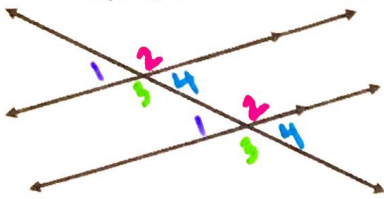


Two or more lines are parallel if and only if they are in the same plane and they do not intersect.

transversal is a line intersecting two or more coplanar lines.

Angle Relationships formed with  $\parallel$  Lines:

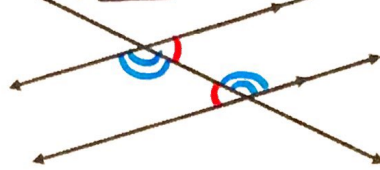
Corresponding  $\angle$ 's  $\cong$  (congruent)  
 • Same Spot, but different vertex.



Corr.  $\angle$ 's Postulate:  
 If 2  $\parallel$  lines are cut by a transversal, then the corresponding  $\angle$ 's are  $\cong$ .

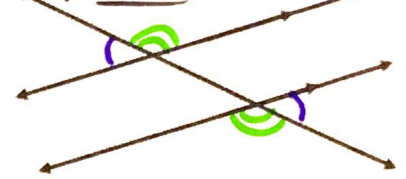
Alternate Interior  $\angle$ 's  $\cong$  (congruent)

• opposite sides of transversal & inside  $\parallel$  lines.



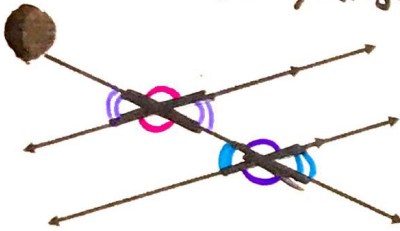
Alt. Int.  $\angle$ 's Theorem:  
 If 2  $\parallel$  lines are cut by a transversal, then the alternate int.  $\angle$ 's are  $\cong$ .

Alternate Exterior  $\angle$ 's  $\cong$   
 • on opposite sides of transversal & outside  $\parallel$  lines.



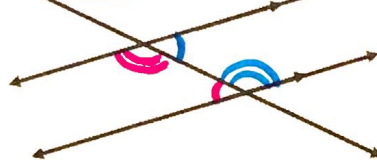
Alt. Ext.  $\angle$ 's Theorem:  
 If 2  $\parallel$  lines are cut by a transversal, then the alternate exterior  $\angle$ 's are  $\cong$ .

Vertical  $\angle$ 's  $\cong$  Vertical Angles



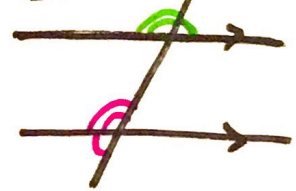
Vert.  $\angle$ 's Theorem:  
 Vertical  $\angle$ 's are  $\cong$ .

Same Side Interior  $\angle$ 's Supplementary ( $180^\circ$ )  
 • Same side as the transversal & inside  $\parallel$  lines.



Same Side Int.  $\angle$ 's Theorem:  
 If 2  $\parallel$  lines are cut by a transversal, then the same side int.  $\angle$ 's are Supp.

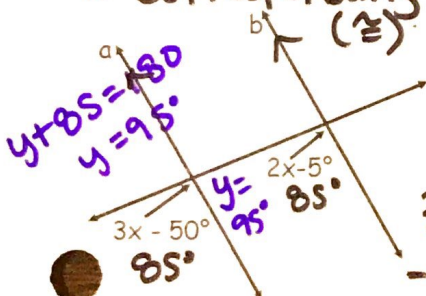
(Supplementary)  
Linear Pair:  
 • angles right next to each other that form a line.



Problem Solving with Angles:

In problems 1 - 2, assume  $a \parallel b$ . Find the value of  $x$ . Then, find the measure of each angle.

1. Corresponding  $\angle$ 's ( $\cong$ )

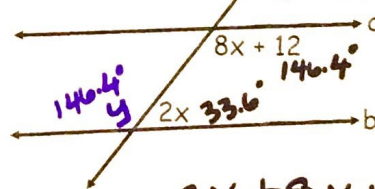


Set angles = to each other.

$$\begin{aligned}
 3x - 50 &= 2x - 5 \\
 -2x &\quad -2x \\
 \hline
 x - 50 &= -5 \\
 +50 &\quad +50 \\
 \hline
 x &= 45
 \end{aligned}$$

$$\begin{aligned}
 3(45) - 50 &= 85^\circ \\
 2(45) - 5 &= 85^\circ
 \end{aligned}$$

2. Same Side Interior (Supplementary)



add them & set = to  $180^\circ$

$$2x + 8x + 12 = 180$$

$$\begin{aligned}
 2(16.8) &= 33.6 \\
 8(16.8) + 12 &= 146.4 \\
 10x + 12 &= 180 \\
 -12 &\quad -12 \\
 \hline
 10x &= 168 \\
 \frac{10x}{10} &= \frac{168}{10} \quad X = 16.8
 \end{aligned}$$