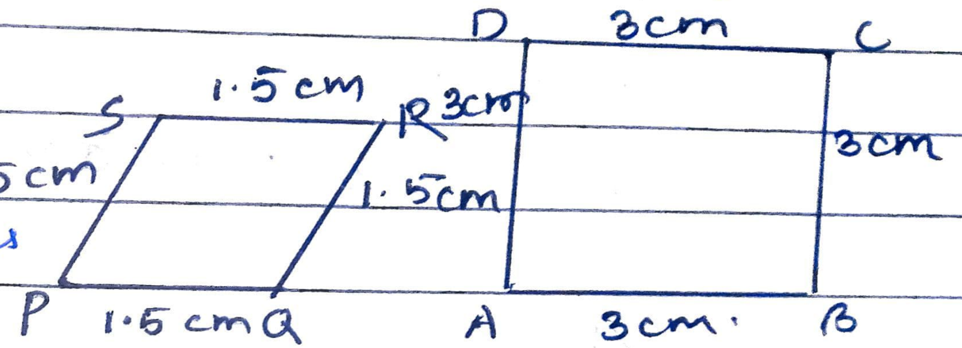
(3)

(i) They are non-similar figures as their angles are not equal.



Ex:-6.2

(1) $\frac{AD}{DB} = \frac{AE}{EC}$

$\frac{1.5}{3} = \frac{1}{EC}$

$1.5\,EC = 3$

$EC = \frac{3}{1.5}$

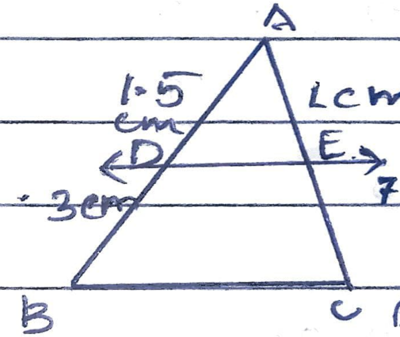
$\boxed{EC = 2\text{ cm}}$

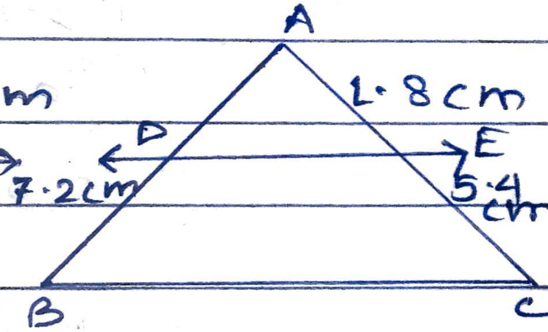
$\frac{AD}{DB} = \frac{AE}{EC}$

$\frac{AD}{7.2} = \frac{1.8}{5.4}$

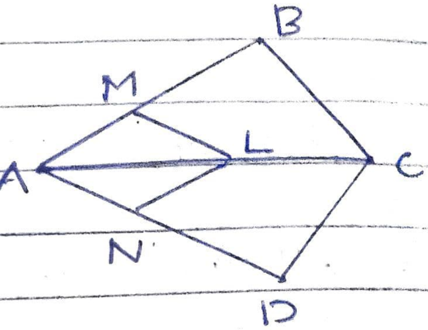
$\frac{AD}{\cancel{7.2}} = \frac{\cancel{1.8}\ 1}{\cancel{5.4}\ 3}$

$\boxed{AD = 2.4\text{ cm}}$





3. To prove :- $\frac{AM}{AB} = \frac{AN}{AD}$



In $\triangle ABC$, $LM \parallel CB$.

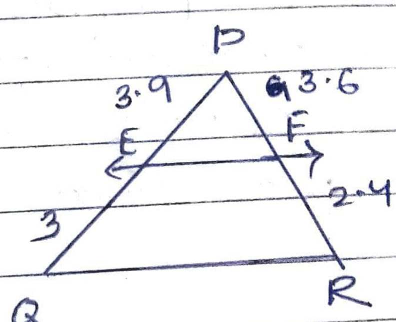
$\therefore \frac{AM}{AB} = \frac{AL}{LC}$ [By BPT] —(I)

In $\triangle ACD$, $LN \parallel CD$.

$\frac{AN}{AD} = \frac{\cancel{8}AL}{AC}$ [By BPT] —(II)

From (I) and (II),

$\frac{AM}{AB} = \frac{AN}{AD}$ [Hence proved]



(2) (i) $\frac{PE}{EQ} = \frac{PF}{FR}$

$\frac{3.9}{3} = \frac{3.6}{2.4}$

$\frac{\overset{13}{\cancel{39}}}{\cancel{3}\times 10} = \frac{\cancel{36}\times 1\cancel{0}}{\cancel{24}\times 1\cancel{0}}$

$\frac{13}{10} \neq \frac{3}{2}$

$1.3 \neq 1.5$

$\therefore$ EF is not $\parallel$ to QR.

