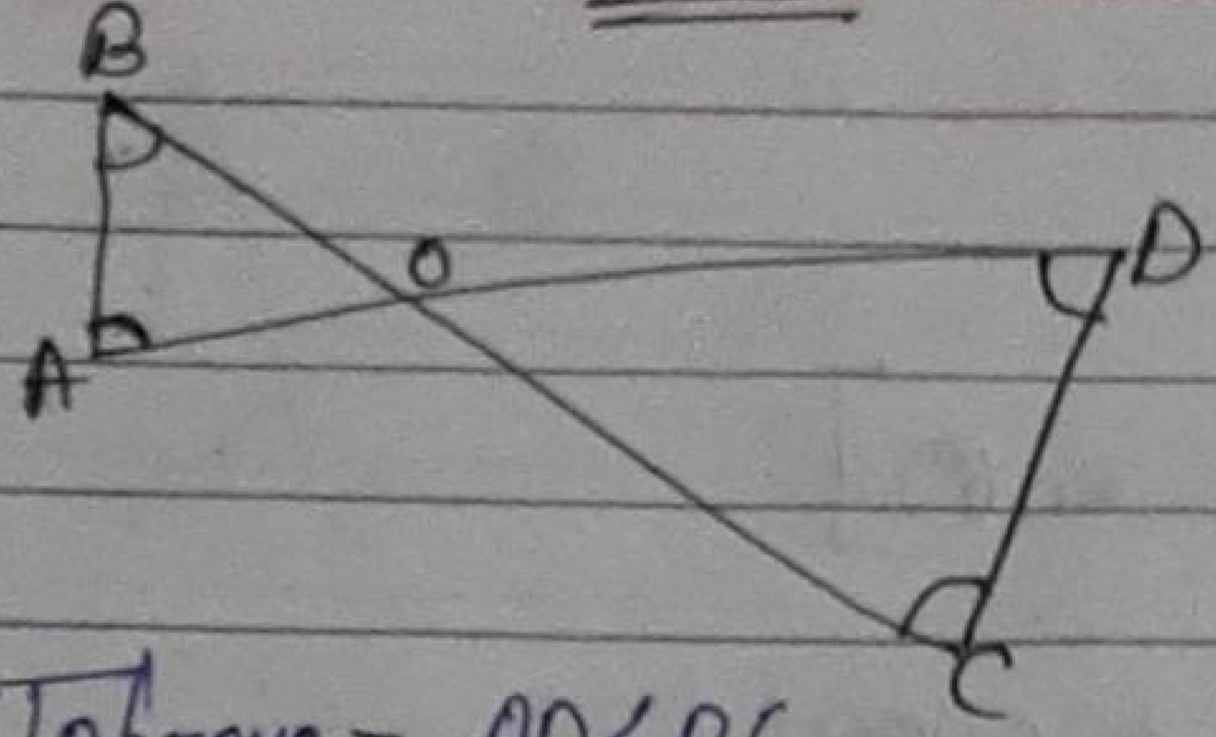
Hw

7.4

(3)



Given - $\angle B < \angle A$
$\angle C < \angle D$

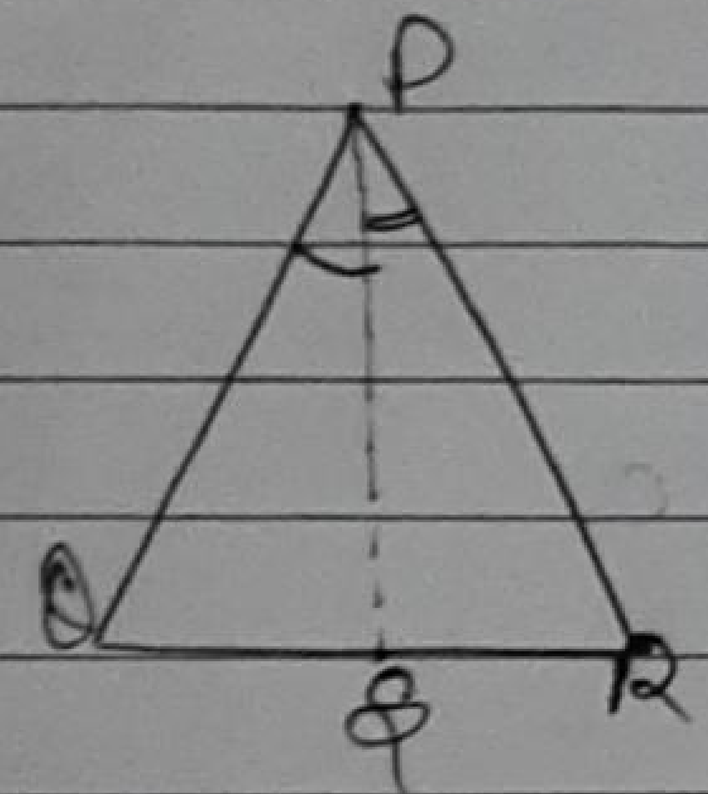
To prove - $AD < BC$

Proof:-

$\angle B < \angle A$
$\Rightarrow AO < BO$ (side opp to greater angle is equal)

HW

(5)



