

## 10/15/19 - Warm Up Problem

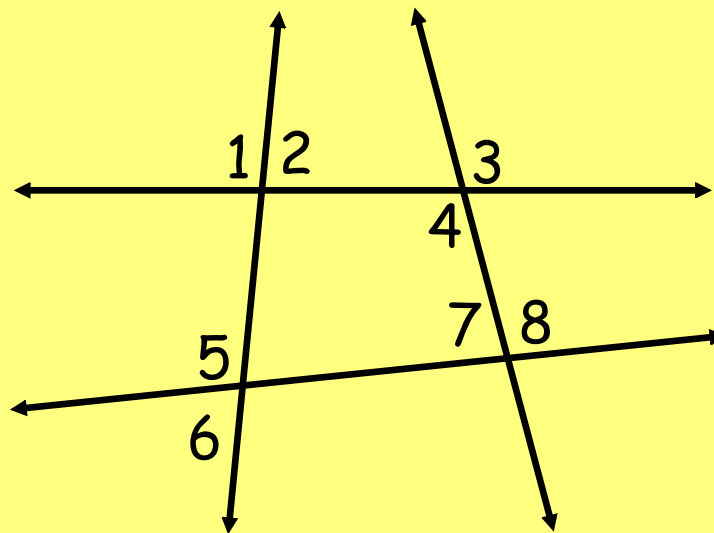
Name each special angle pair.

1.  $\angle 1$  and  $\angle 5$   
*Corresponding*

2.  $\angle 2$  and  $\angle 4$   
*Alt interior*

3.  $\angle 4$  and  $\angle 7$   
*Same side*

4.  $\angle 6$  and  $\angle 8$   
*Alt exterior*



## Assignment:

### Concept 7 Worksheet (10-17)

**Developing Proof** Use the given information to determine which lines, if any, are parallel. Use the converses from your notes and what you know about angle pairs to justify your answers.

10.  $\angle 11$  is supplementary to  $\angle 10$ .

11.  $\angle 6 \cong \angle 9$

$m \parallel n$

Same Side Int. Converse

12.  $\angle 13$  is supplementary to  $\angle 14$ .

13.  $\angle 13 \cong \angle 15$

14.  $\angle 12$  is supplementary to  $\angle 3$ .

15.  $\angle 2 \cong \angle 13$

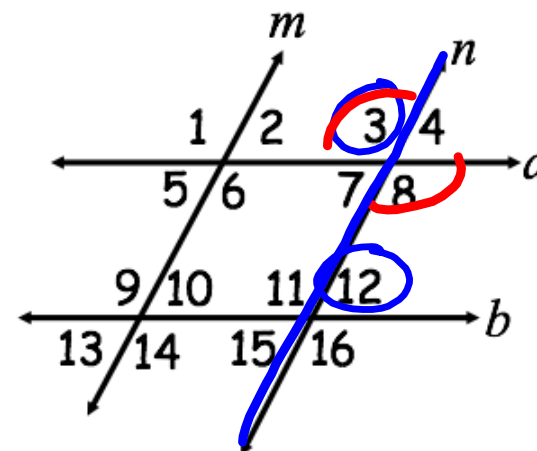
$a \parallel b$

SS Int. Converse

16.  $\angle 1$  is supplementary to  $\angle 4$

17.  $\angle 7 \cong \angle 4$

Not Possible



## Concept 7 - Proving Lines Parallel

**Goal:** write proofs using angle pair theorems and converses

### STEPS FOR WRITING A TWO-COLUMN PROOF

1. **GIVENS** - Copy all given information.
2. **DEFINITIONS** - If your given information is not in equation form, make it an equation using a definition.
3. **POSTULATES / THEOREMS** - Add new equations into your proof using postulates and theorems.
4. **PROPERTIES** - Manipulate and combine your equations to arrive at the statement you are proving.  
- **TRANSITIVE PROPERTY AND SUBSTITUTION ARE USED TO COMBINE 2 EQUATIONS TOGETHER.**

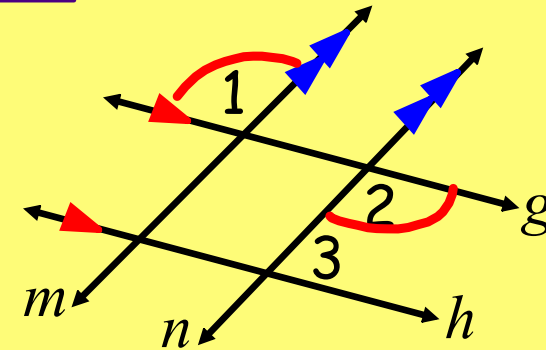
**Follow the same order of steps for proofs.**

