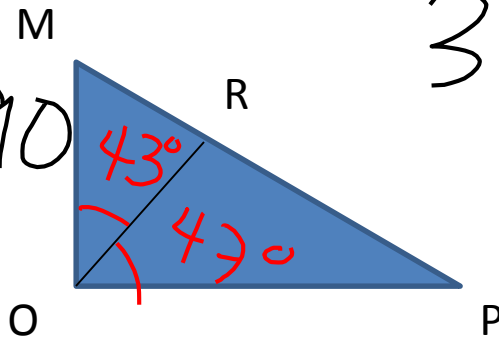


Warm Up

- Given: Angle MOR = $(3x + 7)^\circ$
- Angle ROP = $(4x - 1)^\circ$
- $MO \perp OP$
- Which angle is larger, angle MOR or angle ROP?

$$3x + 7 + 4x - 1 = 90$$
$$7x = 84$$
$$x = 12$$



~~$$3x + 7 = 4x - 1$$~~

Complementary and Supplementary Angles



I CAN...

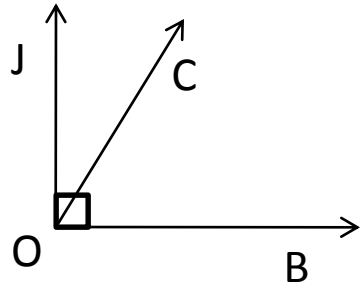
- Define and identify complementary and supplementary angles
- Write proofs involving complementary and supplementary angles

Complementary Angles

- Two angles whose sum is 90°



- $\angle A$ is complementary to $\angle B$



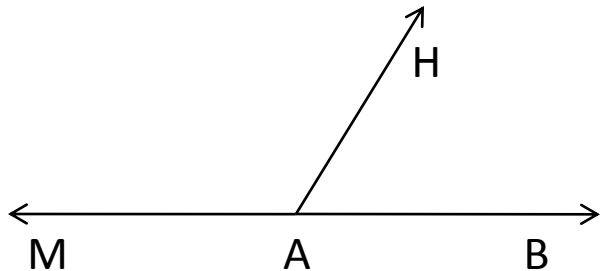
- $\angle JOC$ is the complement of $\angle COB$

Supplementary Angles

- Two angles whose sum is 180°



- $\angle A$ is supplementary to $\angle B$



- $\angle HAM$ is the supplement of $\angle HAB$

Definitions: If-then Form

add to 90°

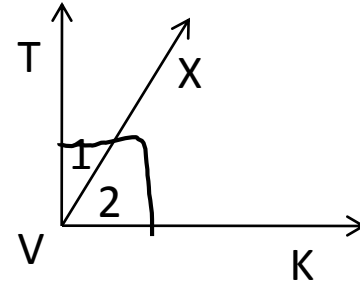
- If two angles form a right angle, then they are **complementary**.

add to 180°

- If two angles form a straight angle, then they are **supplementary**.

Example 1

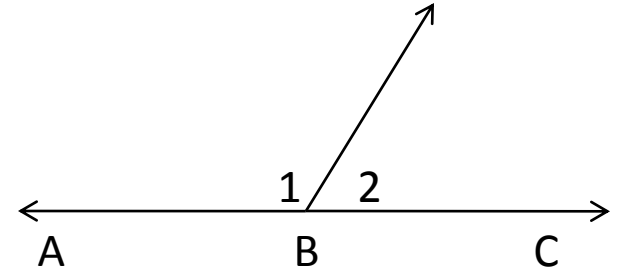
- Given: $\angle TVK$ is a right \angle
- Prove: $\angle 1$ is comp. to $\angle 2$



Statement	Reason
① $\angle TVK$ is a rt \angle	① Given
② $\angle TVX + \angle XVK = 90^\circ$ ($\angle 1$) + ($\angle 2$)	② Assumed from diagram
③ $\angle 1$ comp. to $\angle 2$	③ If 2 \angle 's form a rt \angle , then they are comp.

