Geometry – A
Section 3.2 Notes Parallel Lines and Transversals

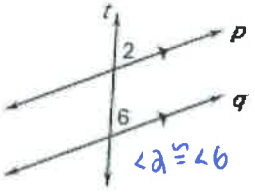
Name: key
Date: _____ Period: _____

- I can identify angle pairs formed by a transversal.
- I can use the angles formed by parallel lines and transversals to solve algebraic problems.

You have just completed an activity in which you found the relationships between angle pairs formed by parallel lines and transversals. Let's summarize your findings:

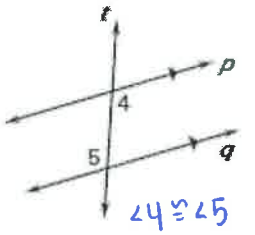
Corresponding Angles Postulate

If two parallel lines are cut by a transversal, then the pairs of corresponding angles are congruent.



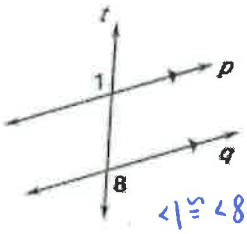
Alternate Interior Angles Theorem

If two parallel lines are cut by a transversal, then the pairs of alternate interior angles are congruent.



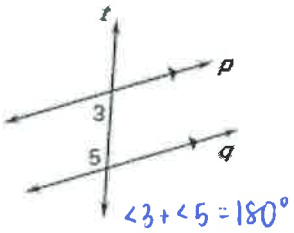
Alternate Exterior Angles Theorem

If two parallel lines are cut by a transversal, then the pairs of alternate exterior angles are congruent.



Consecutive Interior Angles Theorem

If two parallel lines are cut by a transversal, then the pairs of consecutive interior angles are supplementary.

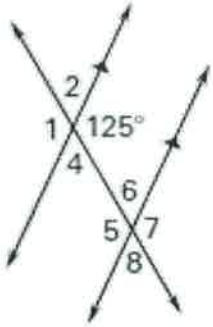


Example 1: The measure of 3 of the numbered angles is 125°. Identify which of the angles are 125°. Give a reason for each.

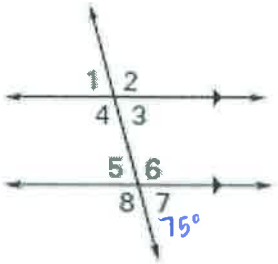
m∠1 = 125° (vertical angles)

m∠5 = 125° (alternate interior angles)

m∠7 = 125° (vertical angles with m∠5)



Example 2: If $m\angle 7 = 75°$, please find $m\angle 1$, $m\angle 3$, $m\angle 5$. Give a reason for each.



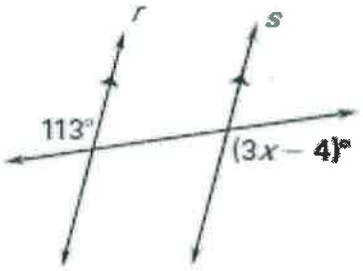
$m\angle 5 = 75°$ (vertical angles)

$m\angle 3 = 75°$ (alternate interior angles with $\angle 5$)

$m\angle 1 = 75°$ (alternate exterior angles with $\angle 7$)

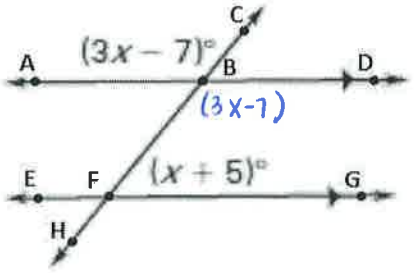
Example 3:

a) Find the value of x. Give a reason for each step when solving.



$113 = 3x - 4$	alternate exterior angles theorem
$117 = 3x$	addition property
$x = 39$	division property

b) Find the value of x. Give a reason for each step when solving.



$m\angle DBF = (3x-7)°$	vertical angles theorem with $\angle ABC$
$m\angle DBF + m\angle BFG = 180°$	consecutive interior angles theorem
$3x-7+x+5 = 180$	substitution property
$4x-2 = 180$	combine like terms
$4x = 182$	addition property
$\boxed{x = 45.5}$	division property

Example 4: A taxiway is being constructed that intersects two parallel runways at an airport. You know that $m\angle 2 = 98°$ What is $m\angle 1$? How do you know?

$m\angle 1 = 98°$ because of the alternate interior angles theorem