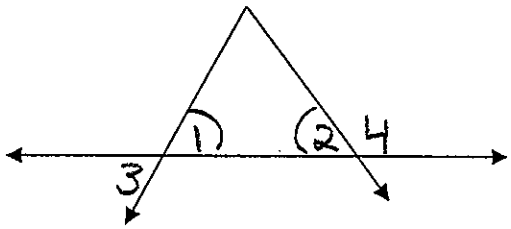
Geometry Honors
Chapter 2 Proofs

Name_____

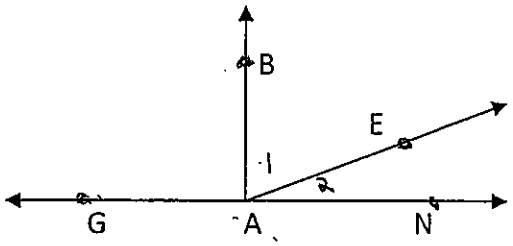
Write a 2-column deductive proof for each example. Check your reasons carefully!

1. Given: $\angle 1 \cong \angle 2$
   Prove: $\angle 3$ and $\angle 4$ are supplementary



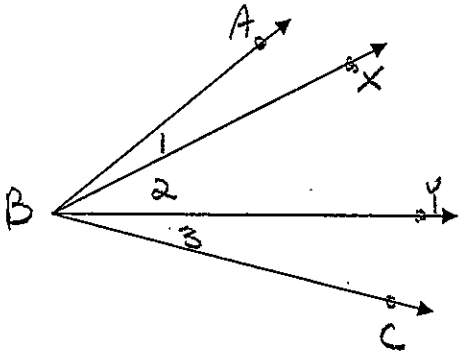
Statements	Reasons
1. $\angle 1 \cong \angle 2$	1. Given
2. $m\angle 2 + m\angle 4 = 180$	2. $\angle$ Add'n Post.
3. $\angle 3 \cong \angle 1$	3. Vert. $\angle$s $\cong$
4. $\angle 3 \cong \angle 2$	4. Transitive
5. $m\angle 3 = m\angle 2$	5. def. $\cong$
6. $m\angle 3 + m\angle 4 = 180$	6. subst.
7. $\angle 3$ & $\angle 4$ supp.	7. def. supp.

2. Given: $\angle 1$ and $\angle 2$ are complementary
   Prove: $m\angle BAG = m\angle BAN$



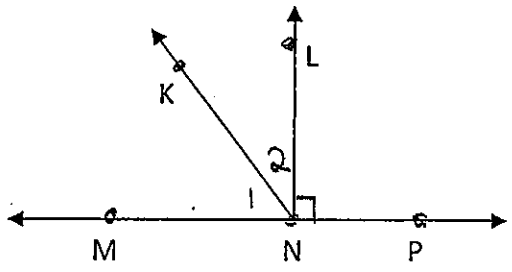
Statements	Reasons
1. $\angle 1$ + $\angle 2$ comp.	1. Given
2. $m\angle 1 + m\angle 2 = 90$	2. def. comp.
3. $m\angle 1 + m\angle 2 = m\angle BAN$	3. $\angle$ Add'n Post.
4. $m\angle BAN = 90$	4. subst.
5. $\angle BAN$ is rt. $\angle$	5. def. rt. $\angle$
6. $\overrightarrow{BA} \perp \overrightarrow{GN}$	6. def. $\perp$
7. $\angle BAG \cong \angle BAN$	7. $\perp$ lines $\rightarrow \cong$ adj. $\angle$s
8. $m\angle BAG = m\angle BAN$	8. def. $\cong$

3. Given: Diagram
Prove: $m\angle 1 + m\angle 2 + m\angle 3 = m\angle ABC$



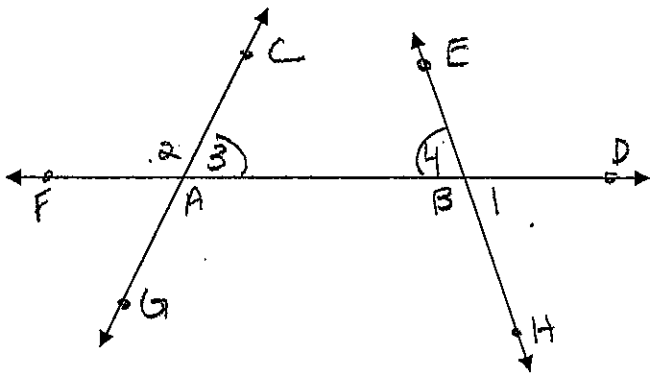
Statements	Reasons
1. $m\angle 1 + m\angle 2 = m\angle ABY$ $m\angle ABY + m\angle 3 = m\angle ABC$	1. $\angle$ Add'n post.
2. $m\angle 1 + m\angle 2 + m\angle 3 = m\angle ABC$	2. Subst.

4. Given: $\angle LNP$ is a right angle
Prove: $\angle 1$ and $\angle 2$ are complementary



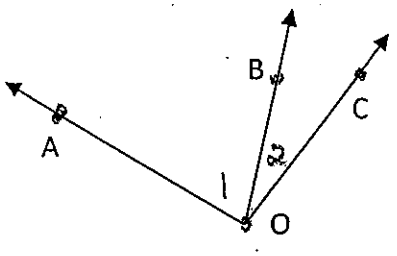
Statements	Reasons
1. $\angle LNP$ is rt. $\angle$	1. Given
2. $\overleftrightarrow{LN} \perp \overleftrightarrow{MP}$	2. def. $\perp$
3. $\angle 1 + \angle 2$ comp.	3. ext. sides of 2 adj. acute $\angle$s $\perp \rightarrow \angle$'s comp.

5. Given: $m\angle 3 = m\angle 4$
Prove: $\angle 2$ and $\angle 1$ are supplementary



Statements	Reasons
1. $m\angle 3 = m\angle 4$	1. Given
2. $m\angle 2 + m\angle 3 = 180$	2. $\angle$ Add'n Post.
3. $\angle 4 \cong \angle 1$	3. Vert. $\angle$s $\cong$
4. $m\angle 4 = m\angle 1$	4. def. $\cong$
5. $m\angle 3 = m\angle 1$	5. subst.
$m\angle 2 + m\angle 1 = 180$	
6. $\angle 2 + \angle 1$ are supp.	6. def. supp.

6. Given: $\angle AOC$ is a right angle
Prove: $m\angle 1 = 90 - m\angle 2$



Statements	Reasons
1. $\angle AOC$ is rt. $\angle$	1. Given
2. $m\angle AOC = 90$	2. def. rt. $\angle$
3. $m\angle 1 + m\angle 2 = m\angle AOC$	3. $\angle$ Add'n Post.
4. $m\angle 1 + m\angle 2 = 90$	4. subst.
5. $m\angle 2 = m\angle 2$	5. Reflexive
6. $m\angle 1 = 90 - m\angle 2$	6. subtr. prop. =