Example 2

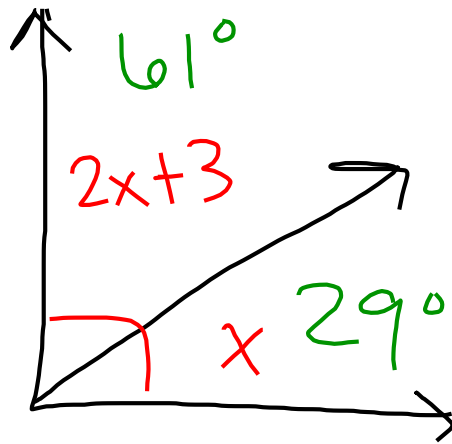
- Given: Diagram as shown
- Prove: $\angle 1$ is supp. to $\angle 2$



Statement	Reason
① Diagram	① Given
② $\angle ABC$ is straight \angle	② Assumed from diagram
③ $\angle 1$ is supp to $\angle 2$	③ If 2 \angle 's form a straight \angle , then they are supp.

Example 3

- The measure of one of two complementary angles is three greater than twice the measure of the other. Find the measure of each.



$$x + 2x + 3 = 90$$

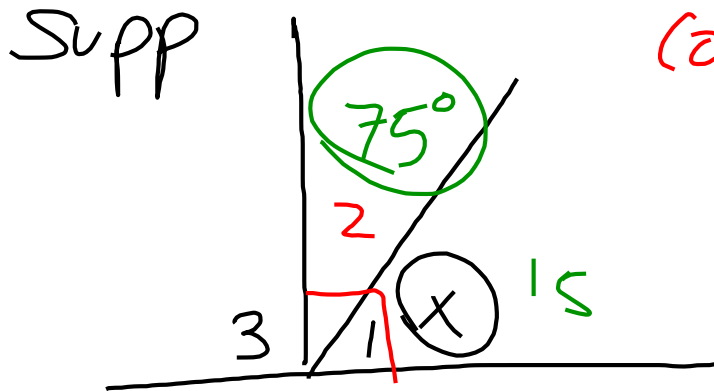
$$x + 2x = 87$$

$$3x = 87$$

$$x = 29$$

Example 4

- The measure of the supplement of an angle is 60 less than 3 times the measure of the complement of the angle. Find the measure of the complement.



$$\text{Supp} = 180 - x$$

$$\text{Comp} = 90 - x$$

$$180 - x = 3(90 - x) - 60$$

$$180 - x = 270 - 3x - 60$$

$$180 - x = 210 - 3x$$

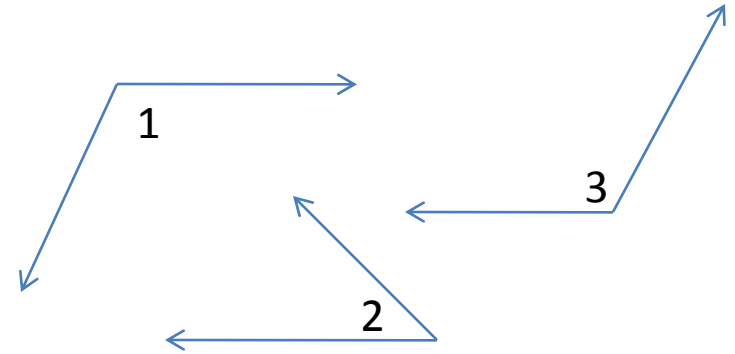
$$2x = 30$$

$$x = 15$$

Groups of 2

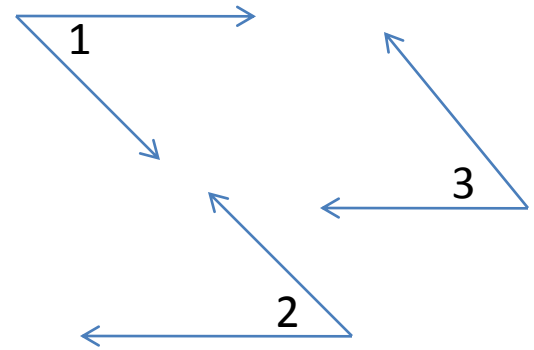
- Work with your partner to complete the proof I give you.
- Write a paragraph proof.
- Be prepared to present your proof to the class!!

