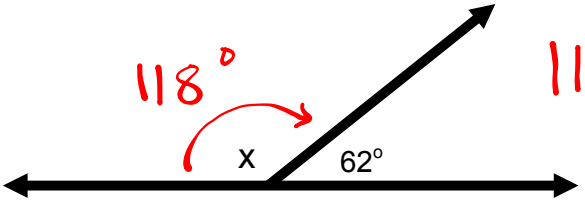
# Warm Up

4/28

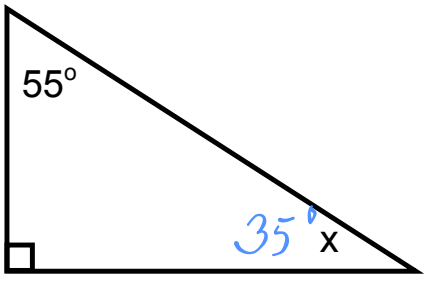
What is the measure of angle x in each figure below?

A.




$118 + 62 = 180°$

B.




$180 = 55 + 90 + x$

$180 = 145 + x$

$-145 \quad -145$

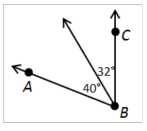
$35 = x$

# Homework Questions?

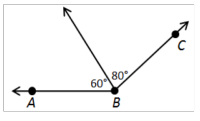
## Angles, Angles, Everywhere!

**Find the measure of $\angle ABC$.**

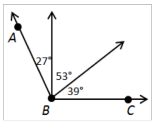
1. $m\angle ABC =$ 72°



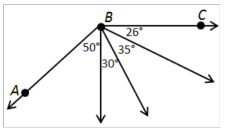

2. $m\angle ABC =$ 140°




3. $m\angle ABC =$ 119°

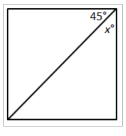



4. $m\angle ABC =$ 141°

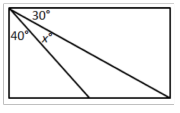



**Find the value of $x$.**

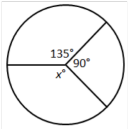
5. $x =$ 90-45 = 45°



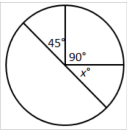

6. $x =$ 90-70 = 20°




7. $x =$ 360-(135+90) = 135°



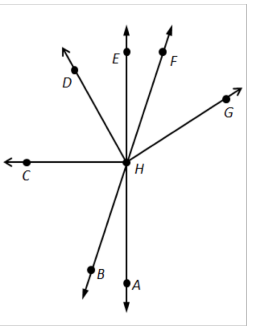

8. $x =$ 180-(90+45) = 45°



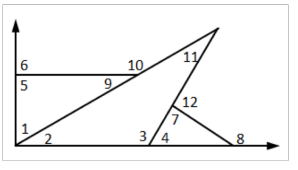

## Classifying Angles

**Tell if the angle appears to be *acute*, *right*, *obtuse*, or *straight*.**

1. $\angle CHF$ Obtuse
2. $\angle CHA$ Right
3. $\angle EHF$ Acute
4. $\angle DHC$ Acute
5. $\angle BHF$ Straight
6. $\angle BHA$ Acute
7. $\angle EHG$ Acute
8. $\angle CHG$ Obtuse
9. $\angle AHE$ Straight
10. $\angle GHA$ Obtuse




**Write each numbered angle in the correct column. Two are done for you.**




| Acute Angles | Right Angles | Obtuse Angles |
|---|---|---|
| ∠1 ∠9 ∠2 ∠11 ∠4 | ∠5 ∠7 ∠6 ∠12 | ∠3 ∠10 ∠8 |



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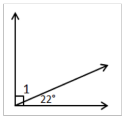
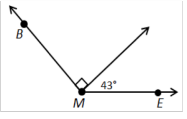
## Missing Measures

**Find the angle measure.**

**1.** $m\angle 1 =$ 90-22 = 68°

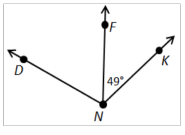



**2.** $m\angle BME =$ 90+43 = 133°

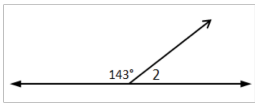



**3.** $m\angle DNK = 110°$

$m\angle DNF =$ 110-49 = 61°



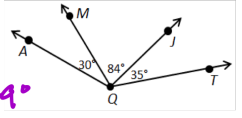

**4.** $m\angle 2 =$ 180-143 = 37°




**5.** $m\angle AQJ =$ 30+84 = 114°

**6.** $m\angle MQT =$ 84+35 = 119°

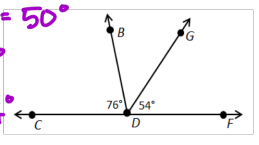
**7.** $m\angle AQT =$ 30+84+35 = 149°




**8.** $m\angle BDG =$ 180-(76+54) = 50°

**9.** $m\angle CDG =$ 180-54 = 126°

**10.** $m\angle BDF =$ 180-76 = 104°






## Working With Adjacent Angles

**Correctly answer each question below.**

1) What is the adjacent angle to ∠BAC?

∠CAD

2) What is the adjacent angle to ∠BAD?

∠DAE

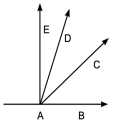
3) What is the adjacent angle to ∠CAE?

∠CAB

4) What two angles are adjacent angles to ∠CAD?

∠EAD and ∠CAB

**Figure A.**

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1) What are the two adjacent angles to ∠3?

∠2 and ∠4

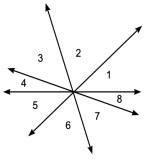
2) What is the smallest adjacent angle to ∠7?

∠8

3) What are the adjacent angles to ∠5?

