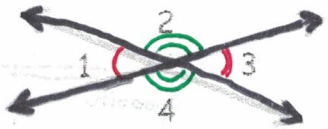
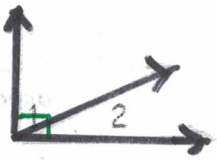
Math 2 Unit 5.1 Parallel Lines Cut by a Transversal Name: _____

Review of Angle Relationships



Vertical Angles - angles that are opposite one another when two lines intersect. Vertical angles are congruent, which means they have the same measure.

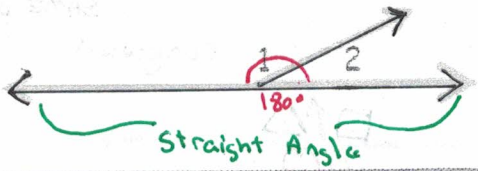
Ex. Angles 1 and 3 are VERTICAL angles. Angles 2 and 4 are VERTICAL angles.



Adjacent Angles - are angles that are next to one another.

Complementary Angles – two angles are complementary if the sum of their measures is 90°. $m\angle 1 + m\angle 2 = 90°$

Supplementary Angles – two angles are supplementary if the sum of their measures is 180°. $m\angle 1 + m\angle 2 = 180°$



∠ angle measure $m\angle$

Parallel Lines - two or more lines that are the same distance apart in a plane that do not intersect.

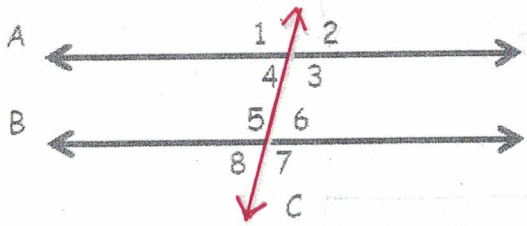
Ex. Line DE is parallel to line ST

or

$\overleftrightarrow{DE} \parallel \overleftrightarrow{ST}$

↖ symbol for parallel "//"

When a line, called a transversal, intersects two parallel lines, eight angles are formed.

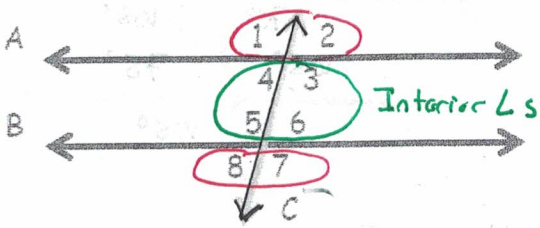


Line C is the transversal line

Each of these eight angles are classified as either Interior angles or Exterior angles.

Interior Angles - angles that are formed BETWEEN a set of parallel lines that are cut by a transversal.

Ex. ∠3, ∠4, ∠5, ∠6 are interior angles

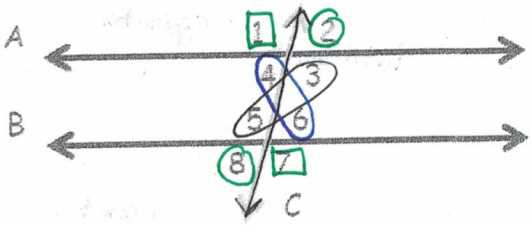


Exterior Angles - angles that are formed outside a set of parallel lines that are cut by a transversal.

Ex. ∠1, ∠2, ∠7, ∠8 are exterior angles

Alternate Interior Angles - are congruent Interior angles found on opposite sides of the transversal.

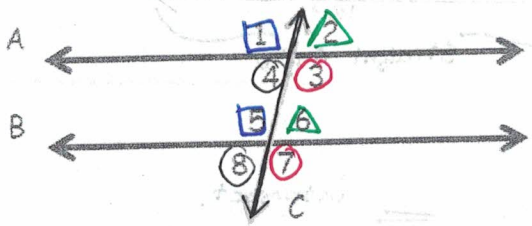
Ex. ∠4 and ∠6 are alternate interior angles & ∠3 and ∠5 are alternate interior angles



Alternate Exterior Angles - are congruent Exterior angles found on opposite sides of the transversal.

