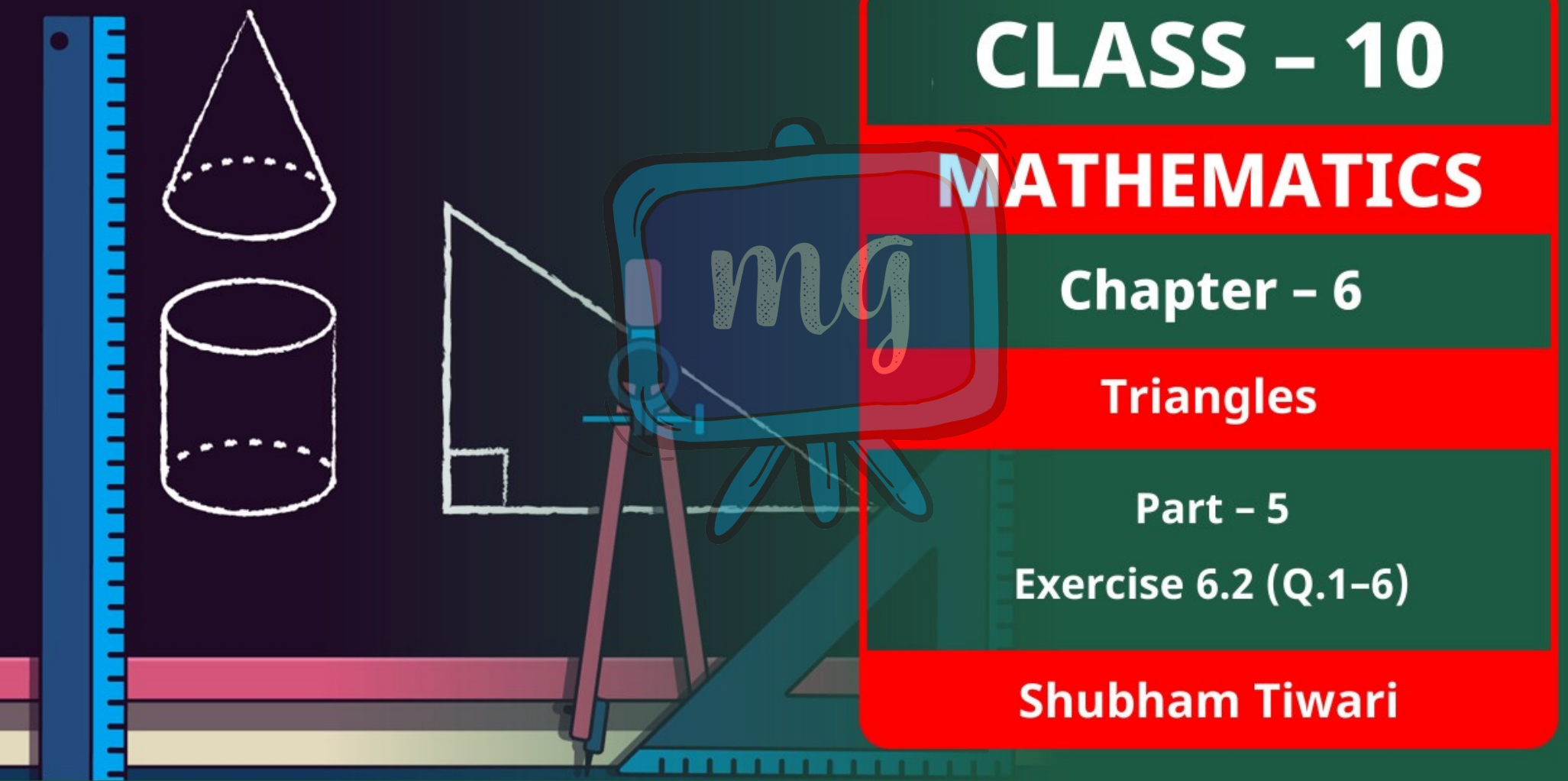
Under CSR Support by ipca | Foundation

missiongyan



CLASS – 10

