**Proving Angle Relationships and Parallel Lines: Notes**

Example 1:

Use Alternate Exterior Angles to prove **Alternate Interior Angles** are Congruent.

**Given:**

 p//$l, <1≅<8$

**Prove:** $      <4≅<5$

Example 2.

Prove **Consecutive Interior Angles** are supplementary.

**Given:**  p//$l, <1≅<8$

**Prove:**  $<3 and <5 are supplementary $

Example 3:

**Prove the Triangle Sum Theorem**

**(don’t use it in the proof)**

**Given:**

p//$l $**Prove:**
$$m<5+m<2+m<6=180$$

**Corresponding Angles Converse Postulate:**

* If corresponding angles are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ then the lines are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Proof of the Alternate Exterior Angles Converse Theorem:**

* If alternate exterior angles are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ then the lines are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_..

1

2

3

c

d

Given: $∠1≅∠2$

Prove: c$ ∥d$

**Proof of:**

* If two lines are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the same line, then they are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

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Given: $l⊥t and m⊥t$

Prove: $l ∥m$

**List of Justifications Up To Chapter 3**

**Vertical angles are \_\_\_\_\_\_\_\_ Linear pairs are \_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_ lines form \_\_\_\_\_\_\_ Consecutive interior angles**

**\_\_\_\_\_\_\_ lines form \_\_\_\_\_\_\_ Corresponding angles**

**\_\_\_\_\_\_\_ lines form \_\_\_\_\_\_\_ Alternate interior angles**

**\_\_\_\_\_\_\_ lines form \_\_\_\_\_\_\_ Alternate exterior angles**

**\_\_\_\_ Corresponding angles form \_\_\_\_\_ lines**

**\_\_\_\_ Consecutive interior angles form \_\_\_\_\_ lines**

**\_\_\_\_ Alternate Interior angles form \_\_\_\_\_ lines**

**\_\_\_\_ Alternate Exterior angles form \_\_\_\_\_ lines**

**Def of ⊥ Def of Compl Def of Suppl. Def of < bisector**

**Angle addition Segment addition Def of Midpoint**

**Substitution Def. right angle**

**Angle addition (straight angle) Triangle Sum Theorem**

**Proving Angle Relationships and Parallel Lines:**

**In Class Practice**

1. Given: <7≅<1 and l // p

Prove: <5≅<3

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2. Given: <1 and <3 are supplementary

Prove: y || a



**3. Proof of the Consecutive Interior Angles Converse Theorem:**

* If consecutive interior angles are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ then the lines are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1

2

3

c

d

Given: $∠1 \& ∠2 are supplementary$

Prove: c$ ∥d$

**Proving Angle Relationships and Parallel Lines:**

**Homework**



1. Use Alternate Exterior Angles to prove **Corresponding Angles** are Congruent**.**

**Given:** p//$l, <1≅<8$

 **Prove:** $      <2≅<6$

**Proof of the Alternate Interior Angles Converse Theorem:**

* If alternate interior angles are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ then the lines are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1

2

3

c

d

Given: $∠1≅∠2$

Prove: c$ ∥d$

3. Given: w // x and y // z

Prove: <1 and <4 are supplementary



4. Given: <1≅<2 and l // p

Prove: <3 + <4 = 180°



5. **Given:**  and

 **Prove:**  



6. **Given:**  and  // 

 **Prove: **

