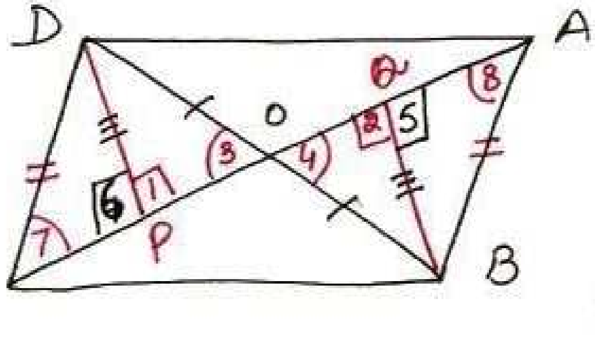
 ex. 9.3



To Prove ar (DOC) = ar (AO

ar (DCB) = ar (ACB)

DA ∥ CB, ABCD is a ∥g

Const - draw DP ⊥ AC, BQ ⊥ AC

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

$\therefore$ 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 prov]

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

But these are alternate interior angles

$\therefore$ CD ∥ BA

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

(1) + (11)

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

$\Rightarrow$ $\boxed{\text{ar (DOC) = ar (AOB)}}$

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

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

$\Rightarrow$ DA ∥ CB [$\triangle$s equal in area and on same base]

□ ABCD is a ∥gm [DA ∥ CB, CD ∥ BA]