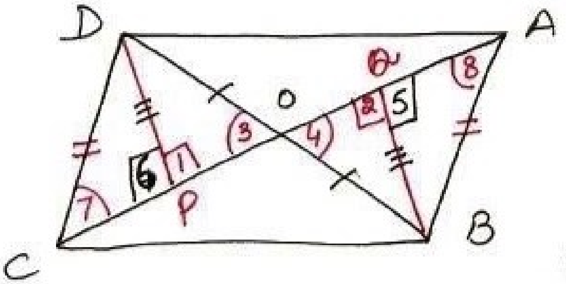
ex. 9.3

(6)



To Prove ar(DOC) = ar(AOB)

ar(DCB) = ar(ACB)

DA ∥ CB, ABCD is a ∥gm

Const - draw $DP \perp AC$, $BQ \perp AC$

Proof - $\triangle DPO \cong \triangle BQO$ by AAS cor. [$\angle 1 = \angle 2 = 90°$; $\angle 3 = \angle 4$ ver opp ∠s; OD = OB given]

∴ DP = BQ (cpct)

$ar(\triangle DPO) = ar(\triangle BQO)$ … (1)

$\triangle CPD \cong \triangle AQB$ by RHS property [$\angle 6 = \angle 5 = 90°$; CD = AB given; DP = BQ proved]

$\angle 7 = \angle 8$ (cpct)

But these are alternate interior angles

∴ CD ∥ BA

$ar(\triangle CPD) = ar(\triangle AQB)$ … (11)

(1) + (11)

$ar(\triangle DPO) + ar(\triangle CPD) = ar(\triangle BQO) + ar(\triangle AQB)$

⇒ $\boxed{ar(DOC) = ar(AOB)}$

$ar(\triangle DOC) + ar(\triangle BOC) = ar(\triangle AOB) + ar(\triangle BOC)$

$\boxed{\Rightarrow ar(\triangle DCB) = ar(\triangle ABC)}$

⇒ DA ∥ CB [△s equal in area and on same base]

□ABCD is a ∥gm [DA ∥ CB; CD ∥ BA]