

**GEOMETRY
HONORS
CLASS NOTES**

Name: _____

Section: 3.4 Period: Date:

Key Question: _____

Questions/ Main
Ideas:

Warm-up: *List the four theorems about parallel lines cut by a transversal.*

- A.
- B.
- C.
- D.

Notes:

There are six ways to prove that two lines are parallel.

Two lines are parallel if, when they are intersected by a transversal:

1. Corresponding angles are congruent.
2. Alternate interior angles are congruent.
3. Alternate exterior angles are congruent.
4. Same-side interior angles are supplementary.

OR

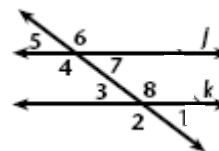
5. Two coplanar lines that are perpendicular to the same line are parallel.
 6. Two lines that are parallel to the same line are parallel to each other.
- The first four are _____ of the transversal theorems we already know.
 - The first postulate we will give you so that you can use it to prove the other converse theorems. Below, write the Converse of the Corresponding Angles Postulate: *If two lines cut by a transversal are parallel, then corresponding angles are congruent.*

Theorem: Converse of the Corresponding Angles Postulate

Example 2 – Write a two-column proof.

Given: $\angle 7$ and $\angle 8$ are supplementary.

Prove: $j \parallel k$



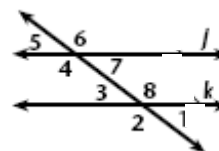
Statements	Reasons
$\angle 7$ and $\angle 8$ are supplementary	
$m\angle 7 + m\angle 8 = 180^\circ$	
$m\angle 7 + m\angle 6 = 180^\circ$	
$m\angle 7 + m\angle 8 = m\angle 7 + m\angle 6$	
$m\angle 6 = m\angle 8$	
$j \parallel k$	

- This was the proof for the _____
_____ **Theorem.**
- Now prove the **Converse of the Alternate Interior Angles Theorem.**

Example 3 - Write a two-column proof.

Given: $\angle 3$ and $\angle 7$ are congruent.

Prove: $j \parallel k$



Statements	Reasons
$\angle 3$ and $\angle 7$ are congruent.	
$j \parallel k$	

- Any theorems we have proved in these notes, you may use in your homework.

Summary: _____