MATHEMATICS

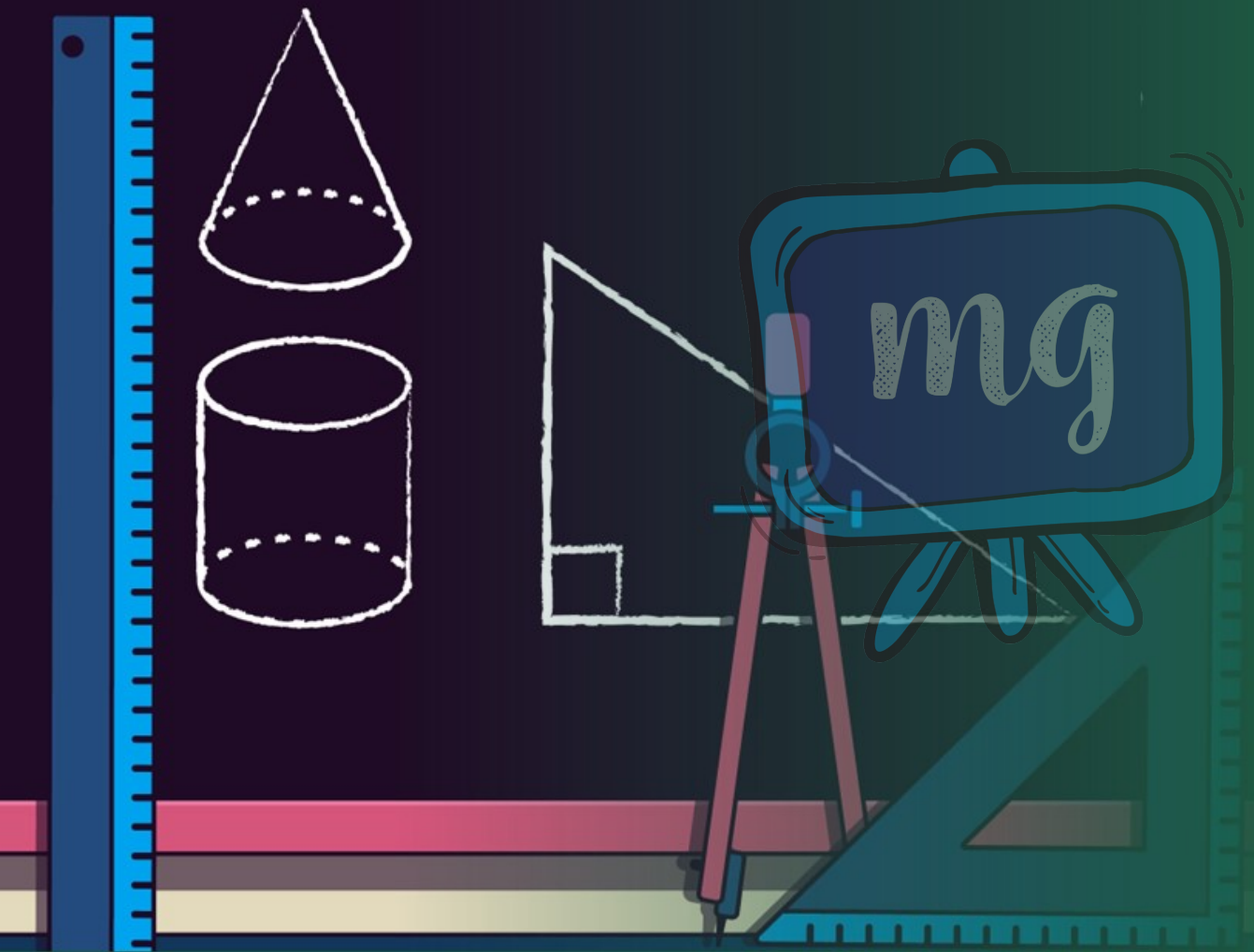
Chapter – 6

Triangles

Part – 5

Exercise 6.2 (Q.1–6)

