**Problem 3**) Since $AC'$ is one-half the length of $AB$ and $AB'$ is one-half the length of $AC$, the triangles $ABC$ and $AC'B'$, which also share a common angle at $A$, are similar. This means that $C'B'$ is parallel to $BC$, and also that the length of $C'B'$ is one-half that of $BC$. The triangles $QBC$ and $QB'C'$ are thus similar (their angles are the same). Since $BC$ is twice as long as $B'C'$, we conclude that $QB$ is also twice the length of $QB'$, and, similarly, $QC$ is twice as long as $QC'$.

The above argument can be applied to any pair of medians, say $AA'$ and $BB'$. Since the crossing point must once again split $BB'$ in a $2{:}\,1$ ratio, it cannot be any point other than $Q$. The three medians, therefore, cross at a single point.