(ii) $\frac{4}{4.5} = \frac{8}{9}$

$= \frac{4\times 1\cancel{0}}{\cancel{45}_{9}} = \frac{8}{9}$

$= \frac{8}{9} = \frac{8}{9}$

$\therefore EF \parallel QR$.

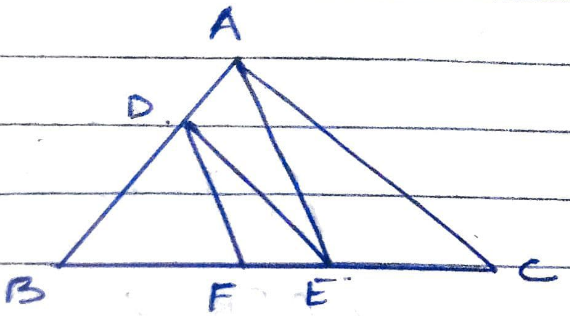
(iii) $\frac{0.18}{1.1} = \frac{0.36}{2.2}$

$= \frac{9\,\cancel{18}\times 1\cancel{0}}{11\times \cancel{100}_{5}} = \frac{\cancel{36}\times 1\cancel{0}}{\cancel{22}\times\cancel{100}}$

$= \frac{.9}{55} = \frac{9}{55}$

$\therefore EF \parallel QR$.

(4) Given:- DE ∥ AC and DF ∥ AE



To prove:- $\frac{BF}{FE} = \frac{BE}{EC}$

In ΔABC, DE ∥ AC.

$\frac{AD}{DB} = \frac{CE}{BE}$ [By BPT] —(I)

In ΔABE,

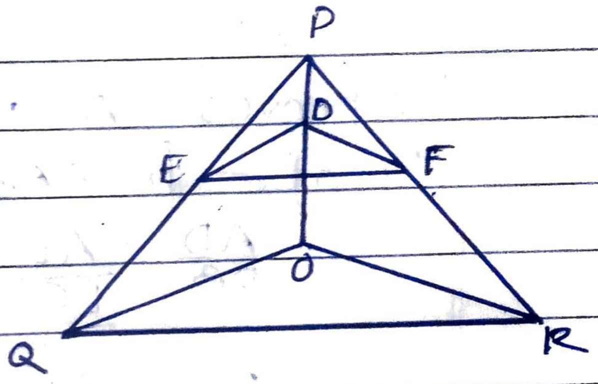
$\frac{AD}{DB} = \frac{EF}{FB}$ [By BPT] —(II)

From (I) and (II).

$\frac{CE}{BE} = \frac{EF}{FB}$

$\frac{BF}{FE} = \frac{BE}{EC}$ [Hence, proved].

(5) Given:- DE ∥ OQ and DF ∥ OR.



To prove:- EF ∥ QR.

Proof:- In ΔPQO, DE ∥ OQ.

$\frac{PE}{EQ} = \frac{PD}{DO}$ [By BPT] —(I)

In ΔPRO.

$\frac{PF}{FR} = \frac{PD}{DO}$ [By BPT] —(II)

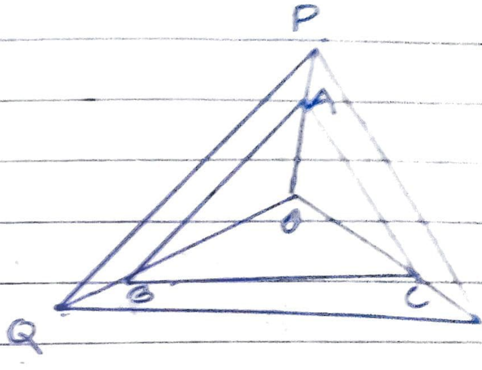
From (I) and (II),

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

So, EF ∥ QR [∵ Hence proved]

(6) Given:- $AB \parallel PQ$ and $AC \parallel PR$

To prove:- $BC \parallel QR$



Proof:- In ΔOPQ, $AB \parallel PQ$

$$\frac{PA}{AO} = \frac{QB}{BO} \text{ [By BPT]} \quad -(1)$$

In ΔOPR, $AC \parallel PR$

$$\frac{PA}{AO} = \frac{RC}{CO} \text{ [By BPT]} \quad -(ii)$$

From (1) and (ii),

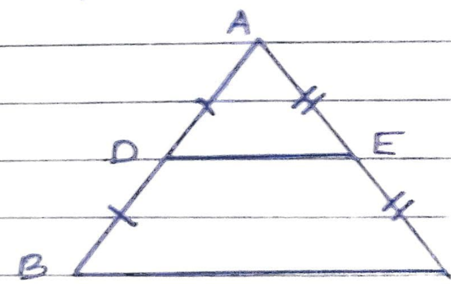
$$\frac{QB}{BO} = \frac{RC}{CO}$$

Therefore, $BC \parallel QR$ [$\therefore$ Hence proved]