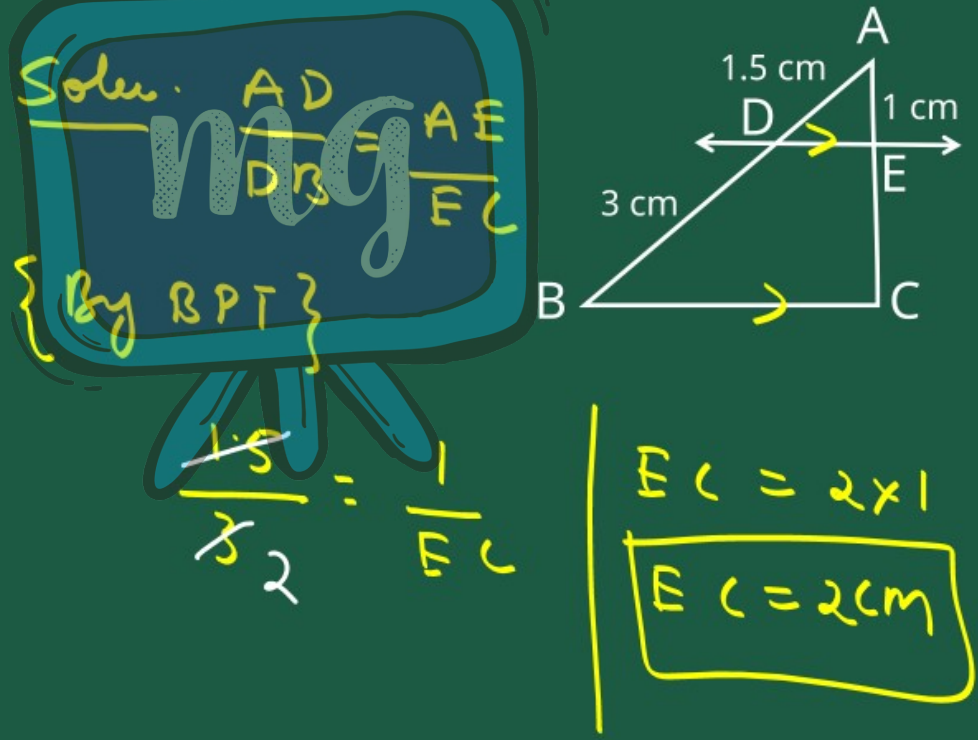
Shubham Tiwari



EXERCISE 6.2

1. In Fig., DE||BC.

(i) Find EC.



Soln. $\frac{AD}{DB} = \frac{AE}{EC}$ {By BPT}

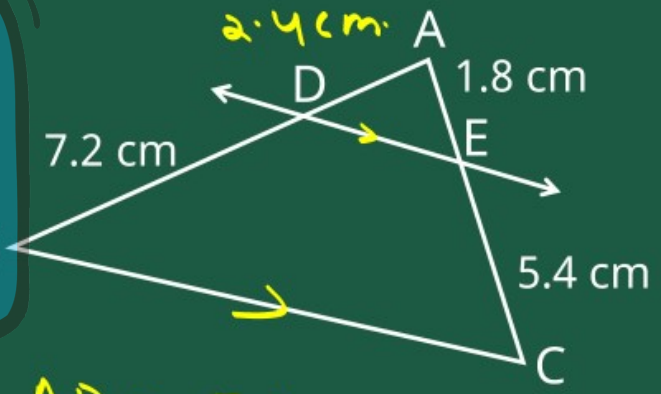
$\frac{1.5}{3/2} = \frac{1}{EC}$

$EC = 2 \times 1$

$EC = 2cm$

In Fig., DE||BC.

(ii) Find AD.



Soln. By BPT

ΔABC

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

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

$AD = \frac{7.2}{3}$

$AD = 2.4$ cm

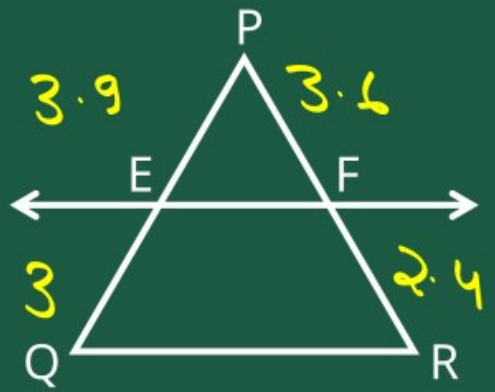
2. E and F are points on the sides PQ and PR respectively of a ΔPQR. State whether EF||QR :

(i) PE = 3.9 cm, EQ = 3 cm, PF = 3.6 cm and FR = 2.4 cm

Solution:

$\frac{PE}{EQ} = \frac{3.9}{3} = \frac{13}{10}$

$\frac{PF}{FR} = \frac{3.6}{2.4} = \frac{3}{2}$



As we can see.

Hence EF is not || to QR

E and F are points on the sides PQ and PR respectively of a ΔPQR. State whether EF||QR :

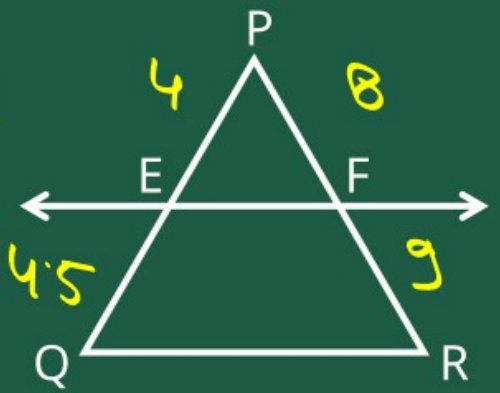
(ii) PE = 4 cm, QE = 4.5 cm, PF = 8 cm and RF = 9 cm

