Given :

ΔABC is inscribed in a circle. AD is altitude from A.

Construction :

CG is altitude from C and let O be orthocentre.

Join MD.

Given : M, L are midpoints of AB & BC respect.

We know that nine point circle passes through foot

of perpendicular, midpoint of side

⟹ M, G, D, L lies in Nine points circle

To prove that F also lies on the same circle.

From Novelties of Geometry page 15 (proof for novelty 3) We know that OD=DE

As $DF = \frac{1}{2} AE$

⟹ $DF = DE + AF$ ------------------------(1)

DF = DO+OF

= DE+OF ---------------------------(2)

from (1) & (2) it is clear that OF = AF

⟹ F lies on 9 point circle

[3 midpoints sides 3 foot of perpendicular, 3 midpoints from vertex to orthocentre]

⟹ $MFLD$ is concyclic

⟹ $\angle MFL = \angle MDB$ (In cyclic quadrilateral exterior angle is equal to opposite interior angle)

Consider right ΔADB.

As AM = MB (M is midpoint of AB)

M is circumcenter of $\Delta ADB \implies AM = MB = MD$.

⟹ ΔMBD is isosceles

⟹ $\angle MDB = \angle MBD$.

Thus $\angle MFL = \angle B$.