- Given: $\angle 1$ is supp. to $\angle 2$
 $\angle 3$ is supp. to $\angle 2$
- Prove: $\angle 1 \cong \angle 3$



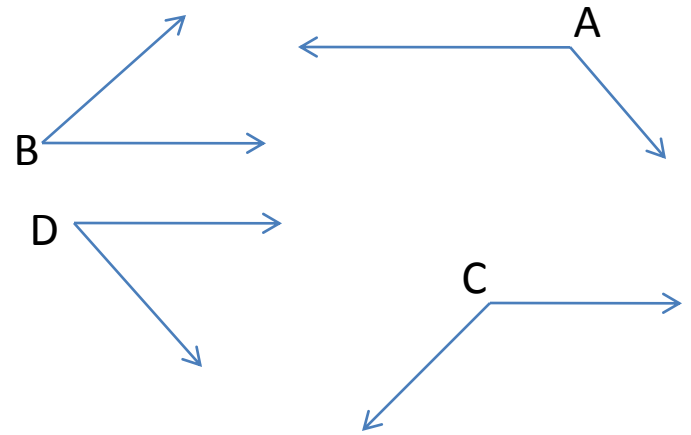
Write a paragraph proof:

- Given: $\angle 1$ is comp. to $\angle 2$
 $\angle 3$ is comp. to $\angle 2$
- Prove: $\angle 1 \cong \angle 3$



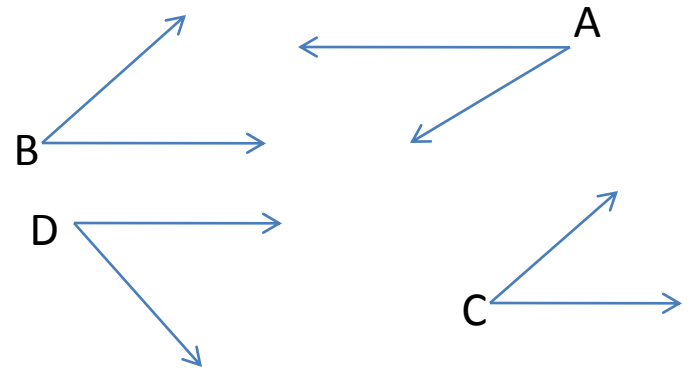
Write a paragraph proof:

- Given: $\angle A$ is supp. to $\angle B$
 $\angle C$ is supp. to $\angle D$
 $\angle B \cong \angle D$
- Prove: $\angle A \cong \angle C$



Write a paragraph proof:

- Given: $\angle A$ is comp. to $\angle B$
 $\angle C$ is comp. to $\angle D$
 $\angle B \cong \angle D$
- Prove: $\angle A \cong \angle C$



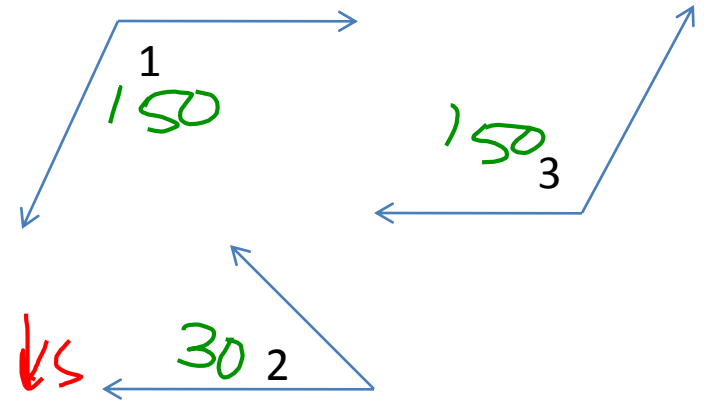
Write a paragraph proof:

Theorem

comp.

