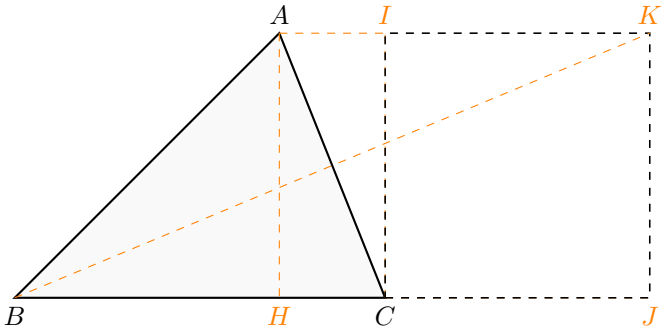
Problem

Given an acute triangle $\triangle ABC$, construct with straightedge and compass square $DEFG$ such that D and E are on $\overline{BC}$, G is on $\overline{AB}$ and F is on $\overline{AC}$.

Straightedge and compass can construct the middle point of a line segment, and perpendicular line through a point on a line segment.



Steps are:

1. draw height AH to BC
2. extend BC to I such that CI = AH
3. draw height JI to BI such that JI = AH
4. draw height CK to BC
5. set intersaction of CK and BJ to X
6. draw line pass X and parallel to BC, intersact with AB at G, with AC at F
7. draw perpendicular lines down from G and F to get D and E

To prove DEFG is a square,