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Topic: 2.4 Geometric Proofs

1. What do you need to bake a cake? I can think of two major categories. Assume you have tools already. What do you need to write a proof?

2. Define $\angle A$ and $\angle B$ to be angles, and $m\angle A$ and $m\angle B$ are their respective angles measures. Translate each of the following sentences into equations.

   - $\angle A$ and $\angle B$ are vertical angles.
   - $\angle A$ and $\angle B$ are complimentary angles.
   - $\angle A$ and $\angle B$ are supplementary angles.
   - $\angle A$ and $\angle B$ are adjacent angles.
   - $\angle A$, $\angle B$, and $\angle C$ are the interior angles of a triangle.

3. Define a line segment $\overline{AB}$ where point M is a midpoint along $\overline{AB}$ write out all the equations possible relating $\overline{AM}$, $\overline{MB}$, and $\overline{AB}$.

4. Below there is a short proof for showing that $\overline{AB} = 2\overline{AM} = 2\overline{MB}$ However only the left side is done. Copy the table for your notebook and fill out the reasons.

Statement	Reason
1.) M is a midpoint of $\overline{AB}$	Given
2.) $\overline{AM} \cong \overline{MB}$	
3.) $\overline{AM} + \overline{MB} = \overline{AB}$	
4.) $\overline{AM} + \overline{AM} = \overline{AB}$	
5.) $2\overline{AM} = \overline{AB}$	
6.) $\overline{AB} = 2\overline{AM}$	
7.) $\overline{AB} = 2\overline{MB}$	
8.) $\overline{AB} = 2\overline{AM} = 2\overline{MB}$	

5. Draw an angle $\angle AOC$ and draw $\overrightarrow{OB}$ that bisects $\angle AOC$. Write out all the equations possible relating $\angle AOB$, $\angle BOC$, and $\angle AOC$.

6. Write a two column proof (refer to yesterday's exploration) to solve the following question. $\angle A$ and $\angle B$ are vertical. $m\angle A = 6x + 4$, and $m\angle B = 3x + 7$. Determine the value of $m\angle A$ and $m\angle B$.