Name: Key _____ Hour: _____

Name: _____

Special Angles and Parallel Lines

Interior angles lie between the two lines.

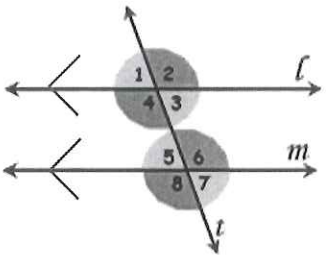
Alternate Interior angles are on the opposite sides of the transversal Example: ∠3 and ∠ 5

Consectutive Interior angles are on the same side of the transversal. Example: ∠3 and ∠6

Exterior angles lie outside the two lines.

Alternate Exterior angles are on the opposite sides of the transversal. Example: ∠2 and ∠8

Corresponding angles on angle in the Exterior and the other in the Interior but on the same side of The transversal. Example: ∠8 and ∠4



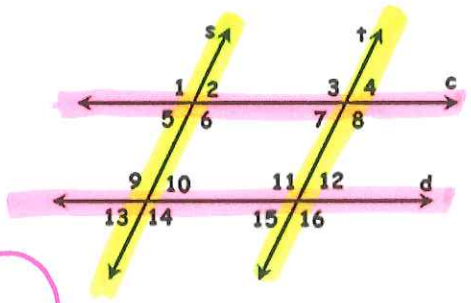
Use these properties!

| | lines form ≅ alternate interior angles.
| | lines form ≅ alternate exterior angles.
| | lines form ≅ corresponding angles.
| | lines form supplementary consecutive interior angles.
≅ alternate interior angles form | | lines.
≅ alternate exterior angles form | | lines.
≅ corresponding angles form | | lines.
Supplementary consecutive interior angles form | | lines.

Practice Example:

s || t and c || d.

Name all the angles that are congruent to ∠1.
Give a reason for each answer.



∠3 ≅ ∠1 *corresponding angles*

∠6 ≅ ∠1 *vertical angles*

∠8 ≅ ∠1 *alternate exterior angles*

∠9 ≅ ∠1 *corresponding angles*

∠14 ≅ ∠1 *alternate exterior angles*

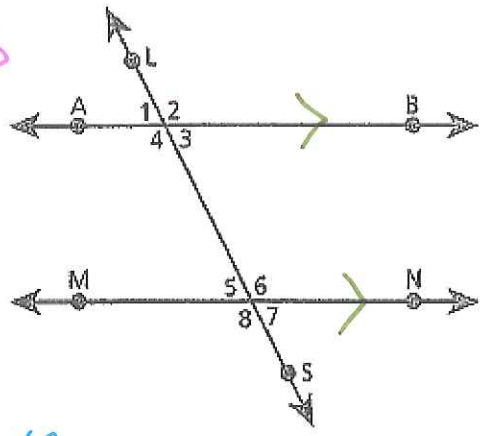
∠11 ≅ ∠9 ≅ ∠1 *corresponding angles*

∠16 ≅ ∠14 ≅ ∠1 *corresponding angles*

must use // lines form...

Parallels Cut by a Transversal- In Class Practice:

Directions: Use the figure to name the relationship between the two angles.



1. Angles 1 and 2 $\angle 1 + \angle 2 = 180^\circ$ linear pairs are suppl.
2. Angles 4 and 2 $\angle 4 \cong \angle 2$ vertical $\angle$s are $\cong$.
3. Angles 5 and 3 $\angle 5 \cong \angle 3$ // lines form $\cong$ alt. int $\angle$s.
4. Angles 1 and 7 $\angle 1 \cong \angle 7$ // lines form $\cong$ alt. ext. $\angle$s.
5. Angles 8 and 4 $\angle 8 \cong \angle 4$ // lines form $\cong$ corr. $\angle$s.
6. Angles 6 and 3 $\angle 6 + \angle 3 = 180^\circ$ // lines form suppl. consecutive int angles.

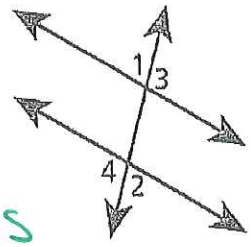
Directions: Use the figure to name the relationship between the two angles assuming the two lines are parallel and find the measure of the angles if $\angle 1 = 85^\circ$.

7. m$\angle$3= 95°

Because linear pairs are suppl.

8. m$\angle$2= 85°

Because // lines form $\cong$ alt. Ext. $\angle$s



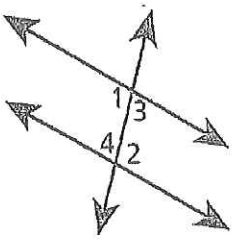
Directions: Use the figure to name the relationship between the two angles assuming the two lines are parallel and find the measure of the angles if $\angle 1 = 110^\circ$.

