Name: _____Key_____

Making Conclusions: An Introduction to Proof Writing Notes

Directions: Make a geometric conclusion based on the given information or diagram. You may need to draw a figure to visualize the concept prior to making a conclusion. Then use your justifications to explain the geometric conclusion.

1. Given: $\angle CAT$ and $\angle RAP$ are complementary

   angles.

   Conclusion: $\angle CAT + \angle RAP = 90°$

   Justification: def of complementary

   No diagram needed b/c we know def.

2.

   Given:

   Conclusion: $\angle 8 + \angle 9 = 180°$

   Justification: linear pairs are supplementary

3. Given: $\angle PAI$ and $\angle IAR$ are a linear pair

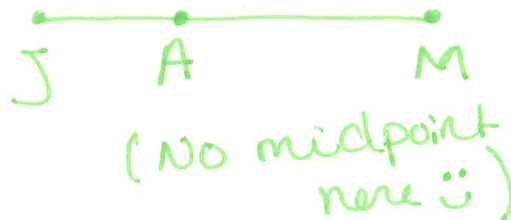   Conclusion: $\angle PAI + \angle IAR = 180°$

   Justification: linear pairs are Suppl.

4. Given: A is between J and M

   Conclusion: $JA + AM = JM$

   Justification: Segment addition.

   J   A   M
   (No midpoint here :))

Proof Notes

Proof: A mathematical argument or explanation that begins with known facts, and uses definitions, axioms, postulates, theorems to arrive at a conclusion about a geometric statement.

Steps to writing a two-column proof:

1. First state the given. *Always*
2. What can you conclude from the given? *defs? thms?*
3. What can you conclude from the diagram?
4. Redecorate & Reason
5. End with what you wanted to prove.
6. Double check logic and make sure your steps are numbered.

Skeleton Proof: Fill in the blank proof.

5. Given AB = 20, M is the midpoint of AB.

   Prove: AM = 10.

   A _____ M _____ B

Statements:	Reasons:
1. AB = 20	1. Given
2. M is midpt of $\overline{AB}$	2. Given
3. $\overline{AM} \cong \overline{MB}$	3. def of midpoint
4. AM + MB = AB	4. Segment addition
5. AM + AM = 20	5. Substitution
6. 2AM = 20	6. CLT
7. AM = 10	7. division

6. Given: <2≅<3
   Prove: <1≅<4

Statements:	Reasons:
1. <2≅<3	1. Given
2. <2≅<1	2. vertical ∠s are ≅
3. <4≅<3	3. vertical ∠s are ≅
4. <1≅<4	4. Substitution.