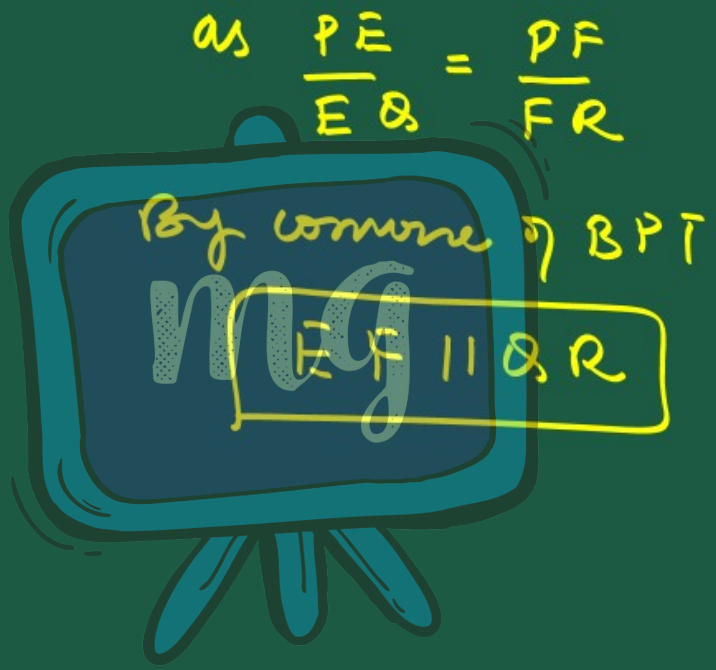
Solu

$\frac{PE}{EQ} = \frac{4}{4.5} = \frac{4}{9/2}$

$= \frac{4}{9} \times 2 = \frac{8}{9}$

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





E and F are points on the sides PQ and PR respectively of a ΔPQR.

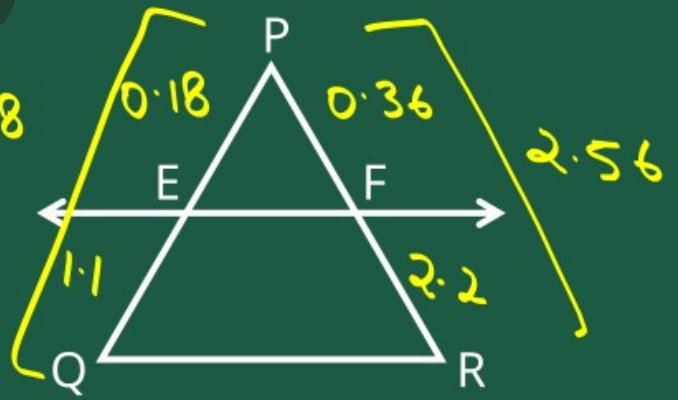
State whether EF||QR :

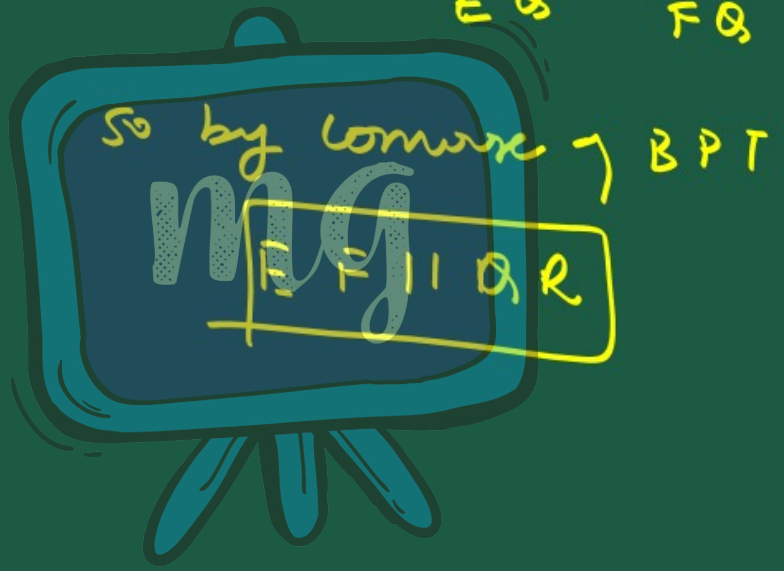
(iii) PQ = 1.28 cm, PR = 2.56 cm, PE = 0.18 cm and PF = 0.36 cm

