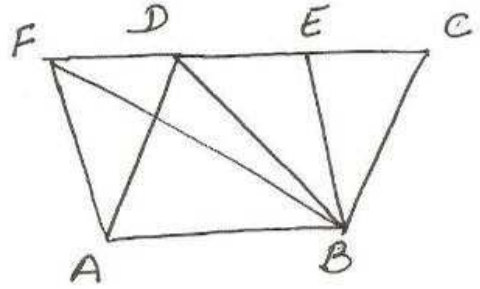
ex 9.3, exemplar IX

③



Sol

ar (11gm ABEF)

= ar (11gm ABEF) = 90cm²

[11gms on same base and between same 11 lines]

$ar(\triangle ABD) = \frac{1}{2} ar(11gm\ ABEF)$

$= \frac{1}{2} \times 90$

$= 45 cm^2$

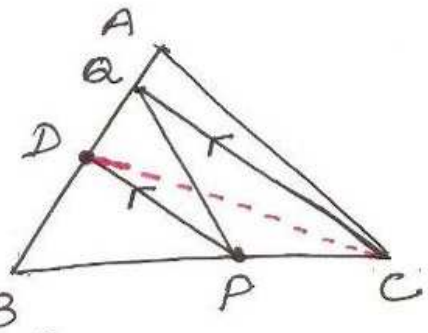
[Δ and 11gm on same base and between same 11 lines]

$ar(\triangle BEF) = \frac{1}{2} ar(11gm\ ABEF)$

$= \frac{1}{2} \times 90$

$= 45 cm^2$ (do)

④



To prove

$ar(\triangle BPQ) = \frac{1}{2} ar(\triangle ABC)$

Proof

$ar(\triangle QDP) = ar(\triangle CPD)$

[Δs on same base and between same 11 lines]

$ar(\triangle QDP) + ar(\triangle DBP)$

$= ar(\triangle CPD) + ar(\triangle DBP)$

$\Rightarrow ar(\triangle BPQ) = ar(\triangle BDC)$ ... (I)

CD is median to side AB of ΔABC

$\therefore ar(\triangle BDC) = \frac{1}{2} ar(\triangle ABC)$ ... (II)

From (I), (II)

$ar(\triangle BPQ) = \frac{1}{2} ar(\triangle ABC)$