

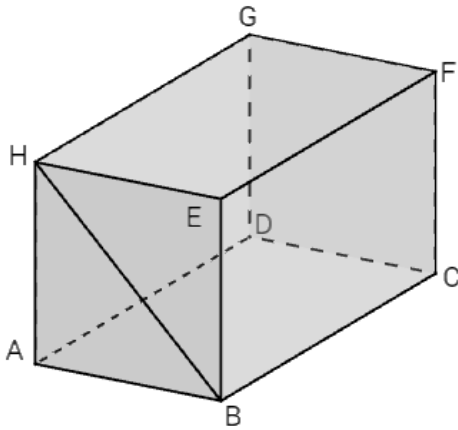
## Team Problems for Chapter 3

Name: \_\_\_\_\_

Date: \_\_\_\_\_

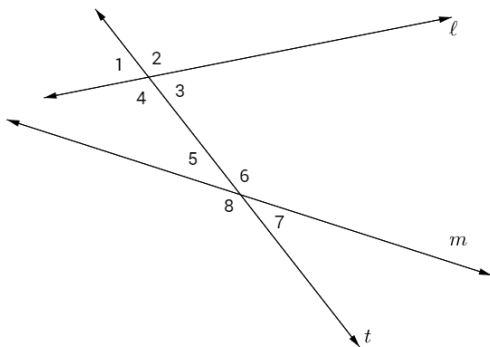
### Problem #1: Vocabulary

1. Using the given figure, assume lines (extended segments) and planes that appear to be parallel are parallel. Fill in the blank with “parallel,” “perpendicular,” “skew,” or “none of these.”



- a.  $\overline{HE}$  and  $\overline{AD}$  are \_\_\_\_\_.
- b.  $\overline{HB}$  and  $\overline{BC}$  are \_\_\_\_\_.
- c.  $\overline{DG}$  and  $\overline{BE}$  are \_\_\_\_\_.
- d.  $\overline{AB}$  and  $\overline{BH}$  are \_\_\_\_\_.
- e.  $\overline{FE}$  and  $\overline{AD}$  are \_\_\_\_\_.
- f.  $\overline{BH}$  and  $\overline{EF}$  are \_\_\_\_\_.
- g. Plane  $ABEH$  and Plane  $ABCD$  are \_\_\_\_\_.
- h. Plane  $BCFE$  and Plane  $ADGH$  are \_\_\_\_\_.

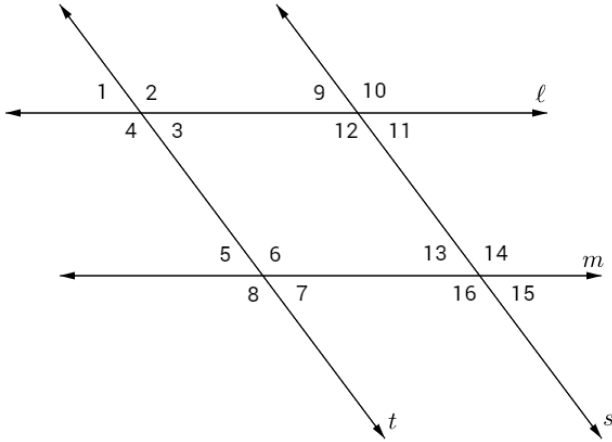
2. Fill in the blanks with vocabulary words about the figure below.



- a.  $t$  is called a \_\_\_\_\_ of the lines  $l$  and  $m$ .
  - b.  $\angle 1$  and  $\angle 7$  are \_\_\_\_\_.
  - c.  $\angle 2$  and  $\angle 4$  are \_\_\_\_\_.
  - d.  $\angle 3$  and  $\angle 5$  are \_\_\_\_\_.
  - e.  $\angle 2$  and  $\angle 7$  are \_\_\_\_\_.
  - f.  $\angle 3$  and  $\angle 6$  are \_\_\_\_\_.
  - g.  $\angle 7$  and  $\angle 8$  are \_\_\_\_\_.
3. True/False: Because  $\angle 2$  and  $\angle 6$  are corresponding angles, they are congruent.  
*Explain why or why not.*

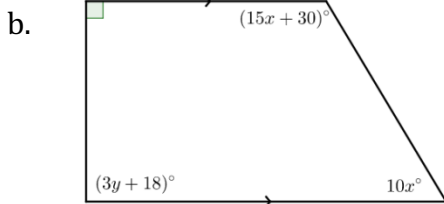
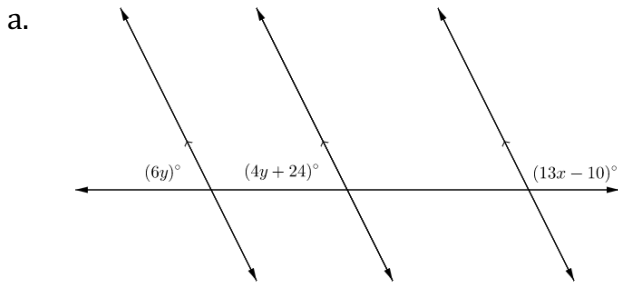
**Problem #2: Find the Angle**

1. In the figure,  $\ell \parallel m$  and  $m\angle 2 = 105^\circ$ . Fill in the blanks with: A.  $105^\circ$ , B.  $75^\circ$ , or C. Not Enough Info.



