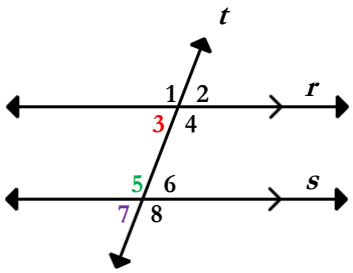
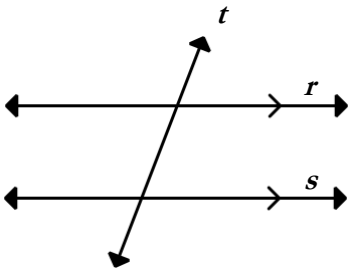
Lines *r* and *s* are parallel. Alex is asked to find the relationship between ∠3 and ∠5. Morgan is asked to find the relationship between ∠3 and ∠6.



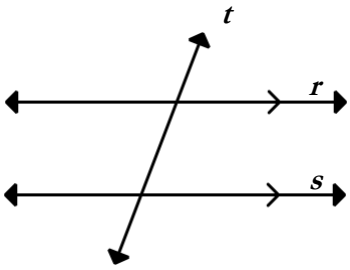
Alex's "Corresponding & Supplementary Angles" Method

∠3 and ∠7 are corresponding angles. Since ∠3 = 70°, then ∠7 is the same.



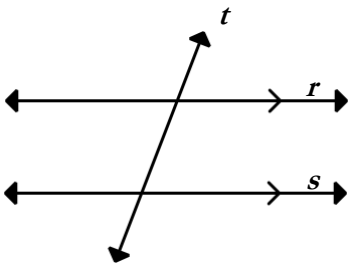
70° = 70°

Because ∠7 and ∠5 add to 180°, I know that 180° − 70° = ∠5.



180° − 70° = 110°

∠3 and ∠5 add to 180°.

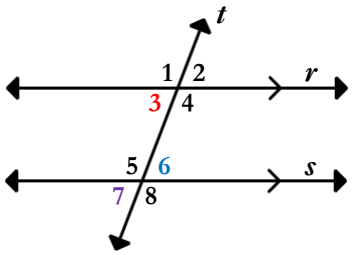


70° + 110° = 180°

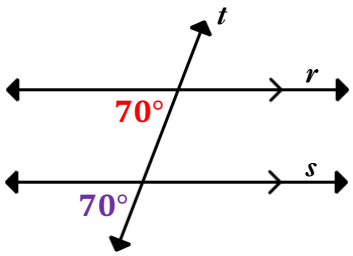
$m\angle 3 + m\angle 5 = 180$

Lines *r* and *s* are parallel. Alex is asked to find the relationship between ∠3 and ∠5. Morgan is asked to find the relationship between ∠3 and ∠6.

$m\angle 3 = 70°$

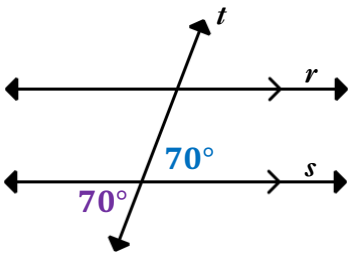


Morgan's "Corresponding & Vertical Angles" Method



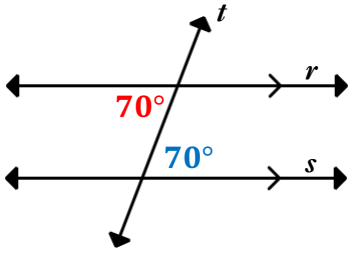
$70° = 70°$

∠3 and ∠7 are congruent angles. Since ∠3 = 70°, then ∠7 is too.



$70° = 70°$

∠7 and ∠6 are vertical angles, so they are the same.



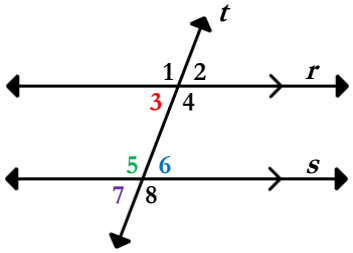
$70° = 70°$

$\angle 3 \cong \angle 6$

∠3 and ∠6 are congruent.

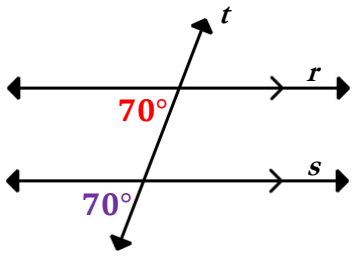
Lines *r* and *s* are parallel. Alex is asked to find the relationship between ∠3 and ∠5. Morgan is asked to find the relationship between ∠3 and ∠6.

$m\angle 3 = 70°$

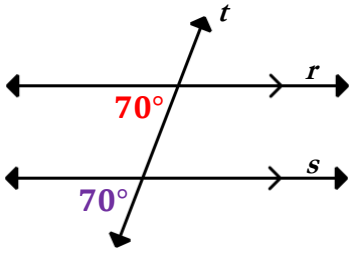


Alex's "Corresponding & Supplementary" Method	Morgan's "Corresponding & Vertical" Method

∠3 and ∠7 are corresponding angles. Since ∠3 = 70°, then ∠7 is the same.