∠4 and ∠6

**Figure B.**






**Adjacent:** Next to

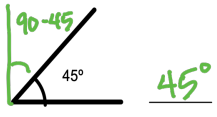
# Working With Complementary Angles

Part 1: Give the measurement for the complementary angle for each angle below.

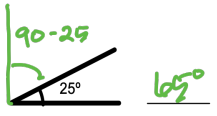
| | | | |
|---|---|---|---|
| A) 45° | 90-45=45° | F) 62° | 90-62=28° |
| B) 30° | 90-30=60° | G) 89° | 90-89=1° |
| C) 20° | 90-20=70° | H) 77° | 90-77=13° |
| D) 80° | 90-80=10° | I) 38° | 90-38=52° |
| E) 55° | 90-55=35° | J) 5° | 90-5=85° |

Part 2: For each figure below, draw the complementary angle and label its measurement

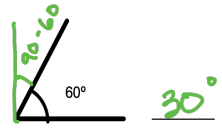
A)



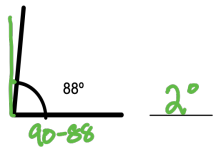

B)




C)




D)








**Complementary:** Sum = 90°

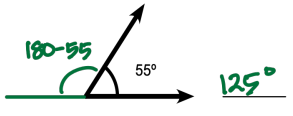
# Working With Supplementary Angles

**Part 1:** Give the measurement for the supplementary angle for each angle below.

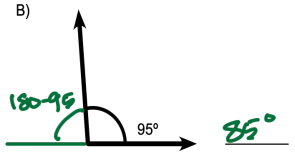
| | | | |
|---|---|---|---|
| A) 60° | 180-60=120° | F) 25° | 180-25=155° |
| B) 110° | 180-110=70° | G) 170° | 180-170=10° |
| C) 45° | 180-45=135° | H) 82° | 180-82=98° |
| D) 90° | 180-90=90° | I) 39° | 180-39=141° |
| E) 150° | 180-150=30° | J) 107° | 180-107=73° |

**Part 2:** For each figure below, draw the supplementary angle and label its measurement

A)




B)



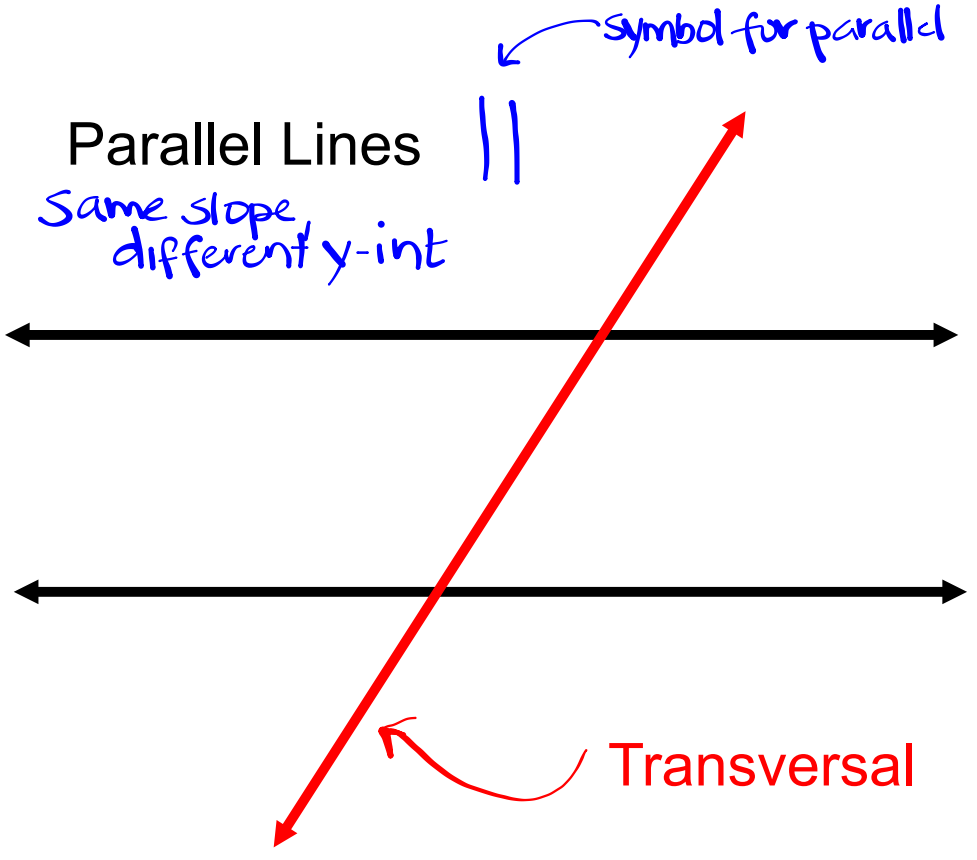

C)


D)