Solution

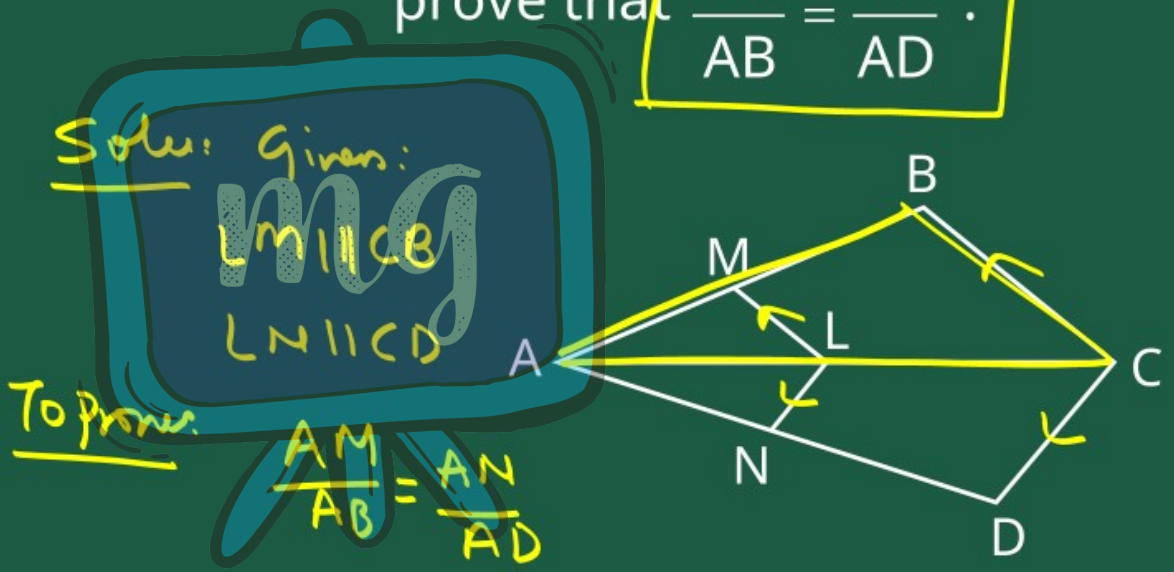
$\frac{PE}{EQ} = \frac{0.18}{1.1}$

$\frac{PF}{FR} = \frac{0.36}{2.2} = \frac{0.18}{1.1}$





3. In Fig., if LM||CB and LN||CD, prove that $\frac{AM}{AB} = \frac{AN}{AD}$.



Solu: Given:
LM || CB
LN || CD

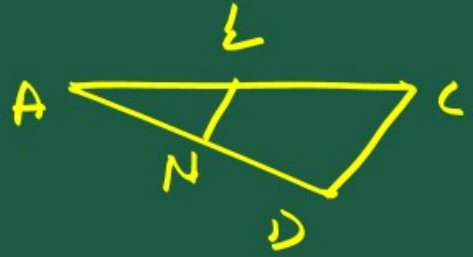
To prove: $\frac{AM}{AB} = \frac{AN}{AD}$

Solu: LM || CB