(7) Given:- ΔABC, $DE \parallel BC$

and D is the mid point

so $AD = DB$



To prove:- $AE = EC$

Proof:- In ΔABC, $DE \parallel BC$

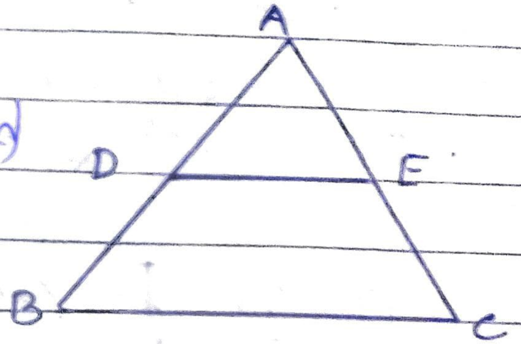
$$\frac{AD}{DB} = \frac{AE}{EC} \text{ (By BPT)}$$

$$\frac{\cancel{AD}}{\cancel{AD}} = \frac{AE}{EC} \quad [AD = DB]$$

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

$AE = EC$ [$\therefore$ Hence proved]

(8). Given:- $\frac{AD}{DB} = \frac{AE}{EC}$



as D is the midpoint of AB and E is the midpoint of AC

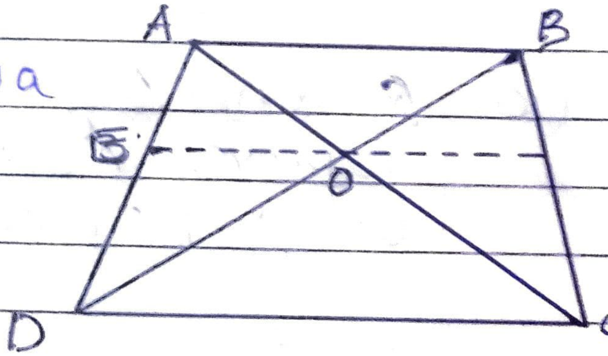
To prove:- DE || BC

Proof:- In $\triangle ABC$,

$\frac{AD}{DB} = \frac{AE}{EC}$ ~~By BPT~~ (By Theorem 6.2)

Therefore, DE || BC [$\therefore$ Hence proved]

(9) Given:- AB || DC



To prove: $\frac{AO}{BO} = \frac{CO}{DO}$ | Construction:- Draw a line EO || AB.

Proof:- In $\triangle ABD$, EO || AB

$\frac{AE}{ED} = \frac{BO}{DO}$ [By BPT] - (i)

In $\triangle ADC$, AB || DC

$\frac{AE}{ED} = \frac{AO}{CO}$ [By BPT] - (ii)

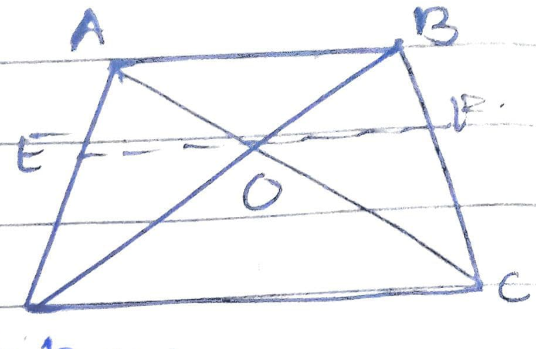
From (i) and (ii),

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

$\frac{AO}{BO} = \frac{BO}{DO}$ [$\therefore$ Hence proved]

(10) Given:- $\frac{AO}{BO} = \frac{CO}{DO}$

$\cancel{\frac{AO}{CO} = B}$



)) Given:- $\frac{AO}{BO} = \frac{CO}{DO}$

To prove:- ABCD is a trapezium

Cons:- $EF \parallel AB$ passing through O

Proof:- $\frac{AO}{CO} = \frac{BO}{DO}$ - (1)

Now, in $\triangle ADB$, $EO \parallel AB$ [$EF \parallel AB$]

$$\frac{AE}{DE} = \frac{BO}{DO}$$

$$\frac{AE}{DE} = \frac{AO}{CO} \quad \left[\because \frac{AO}{CO} = \frac{BO}{DO} \text{ from (1)}\right]$$

So in $\triangle ADC$,

$\therefore EO \parallel DC$

Now, $EO \parallel DC$

we know, $EO \parallel AB$

$EO \parallel AB \parallel DC$

$AB \parallel DC$ ($\because$ Hence proved)