Ex. ∠1 and ∠7 are alternate exterior angles & ∠2 and ∠8 are alternate exterior angles

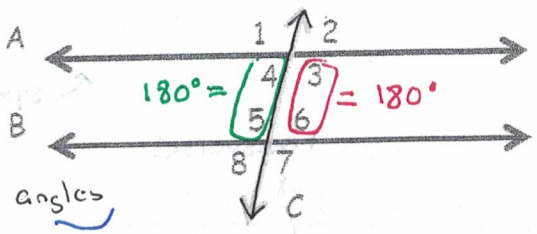
Corresponding Angles - angles that hold the SAME position on two different parallell lines cut by a transversal and they are congruent which means they have the same measures.



Ex.
- Angles 1 and 5 are corresponding angles
- Angles 2 and 6 are corresponding angles
- Angles 3 and 7 are corresponding angles
- Angles 4 and 8 are corresponding angles

Consecutive Angles - are on the same side of the transversal and on the inside of the parallel lines. Their measures add up to 180°.

Ex. ∠4 and ∠5 are consecutive angles & ∠3 and ∠6 are consecutive angles

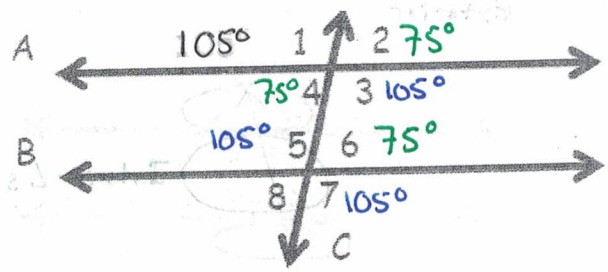


$m\angle 4 + m\angle 5 = 180$ (statement)
$m\angle 3 + m\angle 6 = 180$ (statement)
b/c they are consecutive angles (reason)

When you know the measure of one angle, you can figure out the measures of all the other angles:

Ex 1) Find the rest of the missing angle measures. List the reason for determining each angle.

a)



$m\angle 1 = m\angle 5$ b/c ∠1 and ∠5 are corresponding ∠s

$m\angle 1 + m\angle 2 = 180$ b/c ∠1 and ∠2 are supplementary ∠s

$105 + m\angle 2 = 180$

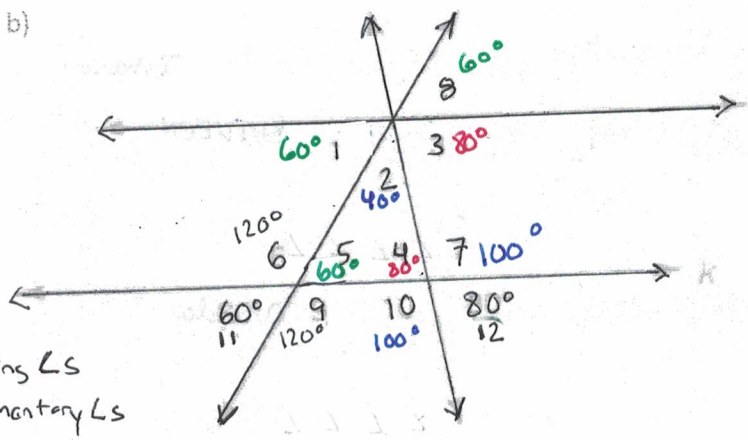
$m\angle 2 = 75$

$m\angle 1 = m\angle 7$ b/c ∠1 and ∠7 are Alternate Exterior ∠s

$m\angle 2 = m\angle 6$ b/c ∠2 and ∠6 are Corresponding ∠s

$m\angle 3 + m\angle 6 = 180$ b/c ∠3 and ∠6 are Consecutives ∠s.

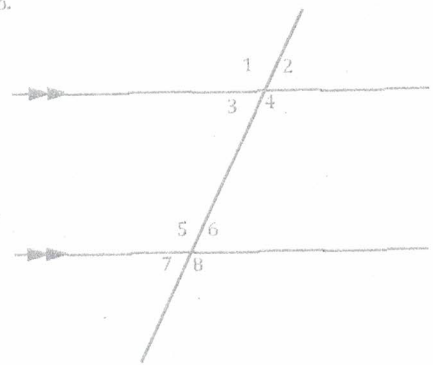
b)



$m\angle 4 = m\angle 2$ b/c ∠4 and ∠2 are vertical ∠

$m\angle 6 = m\angle 8$ b/c ∠6 and ∠8 are vertical ∠

For our first exercise, bubble the correct answer choice for each item below. Refer to the previous pages if you need to.