- If two angles are supplementary to the same angle, then they are congruent.

- If $\angle 1$ is supp. to $\angle 2$ and $\angle 3$ is supp. to $\angle 2$, then $\angle 1 \cong \angle 3$.

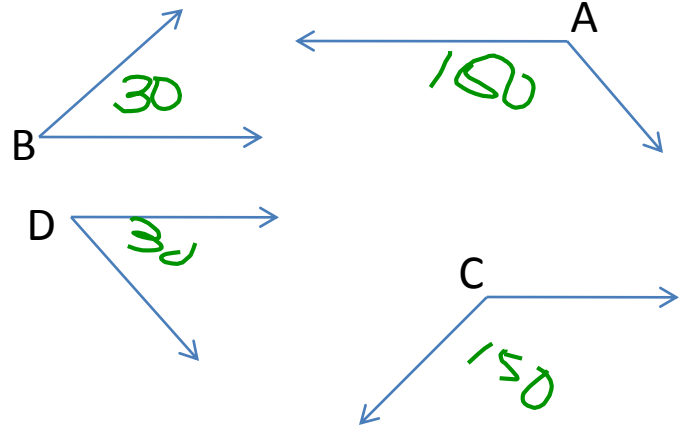


~~✖~~ Also works
w/ comp

Theorem

- If two angles are supplementary to congruent angles, then they are congruent.

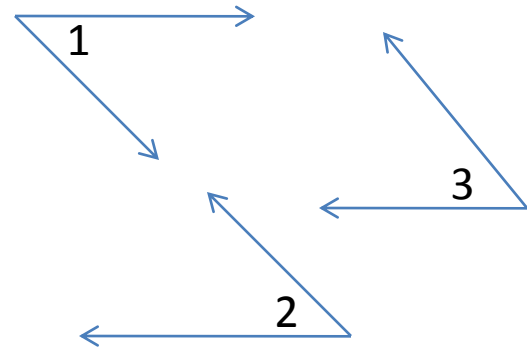
- *If $\angle A$ is supp. to $\angle B$,
 $\angle C$ is supp. to $\angle D$,
and $\angle B \cong \angle D$.
then $\angle A \cong \angle C$.*



Theorem

- If two angles are complementary to the same angle, then they are congruent.

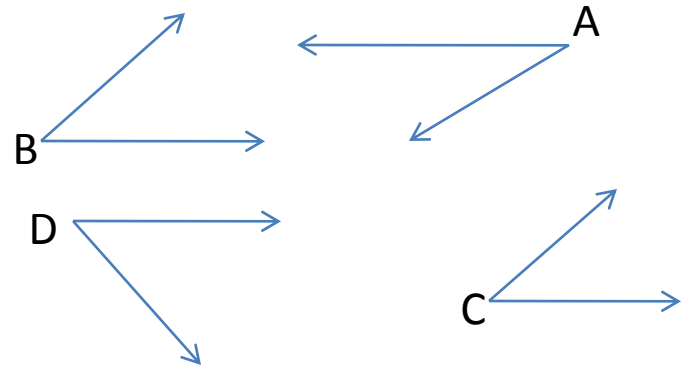
- *If $\angle 1$ is comp. to $\angle 2$
and $\angle 3$ is comp. to $\angle 2$,
then $\angle 1 \cong \angle 3$.*



Theorem

- If two angles are complementary to congruent angles, then they are congruent.

- *If $\angle A$ is comp. to $\angle B$,
 $\angle C$ is comp. to $\angle D$,
and $\angle B \cong \angle D$,
then $\angle A \cong \angle C$.*



Homework

- p. 69 # 7,8,10,11, 16, 21
- Read Sample Problems on pages 77 & 78
- p. 79 # 1, 3, 5,8, 14