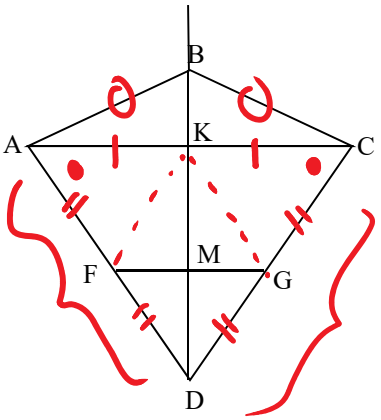
Geometry Honors

Given: $\overline{AB} \cong \overline{BC}$
$\overline{AD} \cong \overline{CD}$
F is the midpoint of $\overline{AD}$
G is the midpoint of $\overline{CD}$

Prove: $\overline{BD}$ is the $\perp$ bisector of $\overline{FG}$



Statements	Reasons
1. $\overline{AB} \cong \overline{BC}$, $\overline{AD} \cong \overline{CD}$ F is the midpt of $\overline{AD}$ G is the midpt of $\overline{CD}$	1. Given
2. $\overline{BD}$ is the $\perp$ bis. of $\overline{AC}$	2. If 2 pts are equidistant from the endpts of a seg → determine the $\perp$ bis. of the seg.
3. $\overline{AK} \cong \overline{KC}$	3. If a pt lies on the $\perp$ bis. → equidistant from the endpts of that seg
4. $\angle 3 \cong \angle 4$	4. If $\measuredangle$ → $\triangle$
5. $\overline{AF} \cong \overline{GC}$, $\overline{FD} \cong \overline{GD}$	5 Division prop.
6. Draw $\overline{FK}$ and $\overline{KG}$	6. 2 pts determine a line
7. $\triangle KAF \cong \triangle KCG$	7. SAS
8. $\overline{FK} \cong \overline{KG}$	8. CPCTC
9. $\overline{BD}$ is the $\perp$ bis. of $\overline{FG}$	9. Same as 2