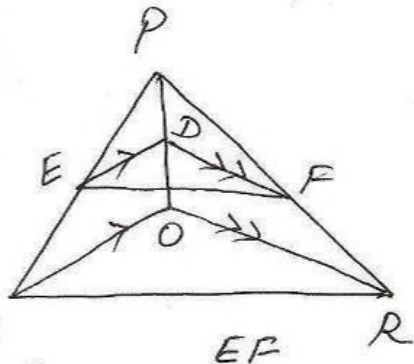


(5)



To prove $EF \parallel QR$

Proof In $\triangle POQ$, $DE \parallel OQ$

$$\frac{PE}{EQ} = \frac{PD}{DQ} \dots \textcircled{i} \text{ (basic prop. th.)}$$

In $\triangle POR$, $DF \parallel OR$

$$\frac{PD}{DR} = \frac{PF}{FR} \dots \textcircled{ii} \text{ (do)}$$

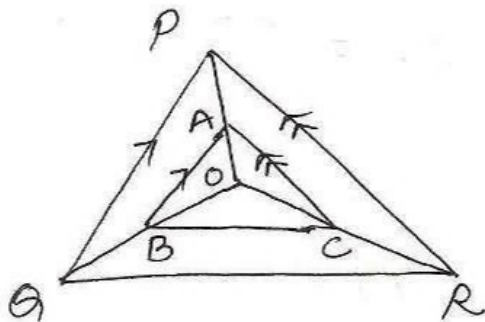
From \textcircled{i} , \textcircled{ii}

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

By converse of basic prop. theorem

$$EF \parallel QR$$

(6)



to show $BC \parallel QR$

proof In $\triangle POQ$, $AB \parallel OQ$

$$\frac{OA}{AP} = \frac{OB}{BQ} \dots \textcircled{i} \text{ (basic prop. th.)}$$

In $\triangle OPR$, $AC \parallel PR$

$$\frac{OA}{AP} = \frac{OC}{CR} \dots \textcircled{ii} \text{ (do)}$$

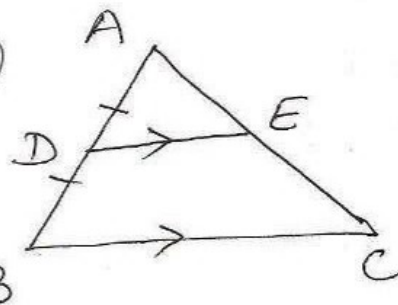
From \textcircled{i} , \textcircled{ii}

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

by converse of basic prop. theorem

$$BC \parallel QR$$

(7)



to prove

$$AE = EC$$

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

$$\frac{AD}{DB} = \frac{AE}{EC} \text{ (basic prop. theorem)}$$

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

$$\Rightarrow AE = EC$$