

Warm-Up:

**Give a reason for each statement.**

- 1.** If  $m\angle 1 = 90^\circ$  and  $m\angle 2 = 90^\circ$ , then  $m\angle 1 = m\angle 2$ .
- 2.** If  $\overline{AB} \perp \overline{BC}$ , then  $\angle ABC$  is a right angle.
- 3.** If  $\overline{FG} \cong \overline{RS}$ , then  $FG = RS$ .

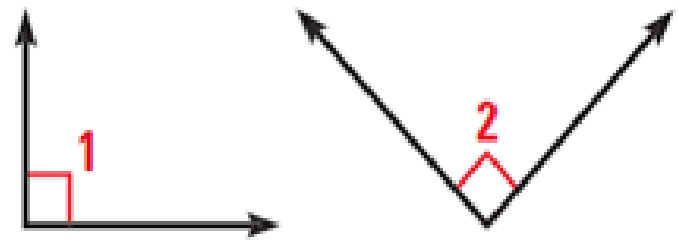
# Right Angle Congruence Theorem

All right angles are congruent.

To prove a theorem use the hyp as given and prove the conclusion

**GIVEN**  $\triangleright$   $\angle 1$  +  $\angle 2$  are right  $\angle$ 's

**PROVE**  $\triangleright$   $\angle 1 \cong \angle 2$



STATEMENTS

REASONS

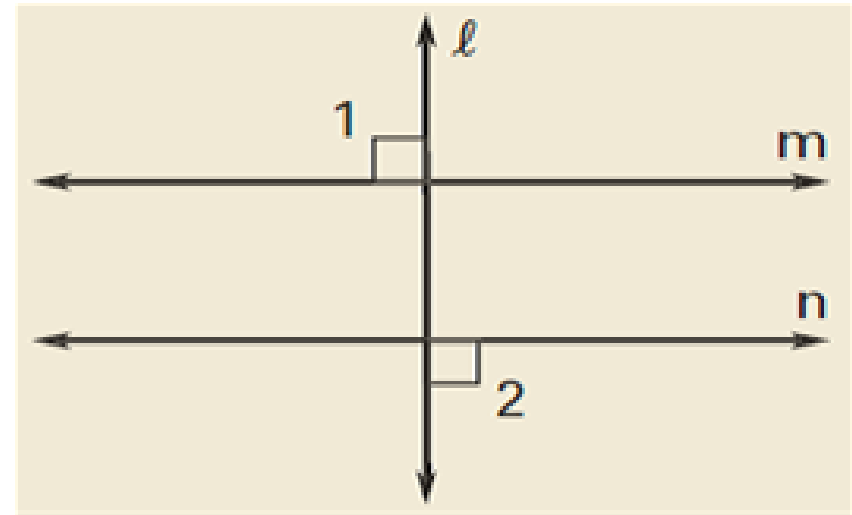
1.  $\angle 1$  +  $\angle 2$  are right  $\angle$ 's.
2.  $m\angle 1 = 90^\circ$ ,  $m\angle 2 = 90^\circ$
3.  $m\angle 1 = m\angle 2$
4.  $\angle 1 \cong \angle 2$

1. Given
2. Def of right  $\angle$ .
3. Transitive Prop.
4. Def of  $\cong$ .

# Example using Right Angle Congruence Thm

Given:  $l \perp m, l \perp n$

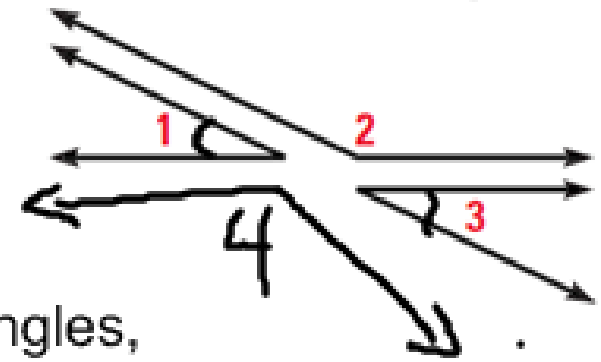
Prove:  $\angle 1 \cong \angle 2$



STATEMENTS	REASONS
1. $l \perp m, l \perp n$	1. Given
2. $\angle 1$ & $\angle 2$ are right $\angle$ 's	2. Def of $\perp$
3. $\angle 1 \cong \angle 2$	3. Right $\angle \cong$ Thm.

