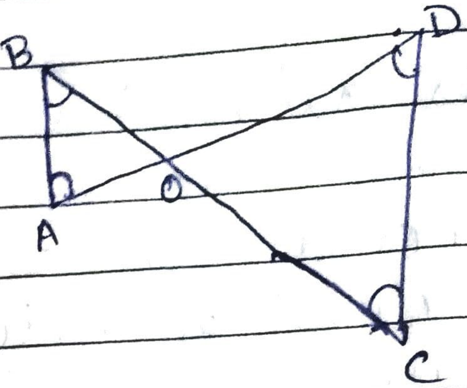
16.07.21 Ch- 7 Triangles

Ex - 7.4



3Ans. Given,

$\angle B < \angle A$

$\angle C < \angle D$

To prove :- $AD < BC$

Proof :- In ΔAOB,

$\angle B < \angle A$

$OA < OB$ --- (1) [Side opp. to larger angle is greater]

In ΔCOD,

$\angle C < \angle D$

$OD < OC$ --- (2) [Side opp. to larger angle is greater].

Adding (1) and (2)

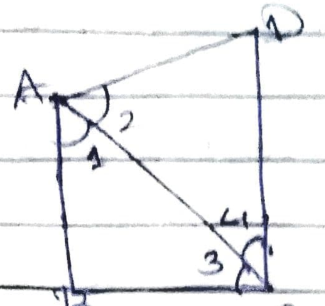
$OA + OD < OB + OC$

$\Rightarrow AD < BC$

[Hence proved]

4 ans Given,

AB is the smallest
CD is the largest



To prove :- $\angle A > \angle C \rightarrow$ (1)
$\angle B > \angle D \rightarrow$ (2)

Prove :- $\angle A > \angle C$

Construction :- I joined AC.

Proof :- In ΔABC,

AB is smallest in (ABCD)
$AB < BC$
$\Rightarrow \angle 3 < \angle 1$ [Angle opp. to larger side is greater] $\rightarrow$ (1)

In ΔACD,

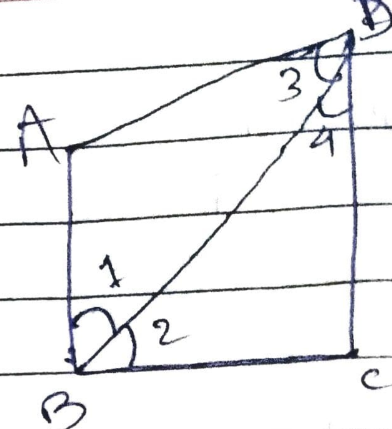
CD is the largest (ABCD)
$AD < CD$
$\angle 4 < \angle 2$ — (2) [Angle opp. to larger side is greater]

Adding (1) and (2)

$\angle 3 + \angle 4 < \angle 1 + \angle 2$
$= \angle C < \angle A$

[Hence Proved] $\rightarrow$ (1)

Prove :- $\angle D < \angle B$



Construction → I joined BD.

Proof :- In ΔABD

AB is the smallest (ABCD)

$AB < AD$

$\angle 3 < \angle 1$ --- (1) [Angle opp. to larger side is greater].

In ΔBCD

CD is the largest (ABCD)

$BC < CD$

$\angle 4 < \angle 2$ ... (2) [Angle opp. to larger side is greater].

Adding eq. (1) and (2)

$\angle 3 + \angle 4 < \angle 1 + \angle 2$

$\angle D < \angle B$

[Hence Proved] (2)