Given - $PR > PQ$, PS bisects $\angle QPR$

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

Proof:-

In ΔPQR,
$PR > PQ$
$\therefore \angle PQR > \angle PRQ$ (Angle opp to longer side is greater)
$\because$ PS bisect $\angle QPR$

In ΔPQS,
$\angle PQS + \angle QPS + \angle PSQ = 180°$ - (3) (The sum of the three angles of a Δ is 180)

In ΔPRS,
$\angle PRS + \angle SPR + \angle PSR = 180°$ - (4)

From 3 and 4,

$\angle PQR + \angle PQS + \angle PSQ = \angle PRS + \angle SPR + \angle PSR$

$\Rightarrow \angle PQR + \angle PQS = \angle PRS + \angle PSR$ - from ②

$\Rightarrow \angle PRS + \angle PSR = \angle PQR + \angle PSQ$

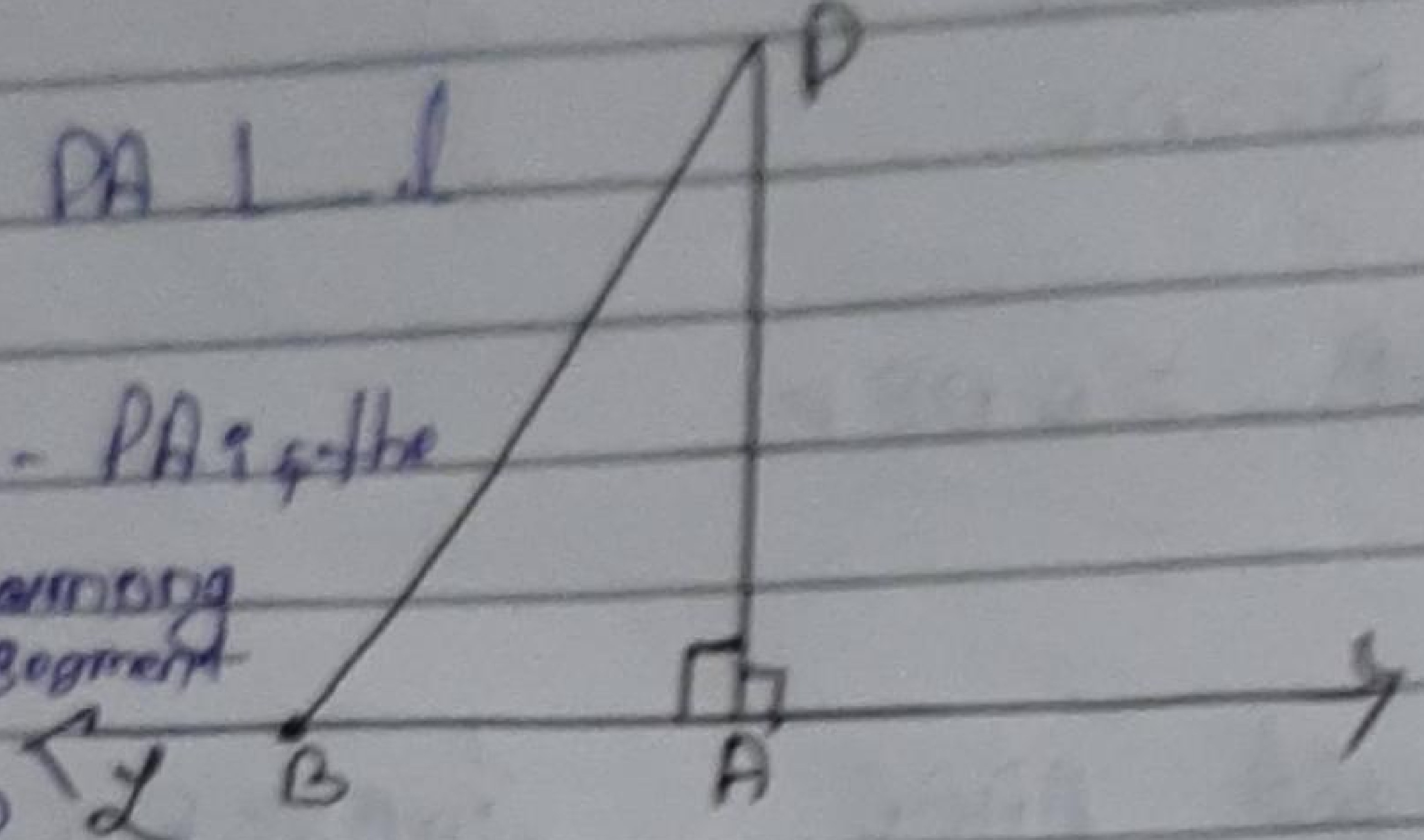
$\Rightarrow \angle PRS + \angle PSR > \angle PRQ + \angle PSQ$ - from ①

$\Rightarrow \angle PRQ + \angle PSR > \angle PRS + \angle PSQ$ $(\because \angle PRQ = \angle PRS)$

$\Rightarrow \angle PSR > \angle PSQ$

5) Given:- $PA \perp l$

To prove :- PA is the shortest among all the line segment joined from P to l



Construction :- Let B be any point on l and join AB.

Proof :- In $\triangle PAB$,

$\angle A = 90^\circ$

$\angle A > \angle B$

$\Rightarrow PB > PA$ (R)

$\therefore$ Hence proved.