1. ∠1 and ∠5 are...
   - (A) Corresponding
   - B. Alternate Interior
   - C. Alternate Exterior
   - D. Consecutive

2. ∠8 and ∠4 are...
   - (A) Corresponding
   - B. Alternate Interior
   - C. Alternate Exterior
   - D. Consecutive

3. ∠2 and ∠7 are...
   - A. Corresponding
   - B. Alternate Interior
   - (C) Alternate Exterior
   - D. Consecutive

4. ∠3 and ∠6 are...
   - A. Corresponding
   - (B) Alternate Interior
   - C. Alternate Exterior
   - D. Consecutive

5. ∠6 and ∠4 are...
   - A. Corresponding
   - B. Alternate Interior
   - C. Alternate Exterior
   - (D) Consecutive

6. ∠2 and ∠6 are...
   - (A) Corresponding
   - B. Alternate Interior
   - C. Alternate Exterior
   - D. Consecutive

7. ∠4 and ∠5 are...
   - A. Corresponding
   - (B) Alternate Interior
   - C. Alternate Exterior
   - D. Consecutive

8. ∠1 and ∠8 are...
   - A. Corresponding
   - B. Alternate Interior
   - (C) Alternate Exterior
   - D. Consecutive

9. ∠3 and ∠5 are...
   - A. Corresponding
   - B. Alternate Interior
   - C. Alternate Exterior
   - (D) Consecutive

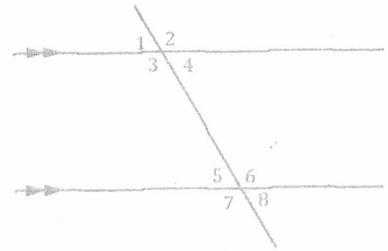
10. ∠4 and ∠8 are...
    - (A) Corresponding
    - B. Alternate Interior
    - C. Alternate Exterior
    - D. Consecutive

Great Job, these are tough to remember which is which. If you are struggling, go back and try to memorize what each one looks like. (like remembering a picture) If you do that these will become very easy. Let's do some more!

Bubble the correct answer choice from each item above.

#1.	#2.	#3.	#4.	#5.	#6.	#7.	#8.	#9.	#10.
○A.	○A.	○A.	○A.	○A.	○A.	○A.	○A.	○A.	○A.
○B.	○B.	○B.	○B.	○B.	○B.	○B.	○B.	○B.	○B.
○C.	○C.	○C.	○C.	○C.	○C.	○C.	○C.	○C.	○C.
○D.	○D.	○D.	○D.	○D.	○D.	○D.	○D.	○D.	○D.

For each, state the angle relationship.



1. Angle ∠1 and ∠8 are... alternate exterior angles
2. Angle ∠3 and ∠5 are... Consecutive Ls
3. Angle ∠1 and ∠5 are... Corresponding Ls
4. Angle ∠4 and ∠8 are... Corresponding Ls
5. Angle ∠2 and ∠6 are... Corresponding Ls
6. Angle ∠4 and ∠5 are... Alt. Interior Ls
7. Angle ∠2 and ∠7 are... Alt. Exterior Ls
8. Angle ∠3 and ∠6 are... Alt. Interior Ls
9. Angle ∠4 and ∠6 are... Consecutive Ls
10. Angle ∠3 and ∠7 are... Corresponding Ls

The next set might have some from other sections! You can do it!

11. Angle ∠7 and ∠6 are... vertical angles
12. Angle ∠5 and ∠7 are... Supplementary Ls
13. Angle ∠1 and ∠4 are... Vertical Ls
14. Angle ∠6 and ∠3 are... Alt. Interior Ls
15. Angle ∠5 and ∠6 are... Supplementary Ls
16. Angle ∠7 and ∠8 are... Supplementary Ls
17. Angle ∠7 and ∠3 are... Corresponding Ls
18. Angle ∠5 and ∠8 are... Vertical Ls