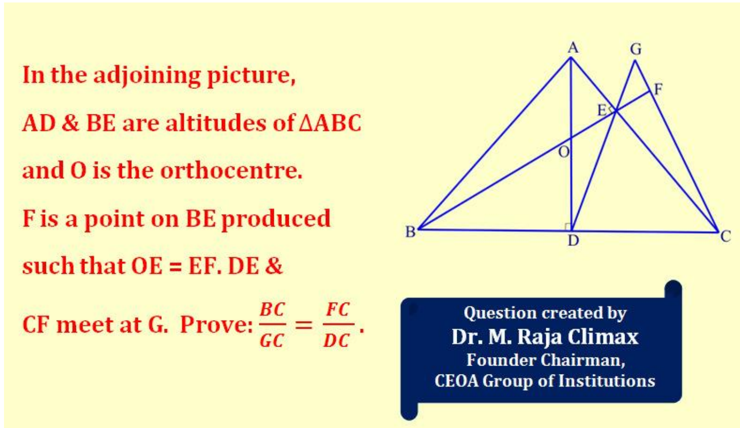
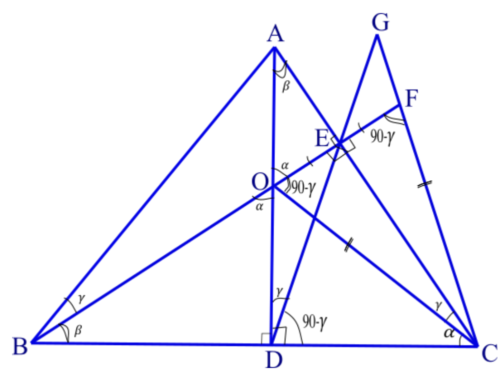
<u>**III CASH PRIZE WINNER Mrs.Ponmalar Selvi's Solution**</u>



<u>Solution:</u>



$\angle OEC + \angle ODC = 180°$

$\therefore$ $ODCE$ is concyclic

Let $\angle ECD = \alpha$

$\angle BOD = \alpha$ (Exterior angle is equal to interior opposite angle)

$\angle AOE = \angle BOD = \alpha$ (vertically opposite angles)

$\angle DBO = \angle OAE = \beta$ (Say)

$\therefore ABDE \text{ is concyclic}$

Let $\angle ABE = \angle ADE = \gamma$

$\angle EDC = 90°$- γ

CE ⊥ OF and bisect of

Δ OCF is an isosceles triangle

OC = CF

$\angle COF = \angle CFO$ (Angles opposite to equal sides are equal)

$\angle ODE = \angle OCE = \gamma$ (Angles in the same segment)

$\angle COE = 90° - \gamma$

$\angle CFE = \angle COE = 90° - \gamma$

Consider $\Delta\ BCF$ & $\Delta\ DCG$ $\angle C$ is common

and $\angle BFC = \angle CDG = 90° - \gamma$

$\therefore\ \Delta BCF \sim \Delta\ GCD$ (by AA similarity)

$\therefore Corresponding\ sides\ are\ proportional.$

$$\frac{BC}{GC} = \frac{FC}{DC}$$

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