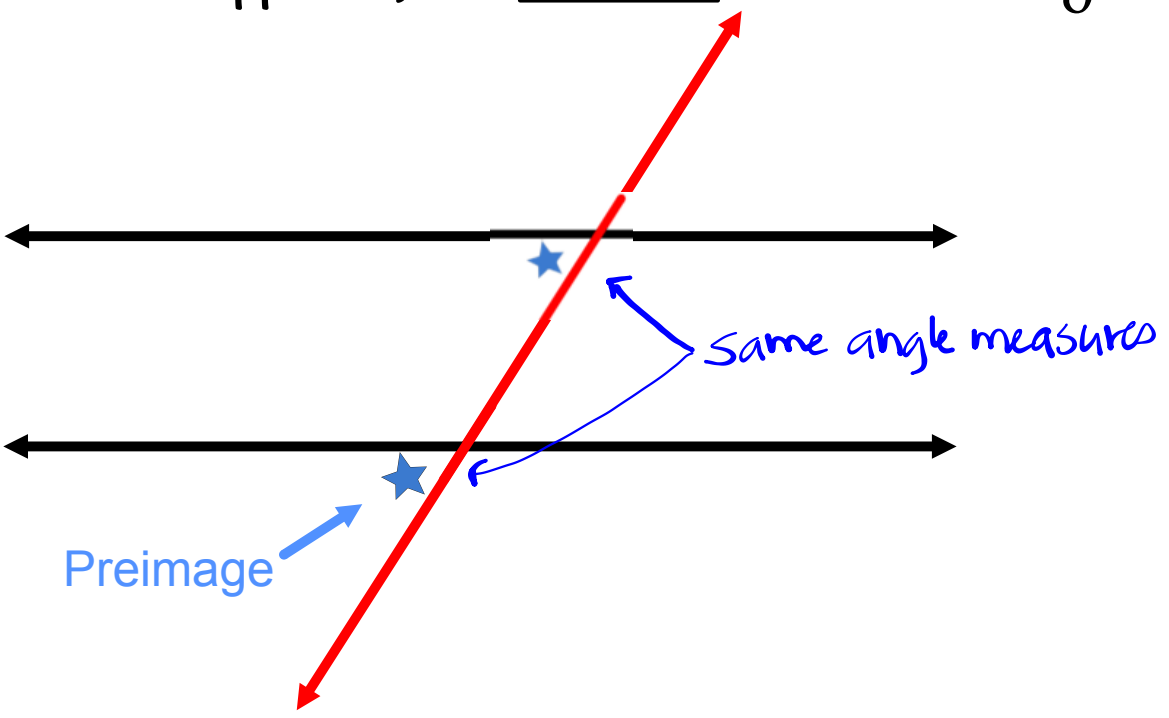




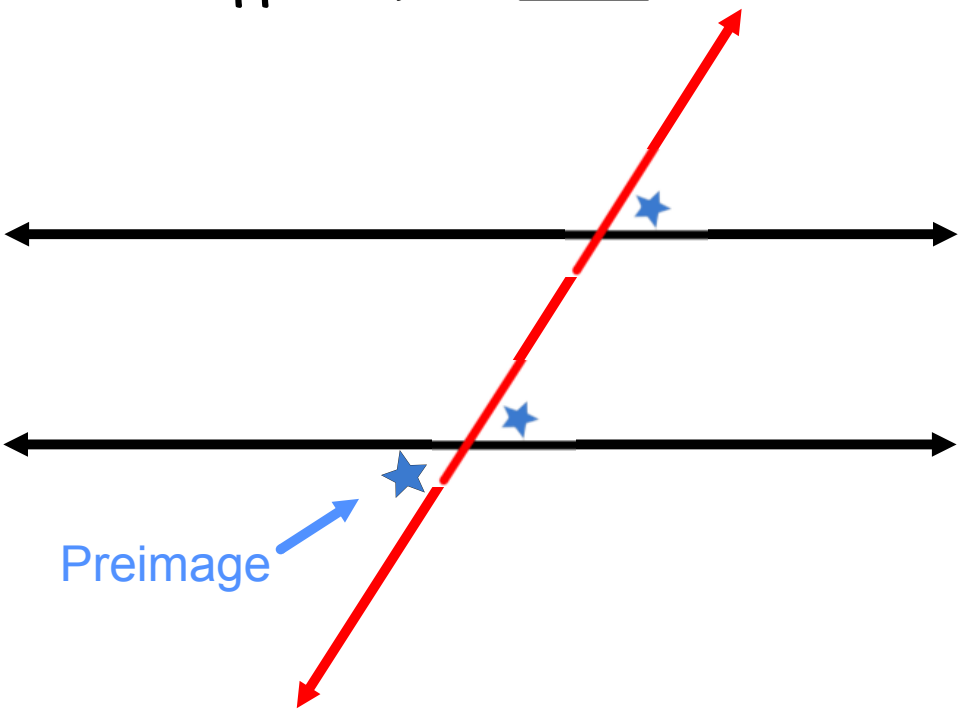

**Supplementary:** Sum = 180°


symbol for parallel
Parallel Lines
Same slope, different y-int
Transversal

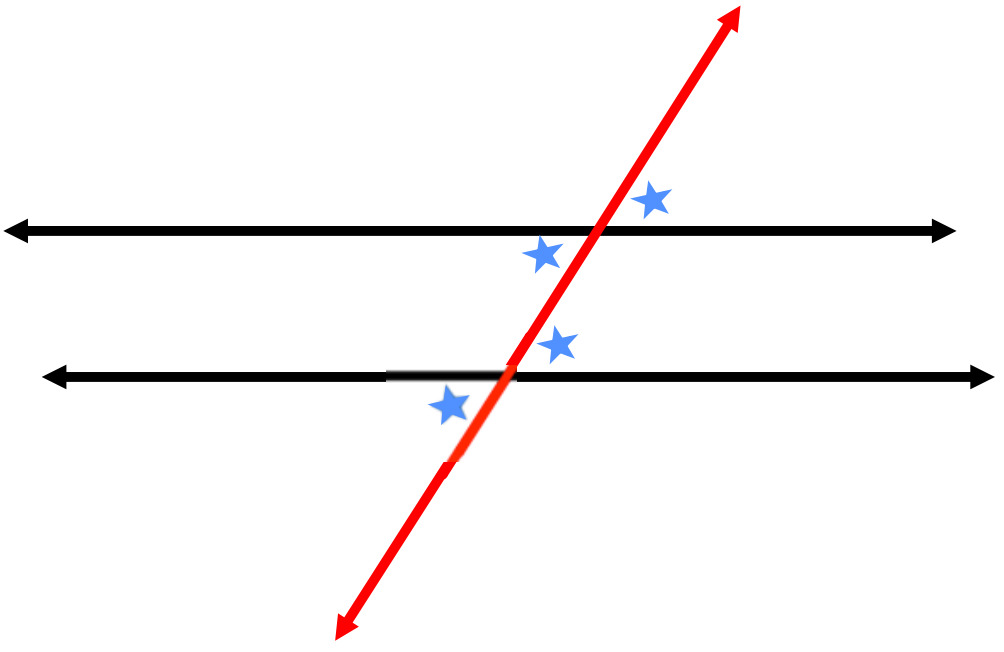
Look what happens if we translate the starred angle.



