

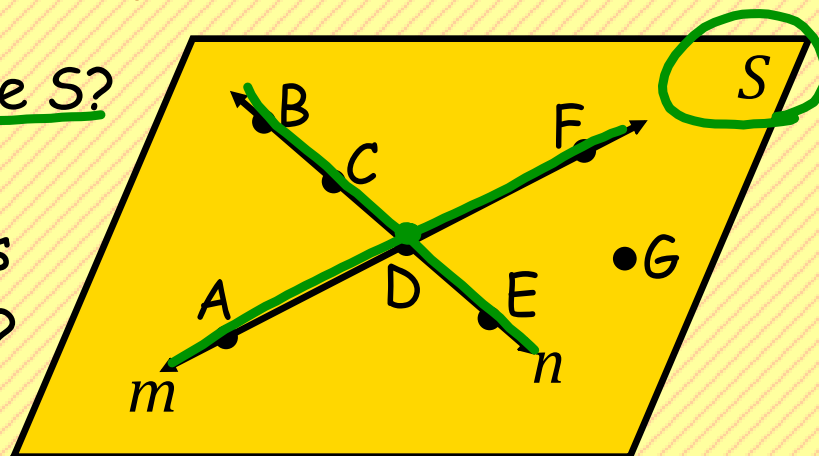
# 9/10/19 - Warm Up Problem

1. What is another name for Plane S?

Plane **BFG**

2. What are two different names for the line that contains point E?

Line **N** Line **BE**



3. What is the intersection of lines m and n?

**D**

4. Name one acute angle in Plane S.

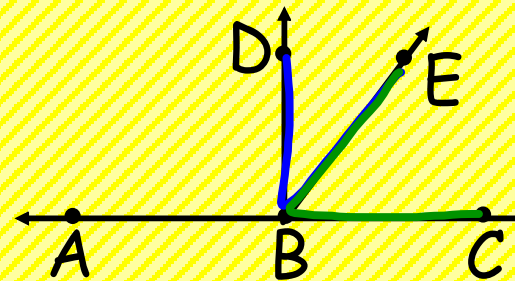
$\angle FDE$  ☺

*Paul*

## Concept 3 - Angle Pairs

**Goals:** draw conclusions about angles from a diagram  
use special angle pair relationships to find angle measures

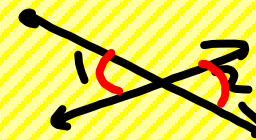
If a diagram has no marks or measures included on it, some information can be concluded from the diagram and some cannot.



### Finding Information from a Diagram

There are some relationships you can conclude such as:

- Angles are adjacent
- Angles are a linear pair (add to 180)
- Angles are vertical angles (so they're congruent)



There are some relationships you CANNOT conclude:

- Angles or segments are congruent
- An angle is a right angle
- Angles are complementary

Can you conclude each statement from the diagram?  
Explain.

