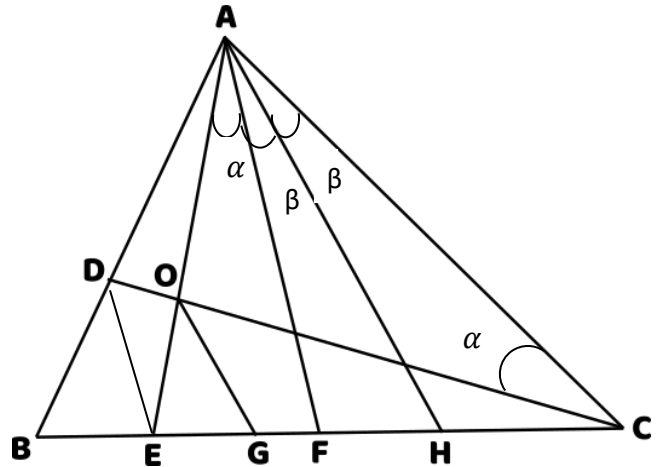


Author's Solution for Cash Award Question of Dec-2024



Construction : Join DE

Solution:

As ADEC is concyclic,

$\angle DAE = \angle DCE$ (say) ----- (1) (angles in the same segment)

$\angle BAF = \angle ACB$ -----(2) (given)

From (1) & (2),

$\angle BAF - \angle DAE = \angle ACB - \angle DCE$

$\angle EAF = \angle ACD = \alpha$

AH is the bisector of $\angle CAF$, $\angle CAH = \angle FAH = \beta$

In $\triangle AOC$,

$\angle COE = \angle OAC + \angle OCA$ (exterior angle = sum of two opposite interior angles)

$= (\angle OAF + \angle FAC) + \angle OCA$

$\angle COE = \alpha + 2\beta + \alpha = 2\alpha + 2\beta$

OG is the bisector of $\angle COE$,

$\angle EOG = \frac{\angle COE}{2} = \alpha + \beta = \angle OAH$

OG is parallel to AH.

Solution by
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