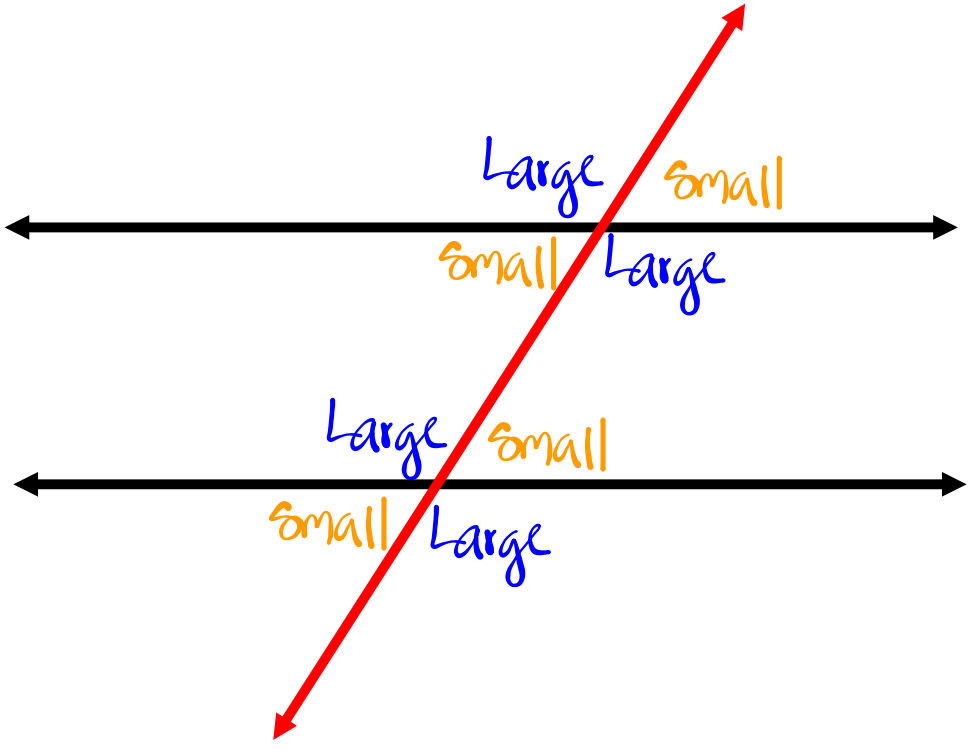
Look what happens if we rotate the starred angle.



What other angles are equal to ★ ?



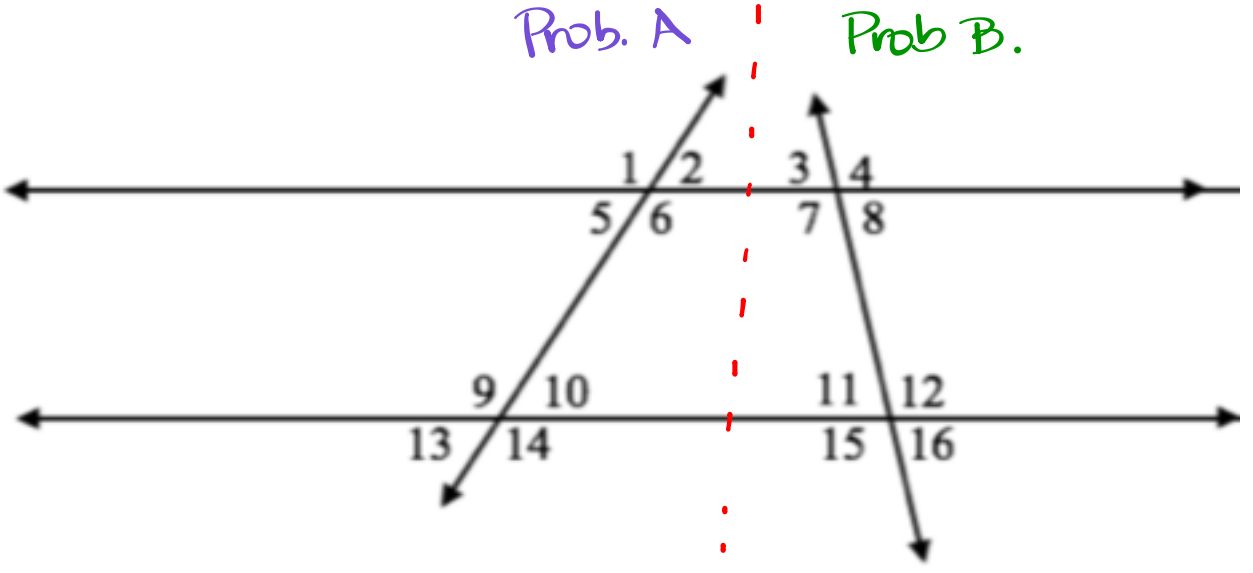
There are only **2** angle measures when parallel lines are cut by a transversal.




