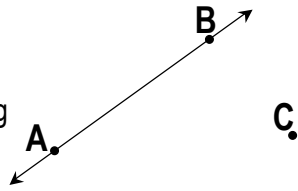


(DN) Draw a diagram like the one at right and construct a line parallel to line AB by translating line AB along vector BC. (Refer to lesson 2.9 #2.)



Name \_\_\_\_\_ Per \_\_\_\_\_  
 LO: I can solve problems involving angles formed by transversals and explain my reasoning.

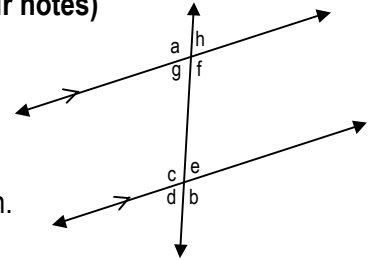
(1) Angles: Finding measures of unknown angles by using relationships (use your notes)

transparencies, dry erase markers, erasers N11

- alternate interior
- alternate exterior
- same side interior
- corresponding

In the diagram at right,  $m\angle a = 125^\circ$ . Complete each statement below:

NOTICE: Reasons can ONLY include relationships to angles that are already known.



- (a)   $m\angle f = 125^\circ$  because  $\angle f$  is \_\_\_\_\_ to  $\angle a$ .
- (b)   $m\angle b = 125^\circ$  because  $\angle b$  is \_\_\_\_\_ to  $\angle a$  and \_\_\_\_\_ to  $\angle f$ .
- (c)   $m\angle c = 125^\circ$  because  $\angle c$  is \_\_\_\_\_ to  $\angle a$  and \_\_\_\_\_ to  $\angle f$  and \_\_\_\_\_ to  $\angle b$ .
- (d)   $m\angle g = 55^\circ$  because  $\angle g$  is \_\_\_\_\_ with  $\angle a$  and \_\_\_\_\_ to  $\angle c$ .
- (e)   $m\angle h = 55^\circ$  because  $\angle h$  is \_\_\_\_\_ to  $\angle g$ .

(2) Angles: Finding measures of unknown angles by using relationships (use your notes)

transparencies, dry erase markers, erasers N11

Find the measure of each angle and name a relationship you used to find the measure. Mention parallel lines and write and solve an equation when needed. REMEMBER: Reasons can ONLY include relationships to angles that are already known. Use the space at the bottom to solve any equations you write. Add the letter x to the diagram to help you find d and y to help you find f.

$m\angle a =$  \_\_\_\_\_ because it is \_\_\_\_\_ with \_\_\_\_\_ and \_\_\_\_\_

$m\angle b =$  \_\_\_\_\_ because it is \_\_\_\_\_ with \_\_\_\_\_ and \_\_\_\_\_

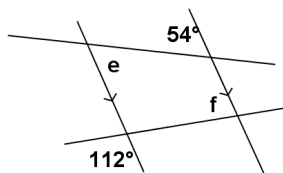
$m\angle c =$  \_\_\_\_\_ because it is \_\_\_\_\_ with \_\_\_\_\_ and \_\_\_\_\_

$m\angle d =$  \_\_\_\_\_ because it is \_\_\_\_\_ with \_\_\_\_\_ and \_\_\_\_\_

$m\angle x =$  \_\_\_\_\_ because it is \_\_\_\_\_ with \_\_\_\_\_

(2) Angles: Finding measures of unknown angles by using relationships (use your notes)

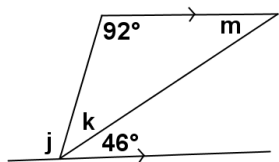
cont



$m\angle e = \underline{\hspace{2cm}}$  because it is  $\underline{\hspace{2cm}}$  with  $\underline{\hspace{1cm}}$  and  $\underline{\hspace{1cm}}$

$m\angle f = \underline{\hspace{2cm}}$  because it is  $\underline{\hspace{2cm}}$  with  $\underline{\hspace{1cm}}$  and  $\underline{\hspace{1cm}}$

$m\angle y = \underline{\hspace{2cm}}$  because it is  $\underline{\hspace{2cm}}$  with  $\underline{\hspace{1cm}}$



$m\angle j = \underline{\hspace{2cm}}$  because it is  $\underline{\hspace{2cm}}$  with  $\underline{\hspace{1cm}}$  and  $\underline{\hspace{1cm}}$

$m\angle k = \underline{\hspace{2cm}}$  because it is  $\underline{\hspace{2cm}}$  with  $\underline{\hspace{1cm}}$  and  $\underline{\hspace{1cm}}$

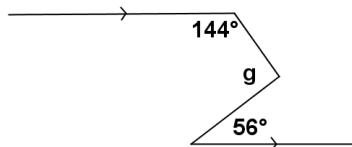
$m\angle m = \underline{\hspace{2cm}}$  because it is  $\underline{\hspace{2cm}}$  with  $\underline{\hspace{1cm}}$  and  $\underline{\hspace{1cm}}$

(3) Angles: Using Auxiliary lines to find unknown angle measures

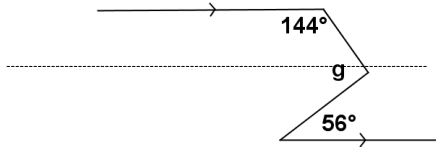
transparencies, dry erase markers, erasers

**Auxiliary** lines are lines that you add to a diagram. To find the measure of angle  $g$  in the diagram below, it is possible to draw a line parallel to the two lines that are parallel and divide  $g$  into two smaller angles. We can call those smaller angles  $g_1$  and  $g_2$ .