9. m$\angle$3= 70°

Because linear pairs are suppl.

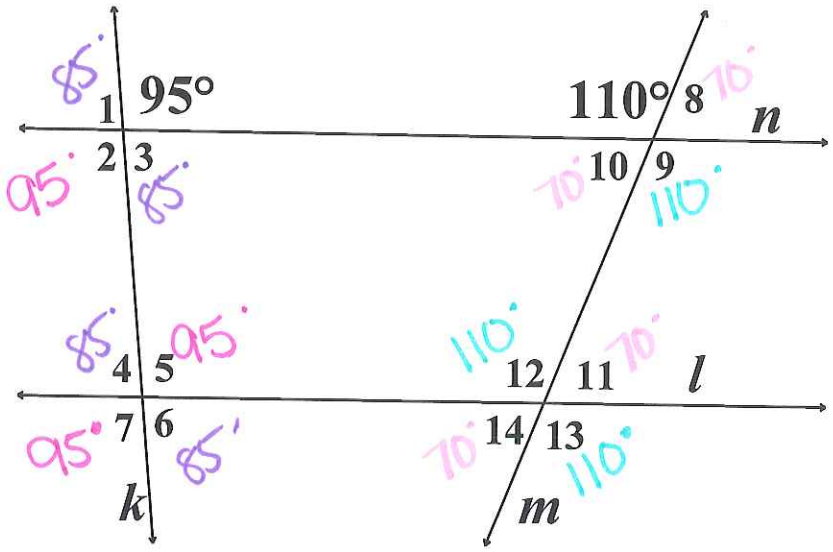
10. m$\angle$2= 110°

Because // lines form $\cong$ alt. int $\angle$s.



Special Angles and Parallel Lines Practice

Find the missing angle measures if $n \parallel \ell$.



∠1 = _____ ∠8 = _____

∠2 = _____ ∠9 = _____

∠3 = _____ ∠10 = _____

∠4 = _____ ∠11 = _____

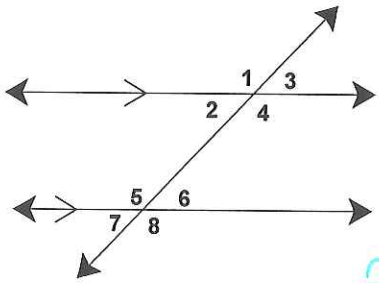
∠5 = _____ ∠12 = _____

∠6 = _____ ∠13 = _____

∠7 = _____ ∠14 = _____

Always, Sometimes or never!

For exercises 1-6, tell whether each statement is ~~true or false~~ using the figure below, then explain the relationship between the two given angles.



1. $\angle 1 \cong \angle 3$ Sometimes. <1 and <3 are linear pairs so <1 ≅ <3 if they both are 90°

2. $\angle 8 \cong \angle 3$ Sometimes → they are not related. so <8 can = <3 only if they Both = 90°.

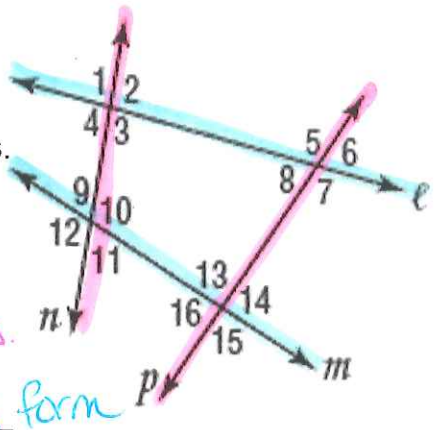
3. $\angle 2$ and $\angle 6$ are supplementary. <2 ≅ <6 because // lines form ≅ alt. int <s so they would only be suppl. if they = 90°

4. $\angle 7$ and $\angle 8$ are supplementary. Always! linear pairs are suppl.

5. $m\angle 1 \neq m\angle 6$ Sometimes ⇒ if they = 90 then they can be ≅ most of the time <1 ≠ <6

6. $m\angle 5 = m\angle 4$ Always // lines form ≅ alt. int. <s!

It's not always as it seems!!! Use the picture to identify the parallel lines.



7. If <1 ≅ <11 then ℓ // m because ≅ alt. ext. <s form // lines

8. If <1 ≅ <7 then n // p because ≅ alt ext < form // lines.

9. If <3 + <10 = 180 then ℓ // m because suppl. cons. int <s form // lines!

10. If <7 ≅ <3 then n // p because ≅ corr. <s form // lines.

11. If <14 + <7 = 180 then ℓ // m because Suppl. cons. int <s form // lines.

12. If <1 ≅ <9 then ℓ // m because ≅ corr. <s form // lines.

13. If <13 ≅ <11 then n // p because ≅ alt. int <s form // lines.