Large + small = 180°

# Don't be fooled by a problem like this!

**This is really 2 problems in one!**

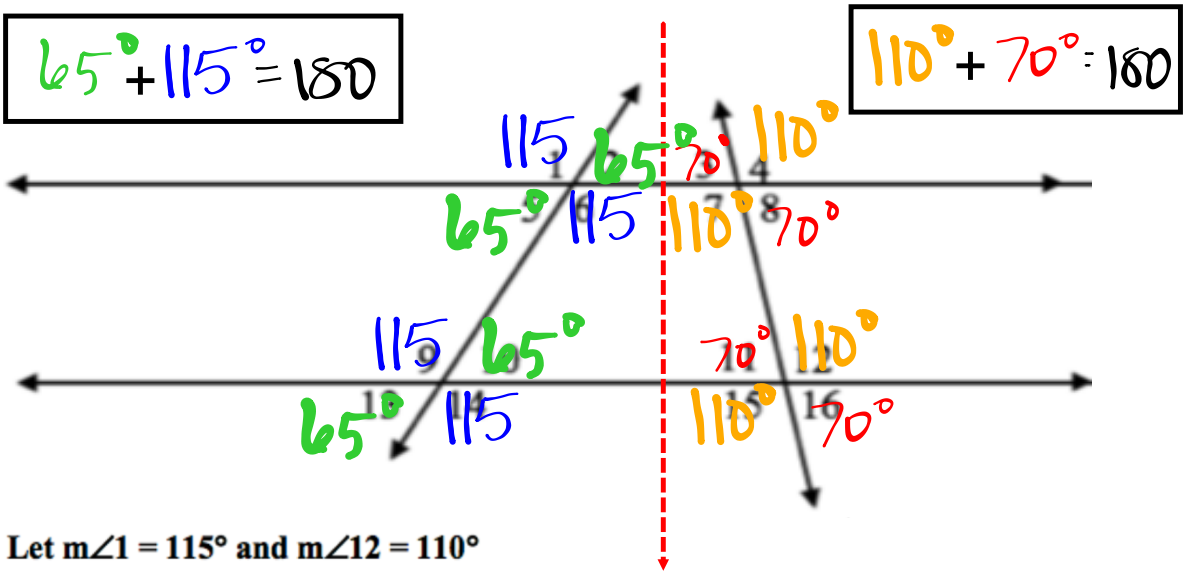



Angles formed in Problem A have

NOTHING to do with angles in Problem B!

$65^\circ + 115^\circ = 180$

$110^\circ + 70^\circ = 180$




**Let m∠1 = 115° and m∠12 = 110°**

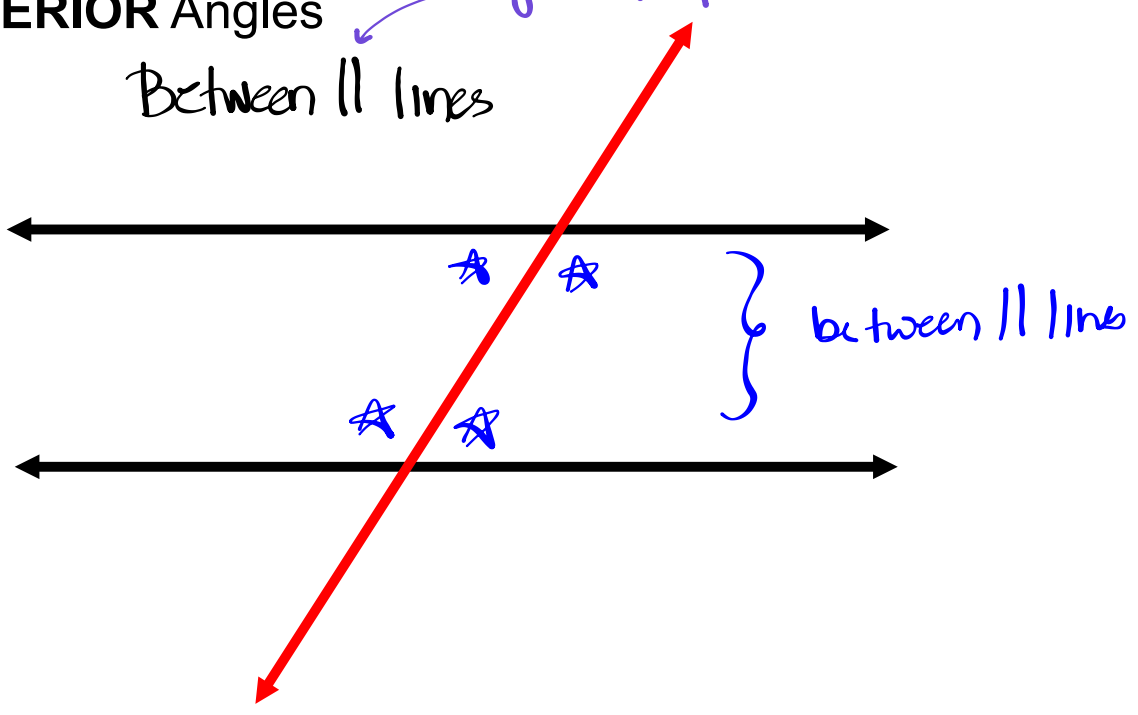
| | |
|---|---|
| 1. m∠9 = 115° | 5. m∠4 = 110° |
| 2. m∠10 = 65° | 6. m∠11 = 70° |
| 3. m∠8 = 70° | 7. m∠5 = 65° |
| 4. m∠3 = 70° | 8. m∠14 = 115° |