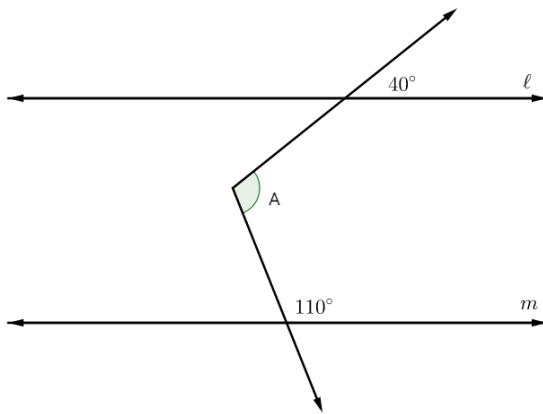
- a.  $m\angle 1 =$  \_\_\_\_\_
- b.  $m\angle 6 =$  \_\_\_\_\_
- c.  $m\angle 10 =$  \_\_\_\_\_
- d.  $m\angle 5 =$  \_\_\_\_\_
- e.  $m\angle 16 =$  \_\_\_\_\_
- f.  $m\angle 8 =$  \_\_\_\_\_

2. Find  $x$  and  $y$  in each figure.



**Problem #3: Angles and transversals**

1. In the figure below,  $\ell \parallel m$ . Find  $m\angle A$ .



*Hint: Sketch a line parallel to  $\ell$  and  $m$  through point  $A$ .*

2. A transversal  $r$  intersects lines  $\ell$  and  $m$ . If  $\ell$  and  $r$  form  $\angle 1$  and  $\angle 2$  and  $m$  and  $r$  form  $\angle 3$  and  $\angle 4$ , sketch a diagram that meets all of the following conditions:
- $\angle 1 \cong \angle 2$
  - $\angle 3$  is an interior angle.
  - $\angle 4$  is an exterior angle.
  - $\angle 3$  and  $\angle 4$  are supplementary.
  - $\angle 2$  and  $\angle 4$  lie on opposite sides of  $r$ .

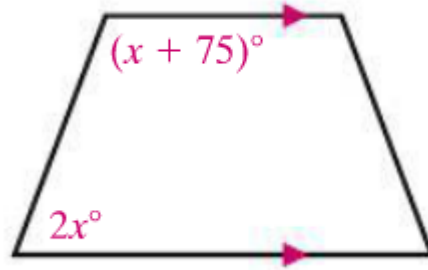
**Problem #4: Find the error**

1. Explain the error in the following solution.

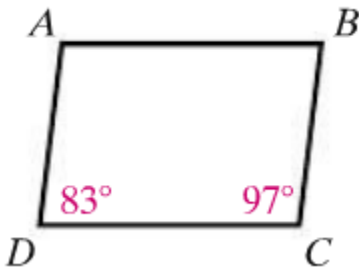
Solution:

$$2x = x + 75$$

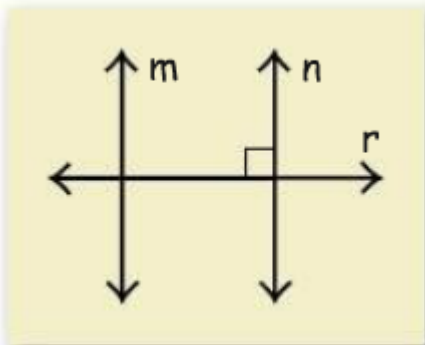
$$x = 75$$



2. A classmate says that  $\overline{AB} \parallel \overline{CD}$  based on the diagram below. Explain your classmate's error.



3. A student sketched coplanar lines  $m$ ,  $n$ , and  $r$  on his homework paper. He claims that it shows that lines  $m$  and  $n$  are parallel. What one other piece of information do you need in order for his claim to be true? Explain.



**Problem #5: Slopes**

1. **Without actually computing the slopes**, determine whether the slope between the two points is positive, negative, zero, or undefined.

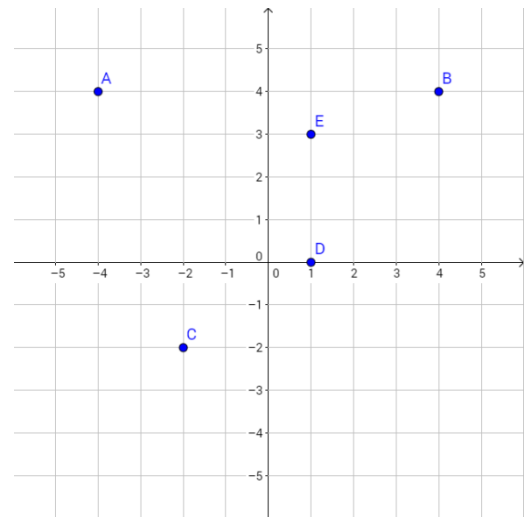
a. A and B: \_\_\_\_\_

b. B and C: \_\_\_\_\_

c. C and B: \_\_\_\_\_

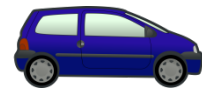
d. D and E: \_\_\_\_\_

e. E and A: \_\_\_\_\_



2. Imagine standing next to straight section of road and watching a car pass by from the left to the right. How would you describe the car's trip if (from your vantage point):

a. the slope of the road is positive



b. the slope of the road is negative

c. the slope of the road is zero

d. the slope of the road is undefined

*(This example is a good way to remember the difference between "slope is zero" and "slope is undefined.")*