

In triangle ABC , $\angle ABC = 90^\circ$. Rectangle $DEFG$ is inscribed in $\triangle ABC$, as shown. Squares $JKGH$ and $MLFN$ are inscribed in $\triangle AGD$ and $\triangle CFE$, respectively. If the side length of $JHGK$ is v , the side length of $MLFN$ is w , and $DG = u$, prove that $u = v + w$.