- pay close attention to which lines are parallel
- you will use your diagram a lot to determine why angles are congruent or supplementary
- substitution can replace an angle in a sentence also

## Using Angle Pair Theorems in Proofs

**Given:**  $m \parallel n$  and  $g \parallel h$

**Prove:**  $\angle 1$  and  $\angle 3$  are supplementary

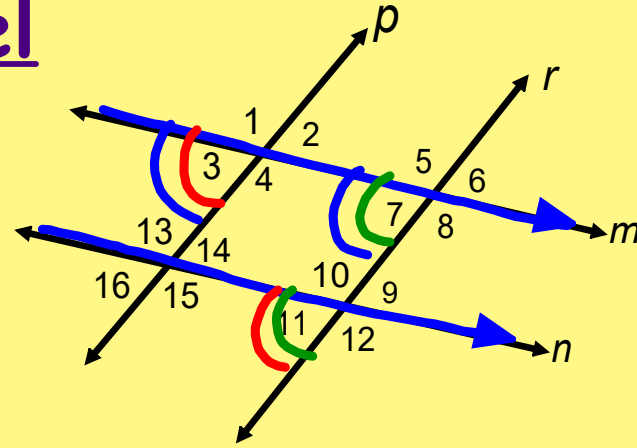


Statements	Justifications
1. $m \parallel n$ and $g \parallel h$	given
2. $m\angle 1 = m\angle 2$	Alt. Ext. Angle Theorem
3. $\angle 2$ and $\angle 3$ are supp.	Same-Side Int. Angles Postulate
4. $\angle 1$ and $\angle 3$ are supp.	Substitution Property (2,3)

## Proving Lines are Parallel

**Given:**  $m \parallel n$ ,  $\angle 11 \cong \angle 3$

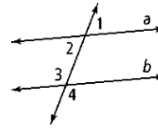
**Prove:**  $p \parallel r$



Statements	Justifications
1. $m \parallel n$	Given
2. $\angle 11 \cong \angle 3$	Given
3. $\angle 11 \cong \angle 7$	Corresponding Angle Theorem
4. $\angle 3 \cong \angle 7$	Transitive Property of $\cong$ (2,3)
5. $p \parallel r$	Corresponding Angles Converse

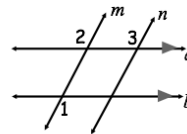
Accelerated Geometry

Concept 7 Worksheet – due by 10/11



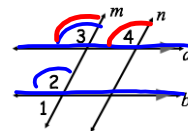
21. **Given:**  $\angle 1$  and  $\angle 4$  are supplementary  
**Prove:**  $a \parallel b$

Statements	Justifications
1. $\angle 1$ and $\angle 4$ are supplementary	
2. $m\angle 1 + m\angle 4 = 180$	
3. $m\angle 1 = m\angle 2$	
4. $m\angle 4 = m\angle 3$	
5. $m\angle 2 + m\angle 3 = 180$	
6. $\angle 2$ and $\angle 3$ are supplementary	
7. $a \parallel b$	



22. **Given:**  $a \parallel b$   
 $\angle 1 \cong \angle 3$   
**Prove:**  $m \parallel n$

Statements	Justifications
1. $a \parallel b$	
2. $\angle 1 \cong \angle 3$	
3. $\angle 1 \cong \angle 2$	
4. $\angle 2 \cong \angle 3$	
5. $m \parallel n$	



23. **Given:**  $a \parallel b$   
 $\angle 1$  and  $\angle 4$  are supplementary  
**Prove:**  $m \parallel n$

Statements	Justifications
1. $a \parallel b$	given
2. $\angle 1$ and $\angle 4$ are supplementary	given
3. $\angle 1$ and $\angle 2$ are supplementary	Linear Pair Postulate
4. $\angle 2 \cong \angle 4$	Congruent Supplements Thm
5. $\angle 2 \cong \angle 3$	Corr. Angles Thm
6. $\angle 3 \cong \angle 4$	Transitive Prop. of $\cong$
7. $m \parallel n$	Corr. Angles Converse