# Some additional vocab...

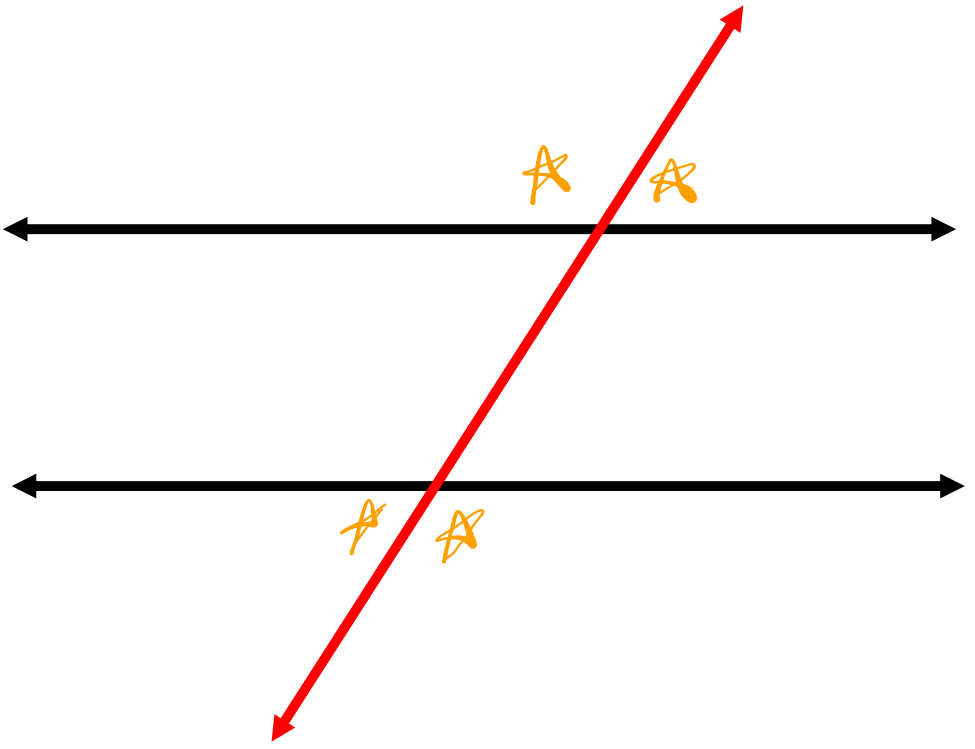
**INTERIOR** Angles

Between || lines

symbol for parallel



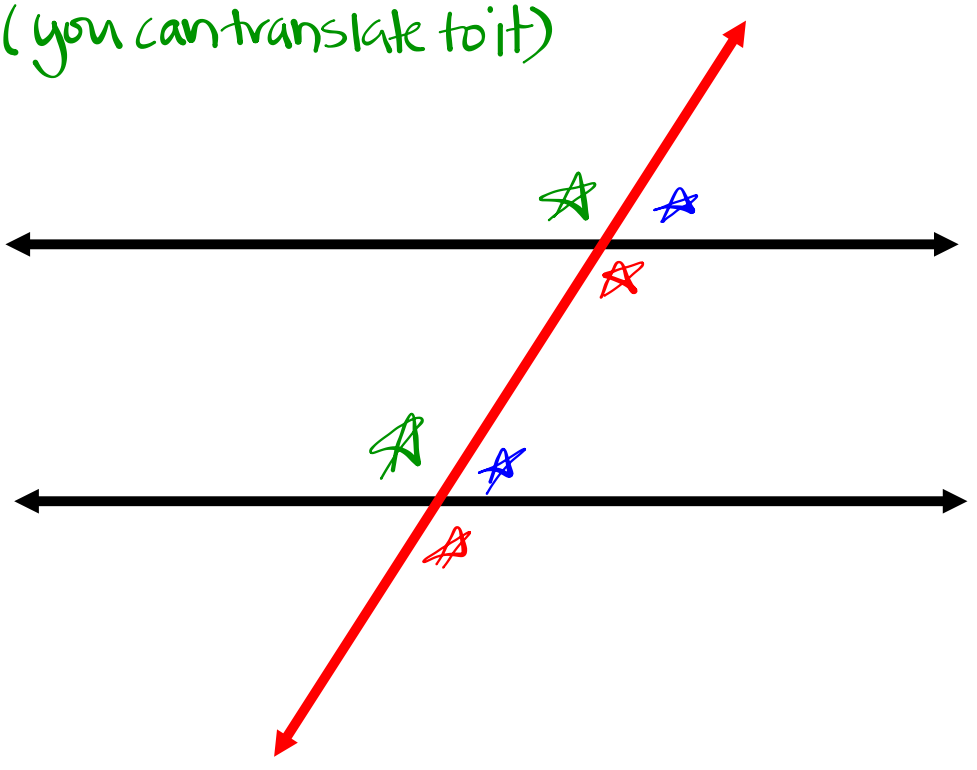
**EXTERIOR** Angles - on the outside of the parallel lines



**CORRESPONDING** Angles

Same angle measures that occupy the same relative position.

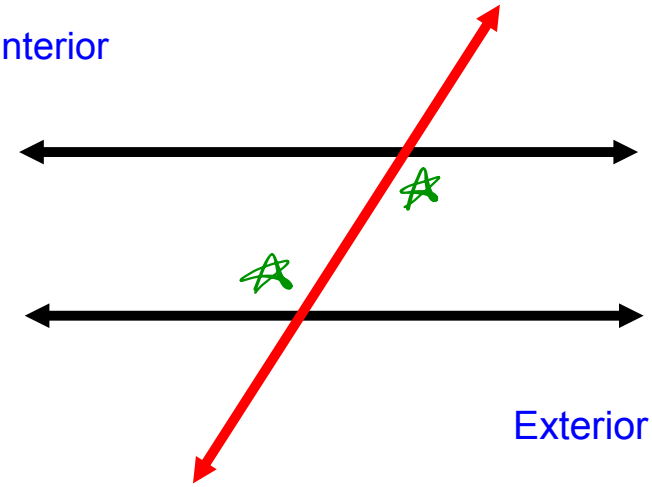
(you can translate to it)