$$\angle 1 \cong \angle 2$$

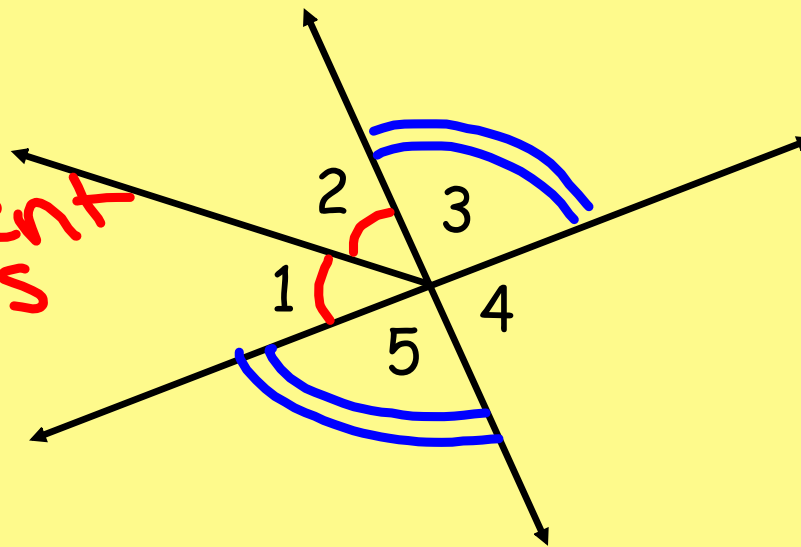
Yes - congruent marks

$$\angle 3 \cong \angle 5$$

Yes - vertical angles

$\angle 1$  and  $\angle 2$  are complementary

No - no measures given



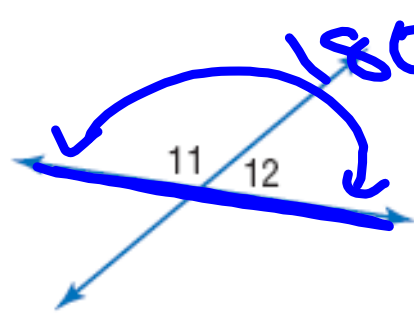
Do these two problems in your notes.

Find the value of  $x$  and the measure of each angle.

Are the angles congruent or should you add them up?

$$m\angle 11 = 4x, \quad 4(31) = 124^\circ$$

$$m\angle 12 = 2x - 6 = 56^\circ$$



$$4x + 2x - 6 = 180$$

$$6x - 6 = 180$$

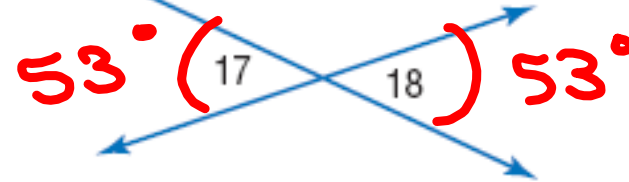
$$\begin{array}{r} +6 \\ +6 \end{array} \quad \begin{array}{r} +6 \\ +6 \end{array}$$

$$\begin{array}{r} 6x = 186 \\ \hline 6 \quad 6 \end{array}$$

$$x = 31$$

$$m\angle 17 = 2x + 7, \quad 2(23) + 7$$

$$m\angle 18 = x + 30, \quad 23 + 30 = 53^\circ$$



$$2x + 7 = x + 30$$

$$\begin{array}{r} -x \\ -x \end{array} \quad \begin{array}{r} -x \\ -x \end{array}$$

$$x + 7 = 30$$

$$\begin{array}{r} -7 \\ -7 \end{array}$$

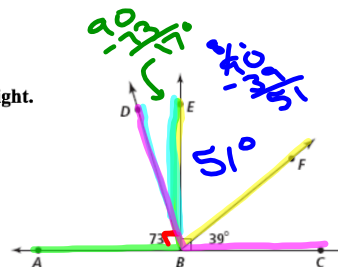
$$x = 23$$

**Assignment:**  
 Concept 3 Worksheet  
 (back)  
 - due by Friday 9/13

**FINDING ANGLE MEASURES**

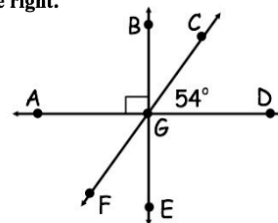
Find the measure of each angle using the diagram to the right.

18.  $\angle EBF$   $51^\circ$       19.  $\angle EBA$   $90^\circ$   
 20.  $\angle DBE$   $17^\circ$       21.  $\angle DBC$   $107^\circ$   
 22.  $\angle ABF$               23.  $\angle DBF$



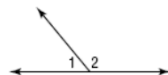
Find the measure of each angle using the second diagram to the right.

24.  $\angle BGC$               25.  $\angle AGF$   
 26.  $\angle FGD$               27.  $\angle CGE$   
 28.  $\angle CGF$               29.  $\angle AGC$



Use the given measures to write and solve an equation to find the measure of each numbered angle.

30.  $m\angle 1 = x + 10$   
 $m\angle 2 = 3x + 18$



31.  $m\angle 2 = 4x - 26$ ,  
 $m\angle 3 = 3x + 4$



32.  $m\angle 4 = 2x - 5$   
 $m\angle 5 = 4x - 13$



33.  $m\angle 6 = 7x - 24$   
 $m\angle 7 = 5x + 14$