$\frac{AM}{MB} = \frac{AL}{LC}$ {By BPT} — (1)

In $\triangle ADC$

$LN \parallel CD$



$$\frac{AL}{LC} = \frac{AN}{ND} \quad \text{(2) \{By BPT\}}$$

from eq (1) and (2)

$$\frac{AM}{MB} = \frac{AN}{ND}$$

$$\frac{MB}{AM} = \frac{ND}{AN}$$

$$1 + \frac{MB}{AM} = \frac{ND}{AN} + 1$$

{ By adding 1 both side }

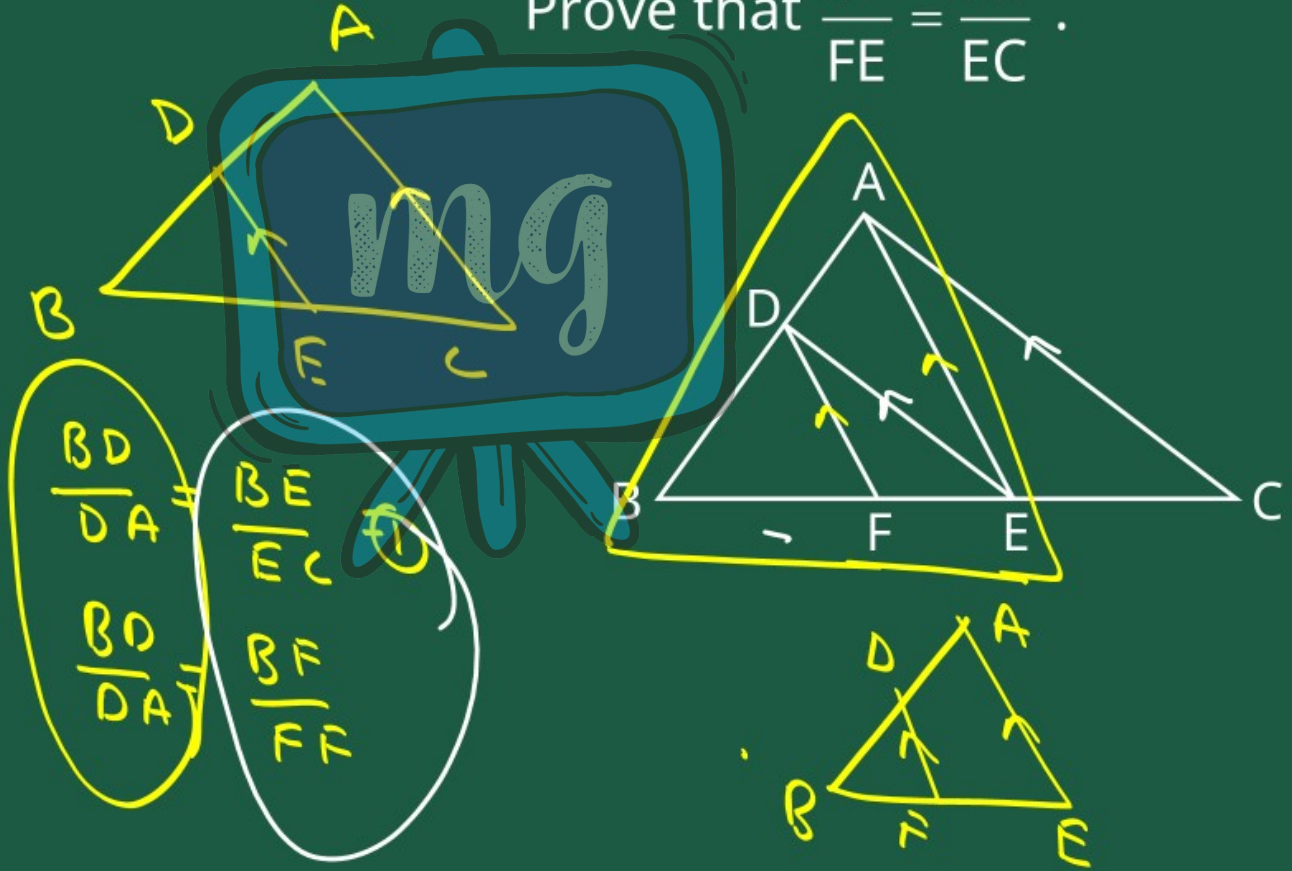
$$\frac{AM + MB}{AM} = \frac{ND + AN}{AN}$$

