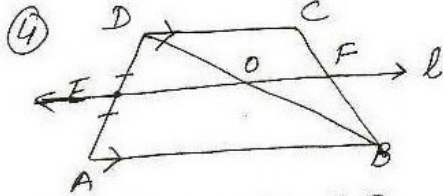


ex 8.2



To show - $CF = BF$

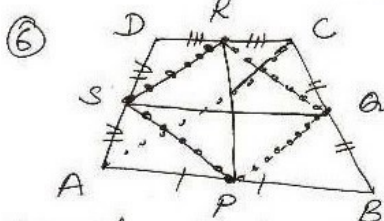
Proof - In $\triangle DAB$, E is midpoint of AD and $EO \parallel AB$

$\therefore DO = OB$ [converse of midpoint theorem]

In $\triangle BDC$

$DO = OB$ and $OF \parallel AB$ [$AB \parallel DC$, $l \parallel AB$, $\Rightarrow AB \parallel DC \parallel l$]

$\therefore CF = BF$ [converse of midpoint theorem]

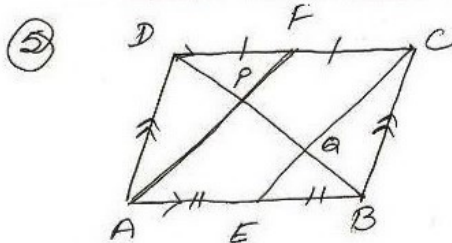


const - join PQ, QR, RS, SP, AC

To Prove - PR and QS bisect each other

Proof - $\square PQRS$ is a $\parallel gm$ [same as Q1]

$\therefore PR$ and QS bisect each other [\because diagonals of $\parallel gm$ bisect each other]



To Prove - $DP = PO = OB$

Proof - $DC \parallel AB$ [opp. sides of $\parallel gm$]
 $\Rightarrow FC \parallel AE$

$DC = AB$.. (do)
 $\therefore FC = 2AE$ [F is midpt of DC, E is midpt of AB]
 $\Rightarrow FC = AE$

$\square AECF$ is a $\parallel gm$ [$FC \parallel AE$, $FC = AE$]

$AF \parallel EC$ (opp. sides of $\parallel gm$)

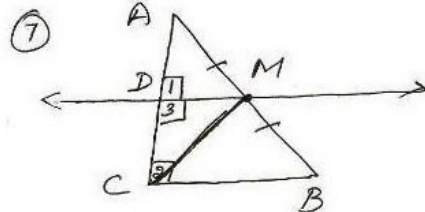
F is midpt. of side DC of $\triangle DCA$ and $PF \parallel AC$

$\therefore DP = PO$ (converse of midpt. theorem) ... (i)

Similarly $PO = OB$... (ii)

From (i) and (ii)

$DP = PO = OB$



To show - $AD = DC$
 $MD \perp AC$
 $CM = MA = \frac{1}{2} AB$

Proof - In $\triangle ACB$, M is midpt of AB, $MD \parallel BC$
 $\therefore AD = DC$ [converse of midpt. theorem]

$DM \parallel CB$

$\therefore \angle 1 = \angle 2 = 90^\circ$ [corresp. angles]
 $\Rightarrow MD \perp AC$

In $\triangle ADM$ and $\triangle CDM$

$AD = DC$

$\angle 1 = \angle 2 = 90^\circ$ [$MD \perp AC$]

$DM = DM$ [common]

$\therefore \triangle ADM \cong \triangle CDM$ by SAS

$\therefore AM = MC$ (cpct)

But $AM = \frac{1}{2} AB$ [\because M is midpt of AB]

$\therefore CM = MA = \frac{1}{2} AB$