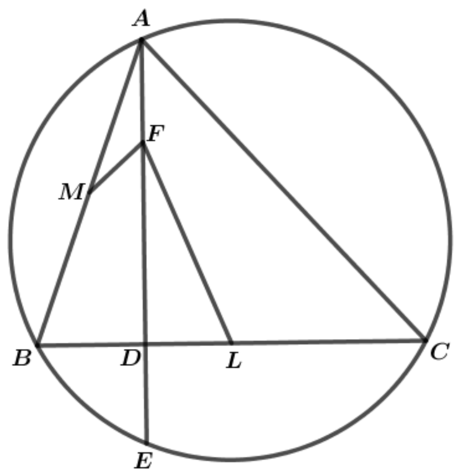
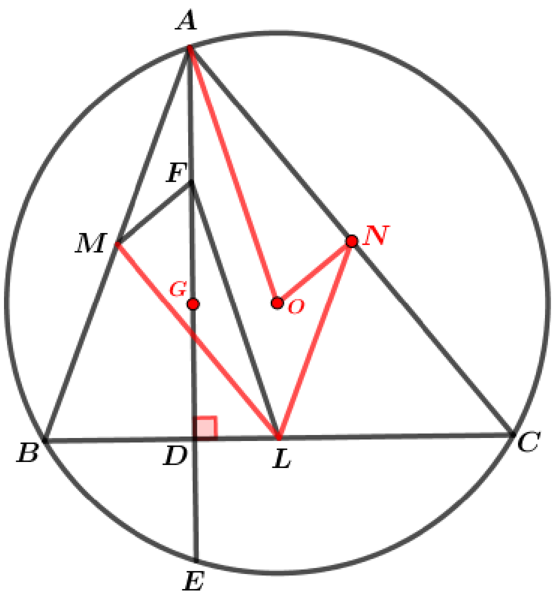
Second Prize Winner Mr. Lakshmi Narayanan Venkataraman's Solution



Figure#1



Figure#2

Let N, G be the mid-points of AC and AErespectively and O be the circumcentre of the given circumcircle of ΔABC.

$\therefore$ $\underline{/B} = \underline{/ABC} = \frac{1}{2}\underline{/AOC} = \underline{/\boldsymbol{AON}}$. - - - **#3**

$AF||OL$ as AD and OL are perpendicular toBC.

$AF = AG - GF = \frac{1}{2}AE - GF\{as\ G\ is\ mid-point\ of\ AE\} = DF - GF\ \{given\} = GD.$

Now, $OGDL$ is a rectangle as $OG \perp GD$; $GD \perp DL$; $DL \perp LO$, implies $GD = OL$. $\therefore AF = OL$.

$\therefore$ $AFLO$ is a parallelogram implying $\boldsymbol{AO} = \boldsymbol{LF}$ and $\boldsymbol{AO}||\boldsymbol{LF}$.

$LM = \frac{1}{2}AC$ and $LM||AC$ by Mid–Point Theorem implying $\boldsymbol{LM} = \boldsymbol{AN}$ and$\boldsymbol{LM}||\boldsymbol{AN}$.

Suppose the lines L_1, L_2, L_3, L_4 are such that $L_1||L_2$ and $L_3||L_4$ but$L_2 \nparallel L_3$, then the {acute or obtuse} angle between $L_1$and$L_3$is same as {acute or obtuse}angle between $L_2$and L_4.

So, angle between AO and AN equals angle between LF and LM as $AO||LF$ and $AN||LM$.

$\therefore$ $\underline{/\boldsymbol{OAN}} = \underline{/\boldsymbol{FLM}}$.

Now, in ΔOAN and ΔFLM, we've

$\boldsymbol{OA} = \boldsymbol{FL}$ (side), $\underline{/\boldsymbol{OAN}} = \underline{/\boldsymbol{FLM}}$ (angle), $\boldsymbol{AN} = \boldsymbol{LM}$ (side).

$\therefore$ $\Delta\boldsymbol{OAN} \cong \Delta\boldsymbol{FLM}$ by SAS congruency and by c.p.c.t. $\underline{/\boldsymbol{AON}} = \underline{/\boldsymbol{LFM}}$. - - - **#4**

From **#3** and **#4**, we've $\underline{/\boldsymbol{B}} = \underline{/\boldsymbol{LFM}}$.