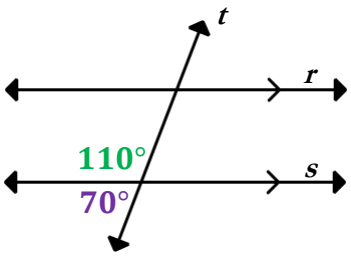
$70° = 70°$



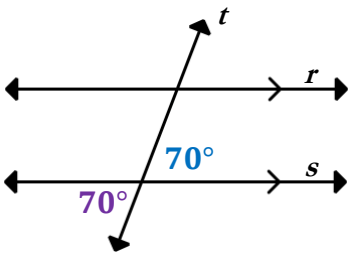
$70° = 70°$

∠3 and ∠7 are congruent angles. Since ∠3 = 70°, then ∠7 is too.

Because ∠7 and ∠5 add to 180°, I know that $180° - 70° = \angle 5$.



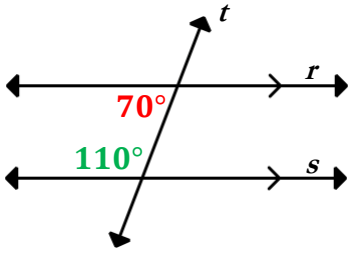
$180° - 70° = 110°$



$70° = 70°$

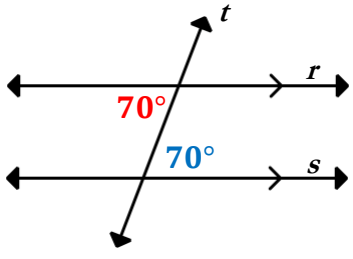
∠7 and ∠6 are vertical angles, so they are the same.

∠3 and ∠5 add to 180°.



$70° + 110° = 180°$

$m\angle 3 + m\angle 5 = 180$



$70° = 70°$

$\angle 3 \cong \angle 6$

∠3 and ∠6 are congruent.

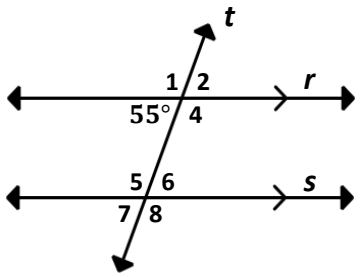
A.3: *Alternate Interior and Same Side Interior Angles*

1) What are the similarities and differences between Alex and Morgan's methods?

Similarities	Differences

2) Find the measure of all the missing angles. Justify each step you take to find each of the missing angles.

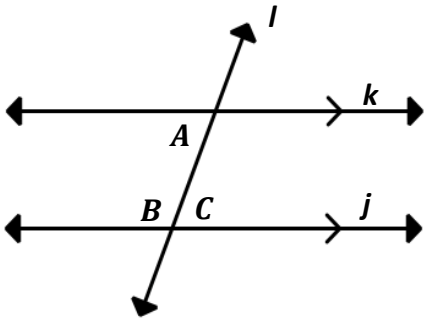
Missing Angle	Justification/Reason
$m\angle 1 =$	
$m\angle 2 =$	
$m\angle 4 =$	
$m\angle 5 =$	
$m\angle 6 =$	
$m\angle 7 =$	
$m\angle 8 =$	



3) Alex found that $m\angle 3 + m\angle 5 = 180°$ and Morgan found that $\angle 3 \cong \angle 6$. Do you think what they found will be true anytime two parallel lines are cut by a transversal? Why or why not?

4) a) Write an equation for the relationship between angles *A* and *B*.

b) Write an equation for the relationship between angles *A* and *C*.



A.3: *Alternate Interior and Same Side Interior Angles*

Lines *r* and *s* are parallel. Alex is ask … h … 3 and ∠5.
Morgan is ask … find …

Morgan and I both learned something new about when two parallel lines are cut by a transversal!

I learned that same-side interior angles are supplementary.

Morgan noticed that alternate interior angles are congruent.

Alex's "…
Suppl…

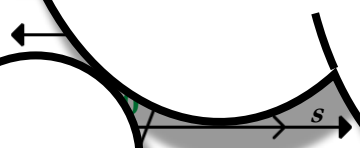
∠3 and ∠7 a…
correspondin…
angles. Since
∠3 = 70°, the…
∠7 is the sam…

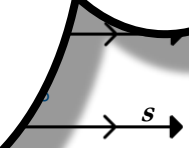
…e
…,
…s too.

Because ∠7 and ∠5 add to 180°, I know that 180° − 70° = ∠5.

∠7 and ∠6 are vertical angles, so they are the same.

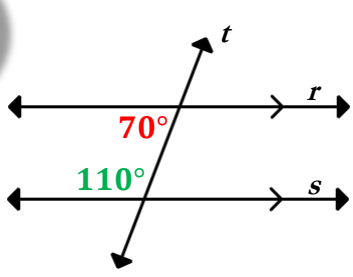
∠3 and ∠5 ad…
to 18…

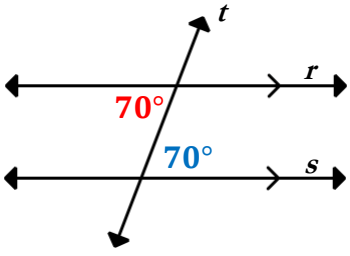




… − 70° = 110°

70° = 70°





∠3 and ∠6 are congruent.

70° + 110° = 180°
$m\angle 3 + m\angle 5 = 180$

70° = 70°
∠3 ≅ ∠6