You can take a snapshot and translate an angle to its corresponding angle

**ALTERNATING** Angles - alternate sides of the transversal

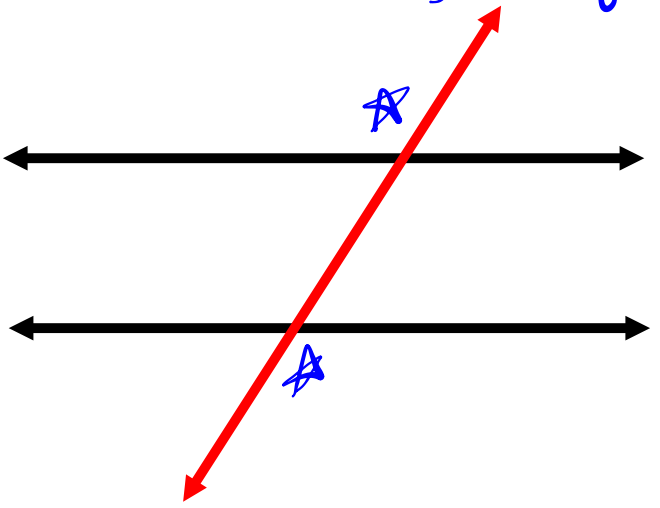
Interior



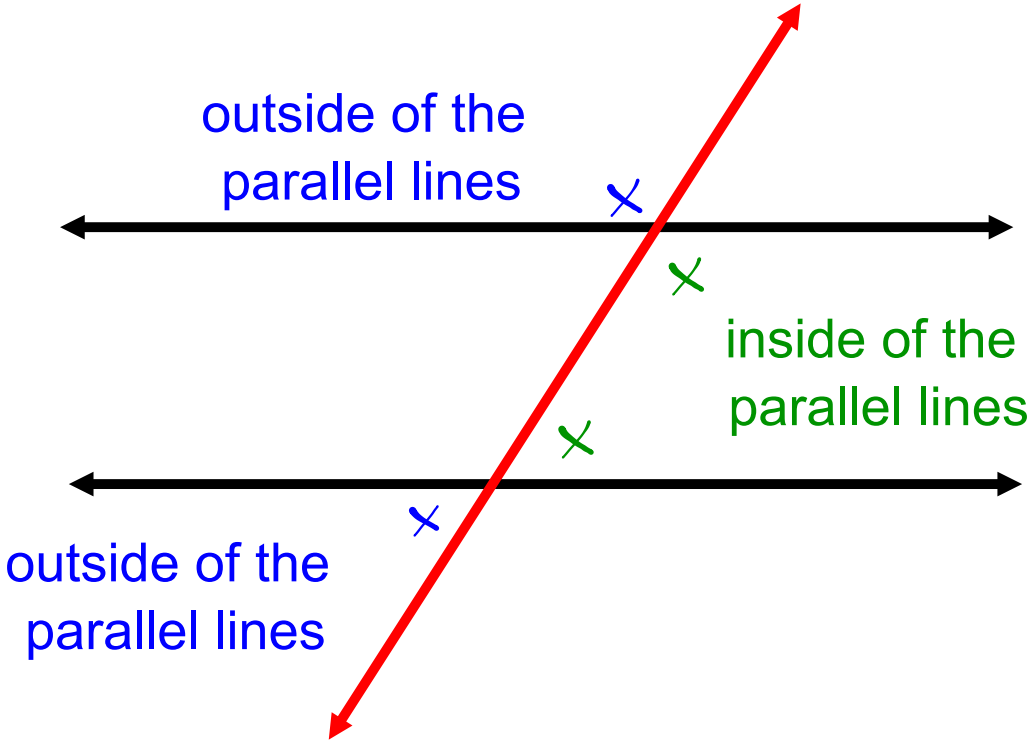
Angles are equal

Exterior

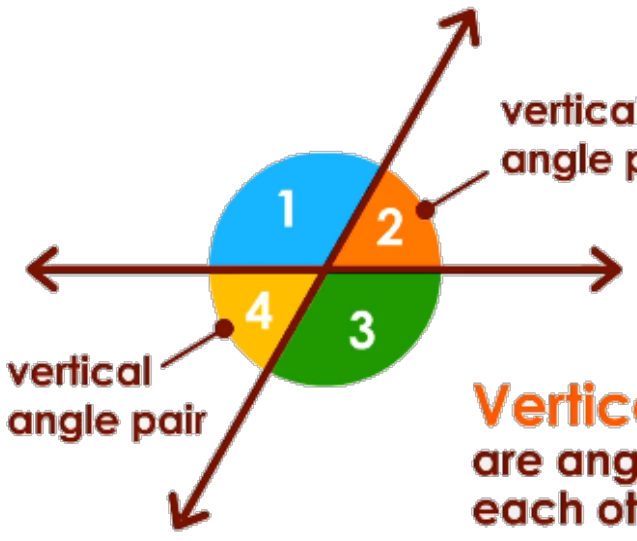
Angles are equal



**CONSECUTIVE** Angles - in a row  sum = 180°



**VERTICAL** Angles - equal angle measures




**Vertical angles**
are angles opposite
each other

# What do you think they are called?

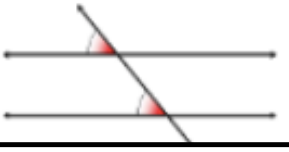
**alternate exterior angles**

angles that are on opposite sides of the transversal and are on the outside of the other two lines

*When the two other liners are parallel, these angles are congruent.

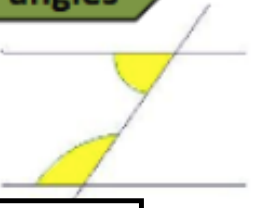
**corresponding angles**

angles that have the same relative position in geometric figures



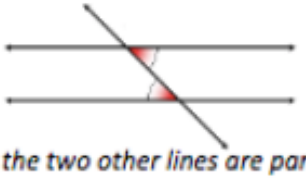
**same-side interior angles**

angles that are on the same side of the transversal and are between the other two lines



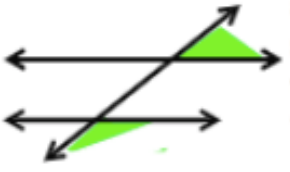
**alternate interior angles**

angles that are on opposite sides of the transversal and are in between the other two lines



*When the two other lines are parallel, these angles are congruent.

