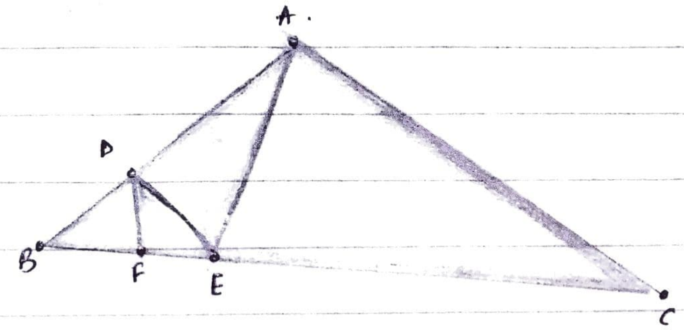
Exercise-6.2.

Q4. In the given figure, DE ∥ AC & DF ∥ AE.



In ΔBAC, $DE \parallel AC$.

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

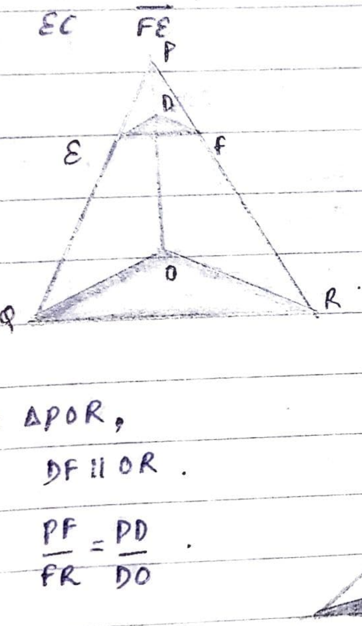
Similarly, in ΔBAE, $DF \parallel AE$.

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

(i) and (ii)

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

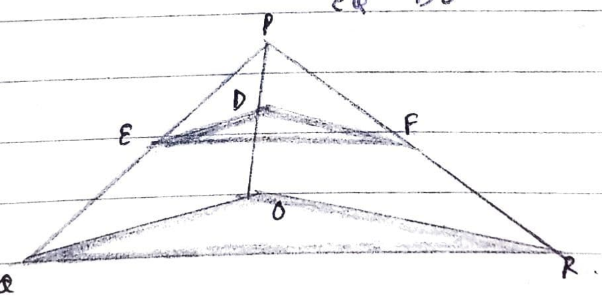
Q5.



In ΔPOQ,

$DE \parallel OQ$.

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



In ΔPOR,

$DF \parallel OR$.

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

(i) & (ii).

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

$\therefore EF \parallel QR$.

Q6. $AB \parallel PQ$.

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

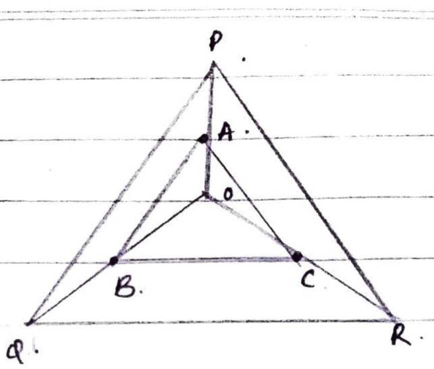
& $AC \parallel PR$.

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

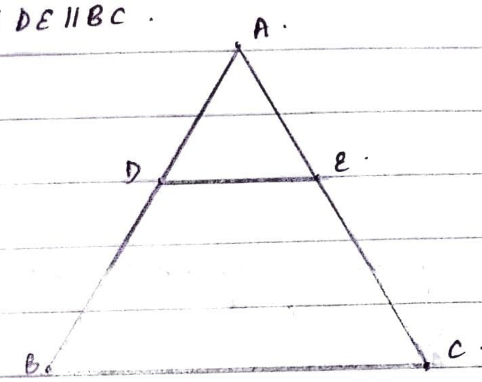
Q6. (ii) & (iii).

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

$\therefore BC \parallel QR$.



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



AE = EC.

In ΔABC, $DE \parallel BC$.

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

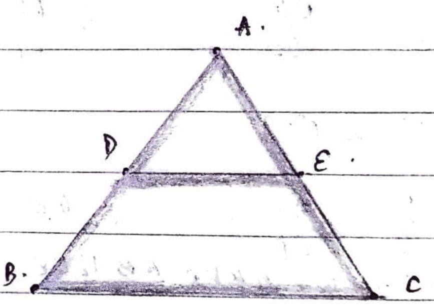
AD = DB.

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

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

hence, DE bisects AC.

Q8. The given figure shows a ΔABC 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 ΔABC,

$\therefore \frac{AE}{ED} = \frac{BO}{DO}$.

$EO \parallel DC$.

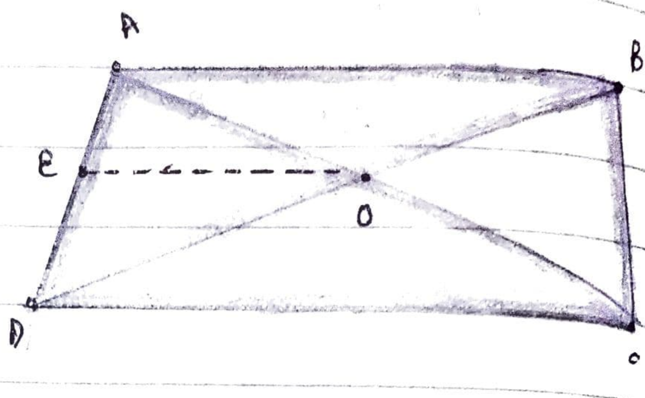
$DC \parallel AB$.

$\Rightarrow EO \parallel AB$.

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

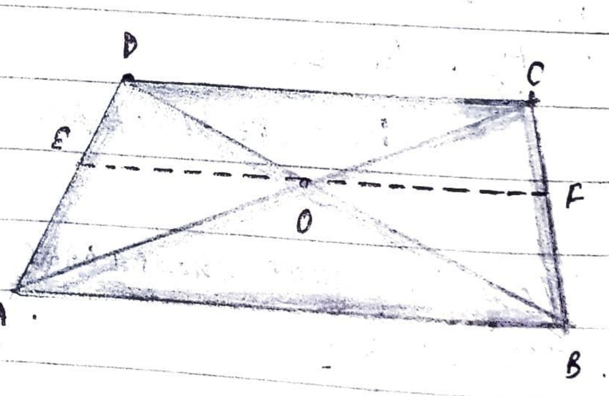
(i) & (ii).

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



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 ΔDAB, $EO \parallel AB$.

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