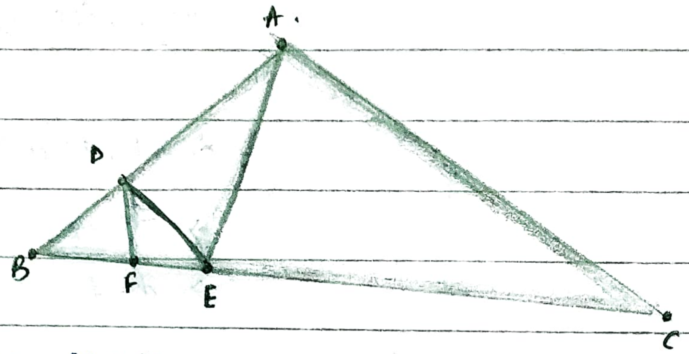
Exercise - 6.2.

Q4. In the given figure, $DE \parallel AC$ & $DF \parallel AE$.



In $\triangle BAC$, $DE \parallel AC$.

$\therefore \frac{BE}{EC} = \frac{BD}{AD}$ ... (i).

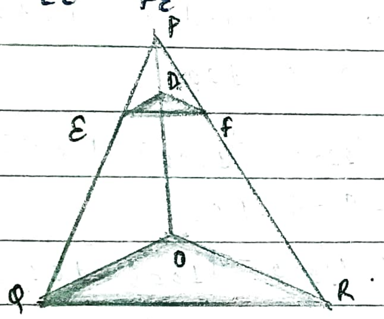
Similarly, in $\triangle BAE$, $DF \parallel AE$.

$\therefore \frac{BF}{FE} = \frac{BD}{DA}$ ... (ii).

(i) and (ii)

$\frac{BE}{EC} = \frac{BF}{FE}$.

Q5.



In $\triangle POQ$,

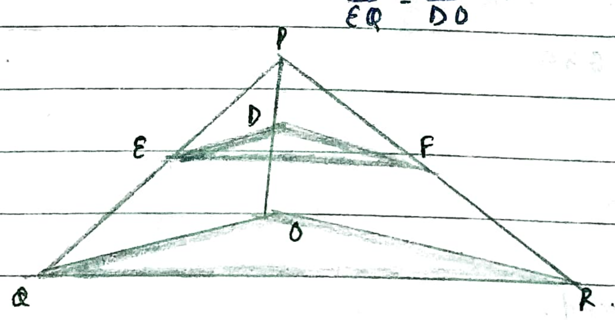
$DE \parallel OQ$.

$\frac{PE}{EQ} = \frac{PD}{DO}$.

In $\triangle POR$,

$DF \parallel OR$.

$\frac{PF}{FR} = \frac{PD}{DO}$.



(i) & (ii).

$\frac{PE}{EQ} = \frac{PE}{FR}$.

$\therefore EF \parallel QR$.

Q6. $AB \parallel PQ$.

$\therefore \frac{OA}{AP} = \frac{OB}{BQ}$ (i).

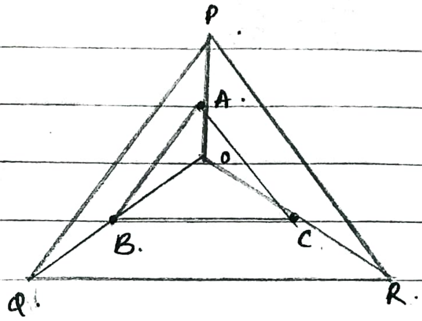
& $AC \parallel PR$.

$\therefore \frac{OA}{AP} = \frac{OC}{CR}$ (ii).

Q6. (i) & (ii).

$\frac{OB}{BQ} = \frac{OC}{CR}$.

$\therefore BC \parallel QR$.



Q7. $\triangle ABC$ in which D is the mid-point of AB & $DE \parallel BC$.

AE = EC.

In $\triangle ABC$, $DE \parallel BC$.