$$\frac{AB}{AM} = \frac{AD}{AN}$$

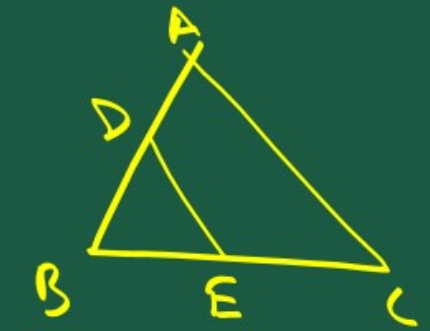
$$\therefore \frac{AM}{AB} = \frac{AN}{AD}$$

4. In Fig., DE||AC and DF||AE.

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



In $\triangle ABC$



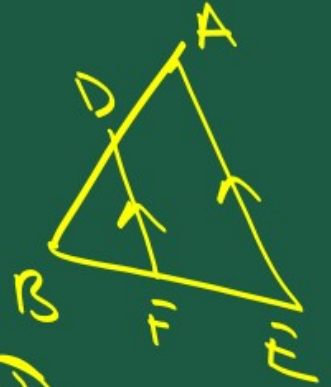
By BPT

$\because DE \parallel AC$

$$\frac{BD}{DA} = \frac{BE}{EC} \quad \text{— (1)}$$

In $\triangle ABE$

$DF \parallel AE$

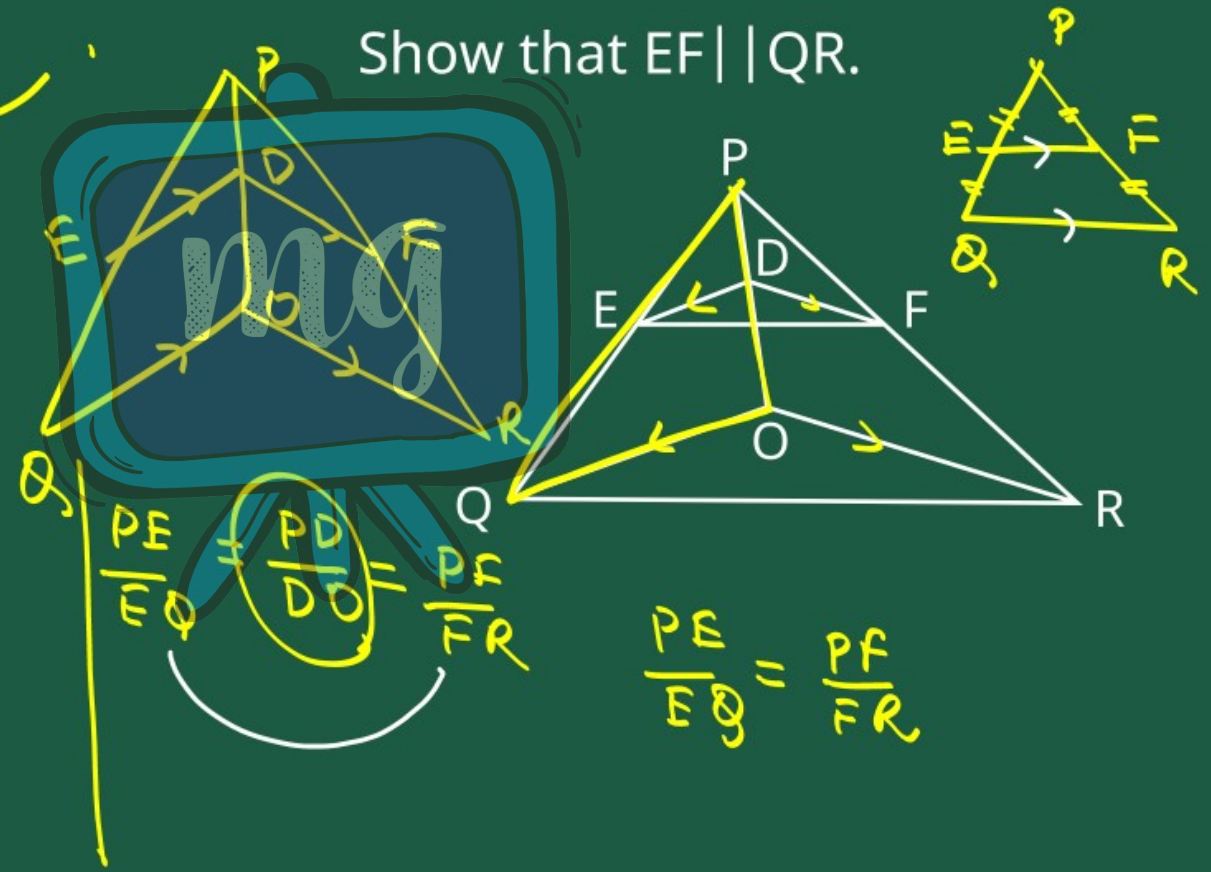


$$\frac{BD}{DA} = \frac{BF}{FE} \quad \{\text{By BPT}\} \quad \text{— (2)}$$

From (1) and (2)

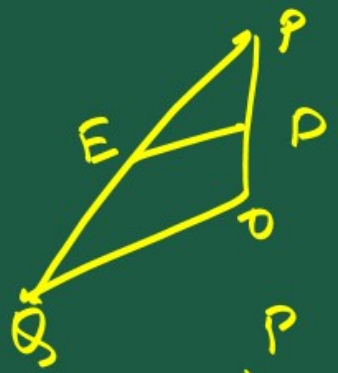
$$\boxed{\frac{BE}{EC} = \frac{BF}{FC}}$$

