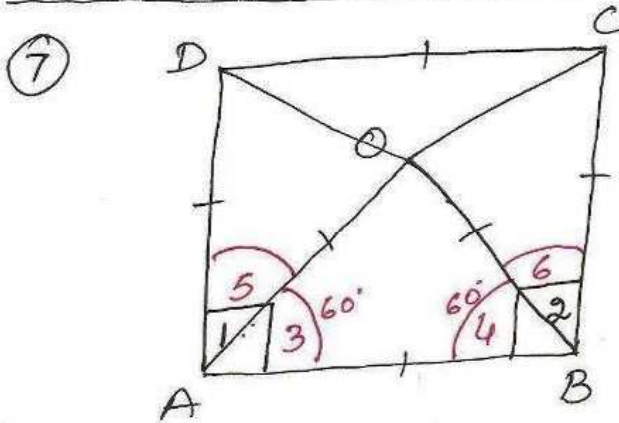


$\Rightarrow AD = BD = CD$ [Midpoint of hypotenuse of a rt Δ is equidistant from the three vertices of Δ]
 ... ①

$$\begin{aligned} BC &= BD + CD \\ &= AD + AD \quad [\text{using (i)}] \\ &= 2AD \end{aligned}$$



to show - ΔOCD is isosceles

proof $\angle 1 = \angle 2 = 90^\circ \dots$ ①

$\angle 3 = \angle 4 = 60^\circ \dots$ ②

① - ②

$\angle 1 - \angle 3 = \angle 2 - \angle 4$

$\Rightarrow \angle 5 = \angle 6$

In ΔDAO and ΔCBO

$AD = BC$ (given)

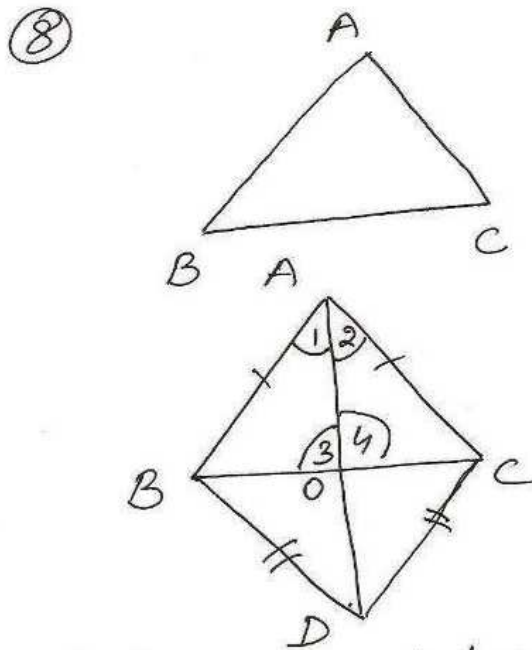
$\angle 5 = \angle 6$ (proved)

$AO = BO$ (given)

$\therefore \Delta DAO \cong \Delta CBO$
 by SAS prop

$OD = OC$ (cpct)

$\Rightarrow \Delta OCD$ is isosceles



To prove AD is per. bis of BC

Proof $AB = AC$ (given)
 $DB = DC$ (do)
 $AD = AD$ (common)
 $\therefore \Delta BAD \cong \Delta CAD$ by SSS prop

$\angle 1 = \angle 2$ (cpct)

$AB = AC$ (given)

$\angle 1 = \angle 2$ (proved)

$AD = AD$ (common)

$\therefore \Delta BAO \cong \Delta CAO$ by SAS prop

$BO = CO$

$\angle 3 = \angle 4$ (cpct)