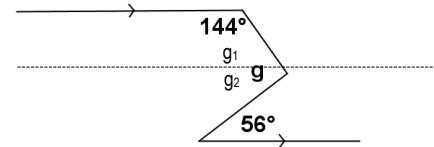
Original problem labeled



With Auxiliary Line



With auxiliary line and  $g_1$  and  $g_2$



(a) From the third diagram, we can write the equation  $g = \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$  because  $\underline{\hspace{2cm}}$

(b)   $g_1 = \underline{\hspace{1cm}}$  because  $g_1$  and  $\underline{\hspace{1cm}}$  are  $\underline{\hspace{2cm}}$  angles and the lines are  $\underline{\hspace{2cm}}$ .

(c)   $g_2 = \underline{\hspace{1cm}}$  because  $g_2$  and  $\underline{\hspace{1cm}}$  are  $\underline{\hspace{2cm}}$  angles and the lines are  $\underline{\hspace{2cm}}$ .

(d)  Since  $g = \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$ ,  $g_1 = \underline{\hspace{1cm}}$ , and  $g_2 = \underline{\hspace{1cm}}$  we can substitute values into the equation to find  $g$ .

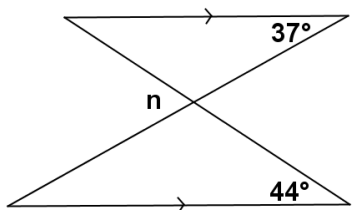
(e) Write the equation and simplify to find the value of  $g$ .  $\underline{\hspace{2cm}}$

(4) **Angles: Using relationships and auxiliary lines to solve for unknown angle measures**

transparencies, dry erase markers, erasers

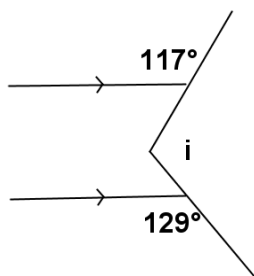
Add auxiliary lines to find the measures of  $l$ ,  $n$ , and  $r$ . Use the steps from #4 to help you. Look back at the notes page N11 to find angle relationships that might help you. Suggestions you MAY want to use are listed for you. You MAY NOT need all of the lines provided. You must write a reason for every measure you find.

(a) SUGGESTIONS: corresponding, alternate interior, vertical



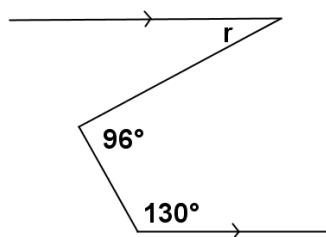
\_\_\_\_\_ because \_\_\_\_\_  
 \_\_\_\_\_ because \_\_\_\_\_  
 \_\_\_\_\_ because \_\_\_\_\_  
 \_\_\_\_\_ because \_\_\_\_\_  
 \_\_\_\_\_ because \_\_\_\_\_  
 \_\_\_\_\_ because \_\_\_\_\_  
 \_\_\_\_\_ because \_\_\_\_\_

(b) SUGGESTIONS: corresponding, angles around a point, supplementary



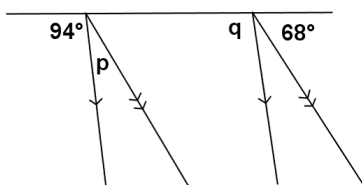
\_\_\_\_\_ because \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

(c) SUGGESTIONS: alternate interior, same side interior, supplementary



\_\_\_\_\_ because \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

(d)

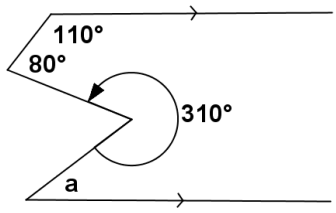


\_\_\_\_\_ because \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

(4) Finding angle measures with transversals and parallel lines

cont.

(e)



because

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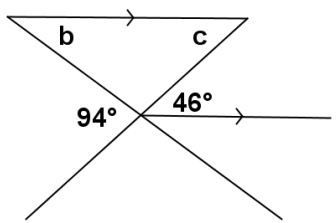
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(f)



because

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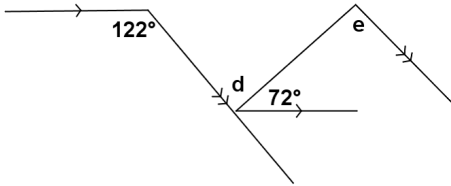
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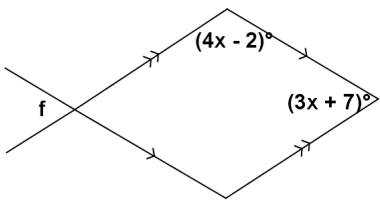
(4) Finding angle measures with transversals and parallel lines  
cont.

(g)



because

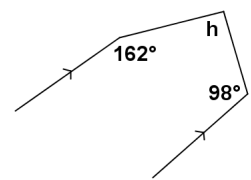
(h)



because

(5) **Exit Ticket**

Find the measure of angle  $h$  and provide a reason for every angle measure you find.

 (5) **Homework**

- (1) Review the angle relationships by using your notes like flashcards.
- (2) Complete any problems that you did not finish during classwork.