# Congruent Supplements Theorem

Part 1 If  $\angle 1$  and  $\angle 2$  are supplementary and  $\angle 3$  and  $\angle 2$  are supplementary, then  $\angle 1 \cong \angle 3$ .



Part 2 If 2 angles are supplementary to congruent angles, then the 2 angles are congruent.

Prove Part 1

**GIVEN**  $\blacktriangleright$   $\angle 1$  and  $\angle 2$  are supplements.  
 $\angle 3$  and  $\angle 2$  are supplements.

**PROVE**  $\blacktriangleright$   $\angle 1 \cong \angle 3$



STATEMENTS

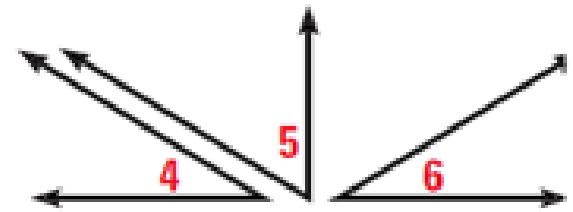
REASONS

1.  $\angle 1$  &  $\angle 2$  are supple  
 $\angle 3$  &  $\angle 2$  are supple.
2.  $m\angle 1 + m\angle 2 = 180^\circ$   
 $m\angle 3 + m\angle 2 = 180^\circ$
3.  $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 2$
4.  $m\angle 1 = m\angle 3$
5.  $\angle 1 \cong \angle 3$

1. Given
2. Definition of Supplementary  $\angle$ 's
3. Transitive Prop.
4.  $\sim$  prop of  $=$
5. Def of  $\cong$

# Congruent Complements Theorem

Part 1 If  $\angle 4$  and  $\angle 5$  are complementary and  $\angle 6$  and  $\angle 5$  are complementary, then  $\angle 4 \cong \angle 6$ .



Part 2 If 2 angles are complementary to congruent angles, then the 2 angles are congruent.

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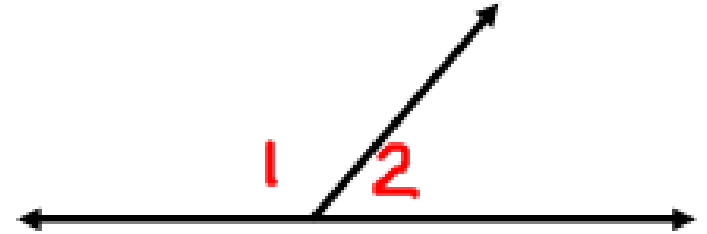
Proving Part 1 for this theorem will exactly like proving part 1 of the supplements theorem.

Proving Part 2 will add another couple steps using the idea of congruent angles.

These 2 things will be on your homework...

## Linear Pair Postulate

Linear pairs  
are supplementary.

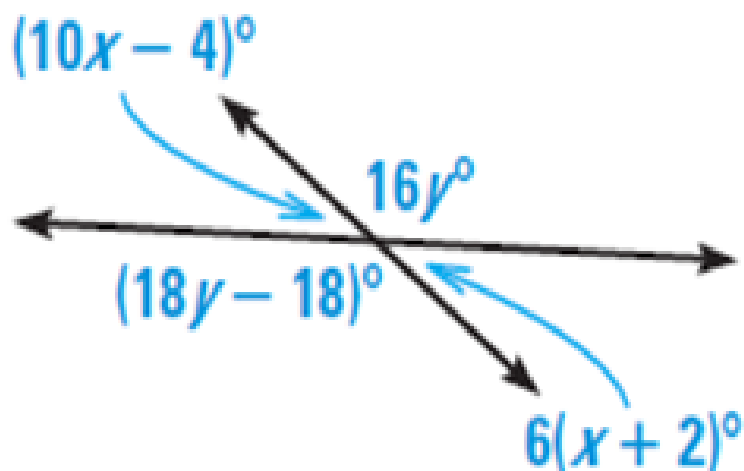




## Using the Vertical Angles Congruence Thm

Find the values of  $x$  and  $y$ .

$$10x - 4 = 6(x + 2)$$



$$18y - 18 = 16y$$



Homework:

p127-130

#'s 2-16 E, 17-21,  
22-26 E, 36-38, 42