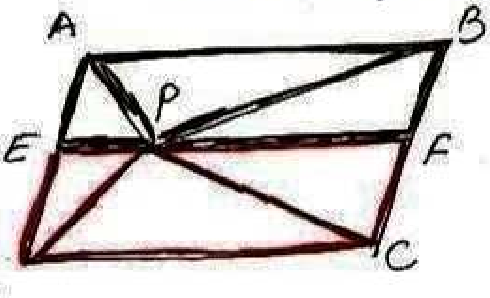
ex 9.2

(4)



To Prove − ar(APB) + ar(PCD) = $\frac{1}{2}$ ar(ABCD)

ar($\triangle$APD) + ar($\triangle$PBC) = ar(APB) + ar(PCD)

Const − draw EPF ∥ DC

Proof − AD ∥ BC [opp. sides of ∥gm]

⇒ DE ∥ CF

EF ∥ DC

□ DCFE is a ∥gm

EF ∥ DC, AB ∥ DC

∴ EF ∥ AB

AD ∥ BC

AE ∥ BF

□ EFBA is a ∥gm

ar($\triangle$PDC) = $\frac{1}{2}$ ar(∥gm DCFE) ...(I)

ar($\triangle$APB) = $\frac{1}{2}$ ar(∥gm EFBA) ...(II)

[$\triangle$ and ∥gm on same base and between same parallel lines]

(I) + (II)

ar($\triangle$APB) + ar($\triangle$PCD) = $\frac{1}{2}$[ar(∥gm DCFE + ar(∥gm EFBA)]

= $\frac{1}{2}$ ar(∥gm ABCD] ... (III)

Similarly ar($\triangle$APD) + ar($\triangle$PBC) = $\frac{1}{2}$(ar ∥gm ABCD) ... (IV)

From (III) and (IV) NCERT Exemplar Solutions by Dev Anoop (Bathinda)

ar($\triangle$APD) + ar($\triangle$PBC) = ar($\triangle$APB) + ar($\triangle$PCD)