23/7/2024

8.1

4.) ΔDAB and ΔCBA

(i) $AD = BC$
(ii) $\angle DAB = \angle CBA = 90°$
(iii) $AB = AB$

$\Rightarrow \Delta DAB \cong \Delta CBA$ [SAS]

$\Rightarrow BD = AC$ [by CPCT] — (1)

ΔDOC & ΔAOB

(i) $\angle DCO = \angle BAO$ (a.i.a)

(ii) $DC = AB$ [given]

(iii) $\angle CDO = \angle ABO$ [a.i.a]

$\Rightarrow \Delta DOC \cong \Delta AOB$ [by ASA]

$\Rightarrow AO = CO$
$BO = DO$ — (2)

ΔAOD and ΔCOD

(i) $AD = CD$ (iii) $DO = DO$

(ii) $AO = CO$

$\Rightarrow \angle AOD = \angle COD$ [by CPCT]

$\Rightarrow \Delta AOD = \Delta COD$ [by SSS]

$\angle AOD + \angle COD = 180$

$\Rightarrow \angle AOD = \angle COD = 90$

5.) ΔDOC & ΔAOB

(i) $DO = BO$

(ii) $\angle DOC = \angle AOB = 90$

(iii) $CO = AO$

$\Rightarrow \Delta DOC \cong \Delta AOB$ [by SAS]

$\Rightarrow \angle DCO = \angle BAO$ [by CPCT]

$\Rightarrow CD \parallel AB$

Similary

$AD \parallel BC$

$\Rightarrow ABCD$ is a parallelogram

ΔAOD & ΔAOB

(i) $DO = BO$ (given)

(ii) $\angle AOD = \angle AOB = 90^\circ$

(iii) $AO = AO$ [common]

$\angle DAB = \angle CBA$

$\angle DAB + \angle CBA = 180^\circ$

$\angle DAB = 90^\circ$