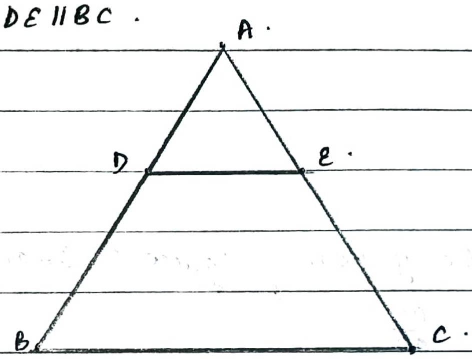
$\therefore \frac{AD}{DB} = \frac{AE}{EC}$.

AD = DB.

$\Rightarrow \frac{AD}{DB} = 1$.

$\Rightarrow 1 = \frac{AE}{EC} \Rightarrow AE = EC$.

hence, DE bisects AC.



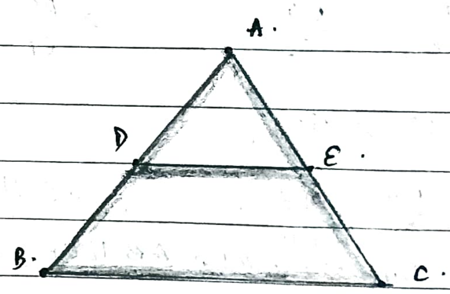
Q8. The given figure shows a $\triangle ABC$ in which D & E are mid-points of sides AB & AC respectively.

$\therefore \frac{AD}{DB} = 1$.

and $\frac{AE}{EC} = 1$.

$\Rightarrow \frac{AD}{DB} = \frac{AE}{EC} \Rightarrow \frac{AD}{DB} \parallel \frac{AE}{EC}$.

hence proved.



Q9. $\frac{AO}{BO} = \frac{CO}{DO}$.

given: ABCD is a trapezium in which $AB \parallel DC$.

$\frac{AO}{BO} = \frac{CO}{DO}$.

construction: Draw $EO \parallel DC$.

In $\triangle ABC$, $\therefore \frac{AE}{ED} = \frac{BO}{DO}$.

$EO \parallel DC$.

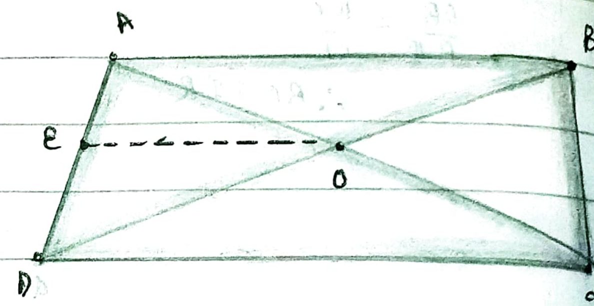
$DC \parallel AB$.

$\Rightarrow EO \parallel AB$.

Q9. In $\triangle ADC$, $EO \parallel DC$ $= \frac{AE}{ED} = \frac{AO}{CO}$.

(i) & (ii).

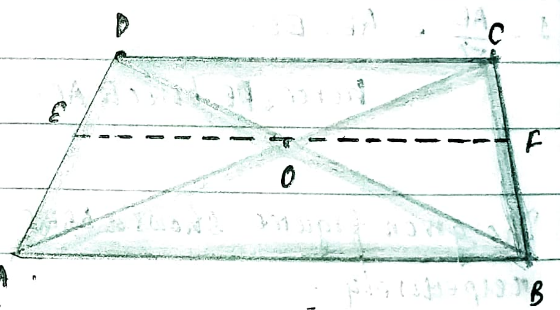
$\frac{BO}{DO} = \frac{AO}{CO}$



Q10. In the given figure is shown a quadilateral ABCD. Draw $EF \parallel AB$.

$\frac{AO}{BO} = \frac{CO}{OD}$.

$\therefore$ $\frac{AO}{OC} = \frac{BO}{OD}$ ....(i).



In $\triangle DAB$, $EO \parallel AB$.

$\therefore$ $\frac{DE}{EA} = \frac{DO}{OB}$. $\Rightarrow \frac{AE}{ED} = \frac{BO}{OD}$ ....(ii)

(i) & (ii).

$\frac{AO}{OC} = \frac{AE}{ED}$. $\therefore OE \parallel CD$.

But we have $AB \parallel OE$.

$\therefore$ $AB \parallel CD$.

hence, quadilateral ABCD is a trapezium.