**same-side exterior angles**



angles that are on the same side of the transversal and are on the outside of the other two lines

You should now have all the info you need to complete the rest of the packet!

GEOMETRY

# Working With Linear Pairs

= 180°

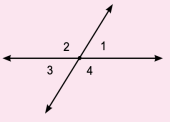
**Write the correct answer each question below.**

Each angle in Figure 1 is numbered.
What makes a linear pair with:

A) ∠1 _____ _____

B) ∠4 _____ _____

**Figure 1**




In Figure 2 what angles make a linear pair with:

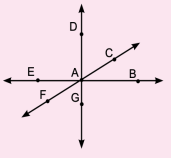
A) ∠BAC _____ _____

B) ∠DAE _____ _____

C) ∠GAF _____ _____

D) ∠BAD _____ _____

**Figure 2**





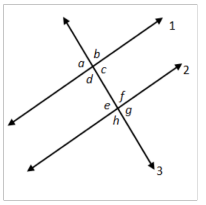



**Linear Pair: Sum of Angles =_____**

## Special Angle Pairs with Parallel Lines

**Line 1 is parallel to line 2. List all the angle pairs that fall into each category.**

| Corresponding | Alternate Interior |
|---|---|
| | |
| **Alternate Exterior** | **Consecutive Interior** |
| | |




**Line *a* is parallel to line *b*. Tell if each statement is true (T) or false (F).**

∠1 and ∠10 are alternate exterior angles. _____

∠8 and ∠11 are alternate interior angles. _____

∠2 and ∠10 are corresponding angles. _____

∠2 and ∠7 are alternate interior angles. _____

∠7 and ∠15 are corresponding angles. _____

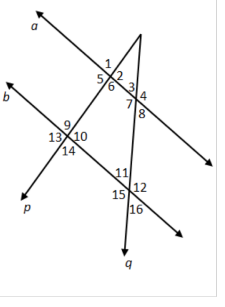
∠5 and ∠10 are alternate interior angles. _____

∠7 and ∠11 are consecutive interior angles. _____

∠10 and ∠14 are consecutive interior angles. _____

∠1 and ∠3 are corresponding angles. _____

∠4 and ∠15 are alternate exterior angles. _____




**Interior:** _____

**Exterior:** _____

**Consecutive:** _____

**Alternate:** _____

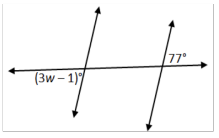
**Corresponding:** _____

## Parallel Lines: Finding the Unknown

**Each diagram is formed by two parallel lines and a transversal. Write the equation you can use to find the value of the variable. Then find the value of the variable.**

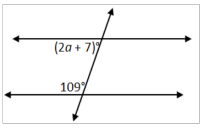
Equation _____

$w$ = _____



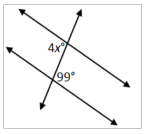

Equation _____

$a$ = _____



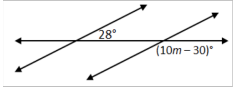

Equation _____

$x$ = _____



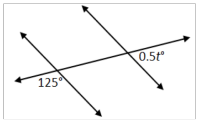

Equation _____

$m$ = _____




Equation _____

$t$ = _____

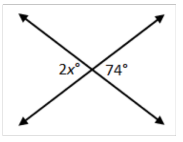




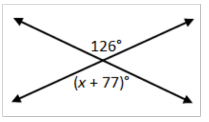

## Writing Equations for Vertical Angles

**Find the values of $x$ and $y$.**

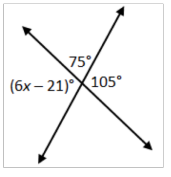
**1.** $x$ = _____



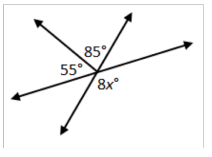

**2.** $x$ = _____




**3.** $x$ = _____

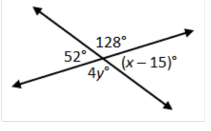



**4.** $x$ = _____



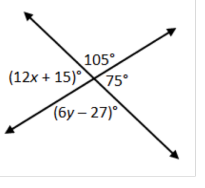

**5.** $x$ = _____

$y$ = _____




**6.** $x$ = _____

$y$ = _____



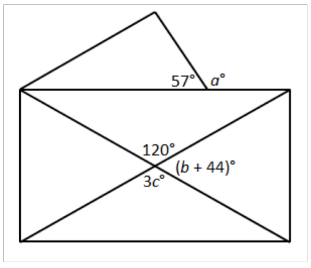
## Using Angle Relationships

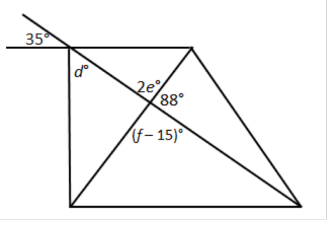
**Find the values of the variables.**

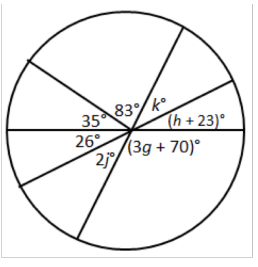
***a*** = _____ ***b*** = _____ ***c*** = _____

***d*** = _____ ***e*** = _____ ***f*** = _____

***g*** = _____ ***h*** = _____ ***j*** = _____ ***k*** = _____



**Homework**

Finish Packet