5. In Fig., DE||OQ and DF||OR.
Show that EF||QR.



In $\triangle PQR$

$ED \parallel QR$

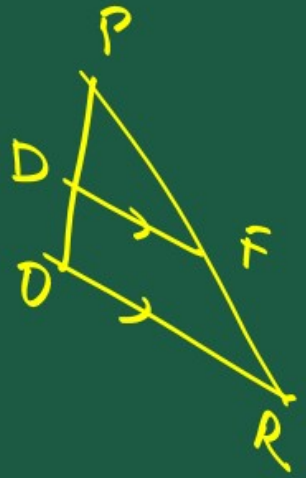


By BPT

$$\frac{PE}{EQ} = \frac{PD}{DO} \quad \text{---(1)}$$

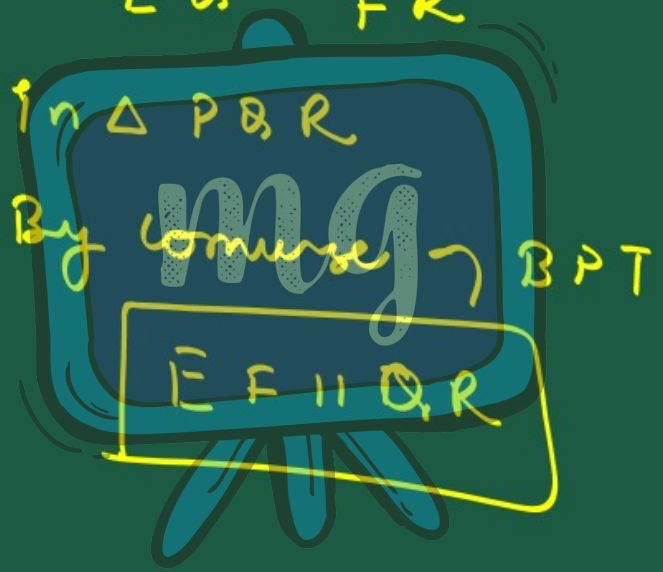
In $\triangle POR$

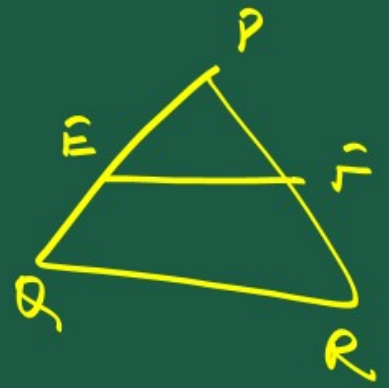
$DF \parallel OR$



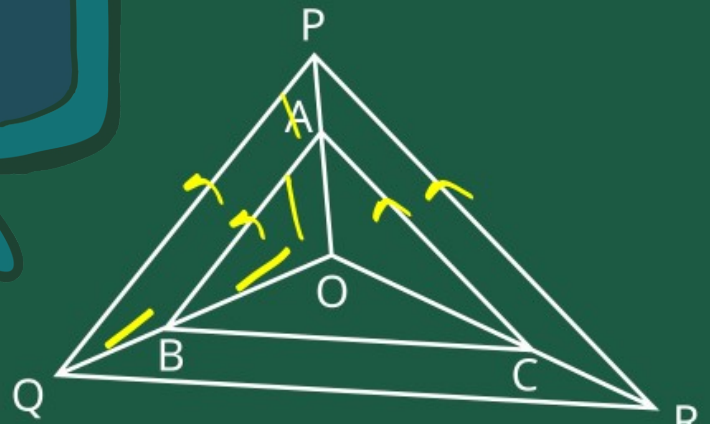
$$\frac{PD}{DO} = \frac{PF}{FR} \quad \{\text{By BPT}\} \quad \text{---(2)}$$

From eq (1) and eq (2)





6. In Fig., A, B and C are points on OP, OQ and OR respectively such that AB||PQ and AC||PR. Show that BC||QR.



Soln:

In $\triangle PQQ$

$AB \parallel PQ$

By BPT

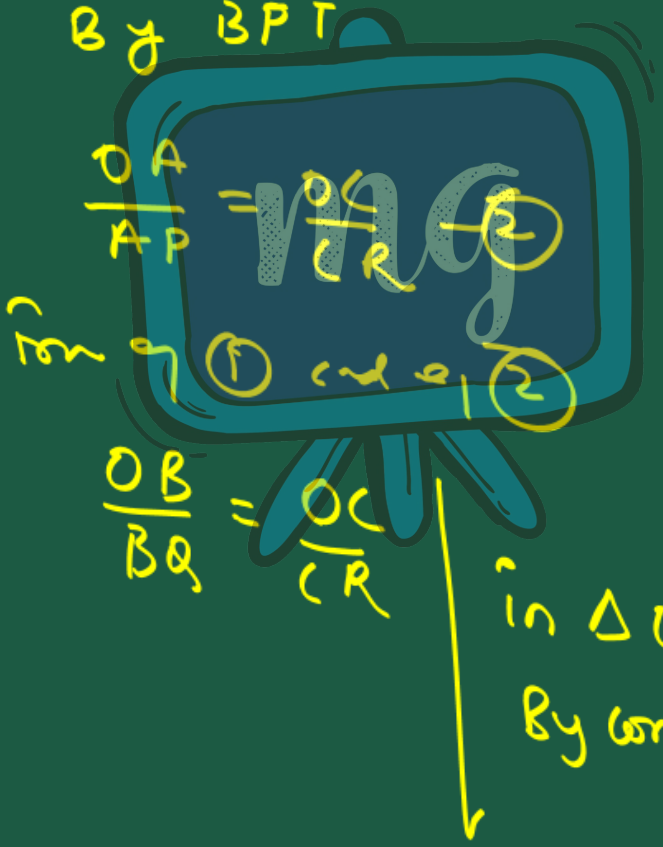
$$\frac{OA}{AP} = \frac{OB}{BQ} \quad \text{--- (1)}$$

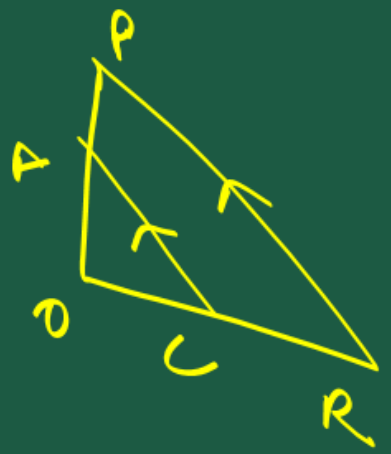
In $\triangle PQR$

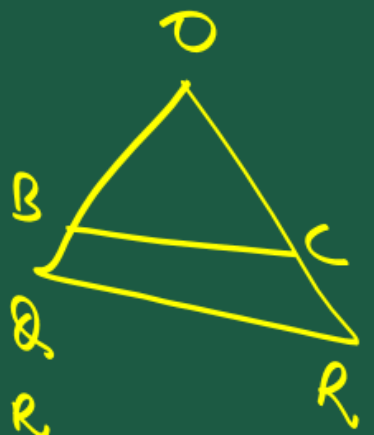
$AC \parallel QR$

By BPT

$$\frac{PA}{AQ} = \frac{PC}{CR} \quad \text{--- (1)}$$







In $\triangle OQR$

By converse of BPT $BC \parallel QR$.

For (1) and (2)

$$\frac{OB}{BQ} = \frac{OC}{CR} \quad \text{--- (2)}$$