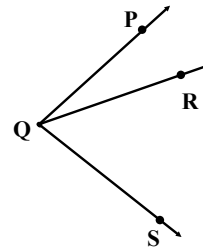


## 2 - 8

### *Proving Angle Relationships*

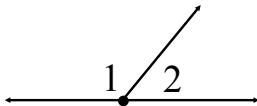
## Angle Addition Postulate

*If  $R$  is in the interior of  $\angle PQS$ ,  
then  $m\angle PQR + m\angle RQS = m\angle PQS$*



## Supplement Theorem

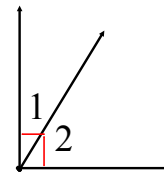
*If two angles form a linear pair, then they are supplementary angles.*



*When completing a proof, if you see a picture of two angles that form a linear pair (as shown above), you can conclude that  $\angle 1 + \angle 2 = 180$  because of the Supplement Theorem*

## Complement Theorem

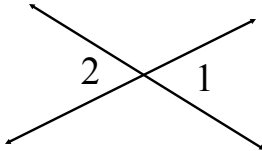
*If the noncommon sides of two adjacent angles form a right angle, then the angles are complementary.*



*When completing a proof, if you see a picture of two angles that form a right angle (as shown above), you can conclude that  $\angle 1 + \angle 2 = 90$  because of the Complement Theorem*

## Vertical Angle Theorem

*If two angles are vertical angles, then they are congruent.*

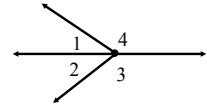


*When completing a proof, if you see a picture of two angles that are vertical angles(as shown above), you can conclude that  $\angle 1 \cong \angle 2$  because of the Vertical Angle Theorem.*

### PROOF with ANGLES

Given:  $\angle 1$  and  $\angle 3$  are supplementary

*Prove:*  $\angle 3 \cong \angle 4$

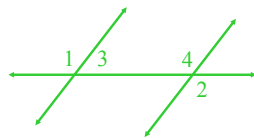


Always restate Given first	STATEMENTS	REASONS
Define your given information	1) $\angle 1$ and $\angle 3$ are supplementary	1) Given
Use your picture to identify things that might help	2) $\angle 1 + \angle 3 = 180$	2) Def. of Supplementary
Use your equations, when possible, to create new equations	3) $\angle 1 + \angle 4 = 180$	3) Supplement Theorem
	4) $\angle 1 + \angle 3 = \angle 1 + \angle 4$	4) Substitution
Eliminate common values	5) $\angle 3 = \angle 4$	5) Subtraction
Remember to convert equal statements back to congruent statements	6) $\angle 3 \cong \angle 4$	6) Def. of Congruence

### EXAMPLE

**Given:**  $\angle 1 \cong \angle 2$

**Prove:**  $\angle 3 + \angle 4 = 180$



STATEMENTS	REASONS