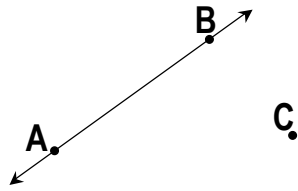


(DN) Draw a diagram like the one at right and construct a line parallel to line AB by rotation around point C. (Refer to lesson 2.9 #3.)



Name _____ Per _____
 SLO: I can solve problems involving angles formed by transversals and explain my reasoning.

(1) Angle relationships notes:
N11

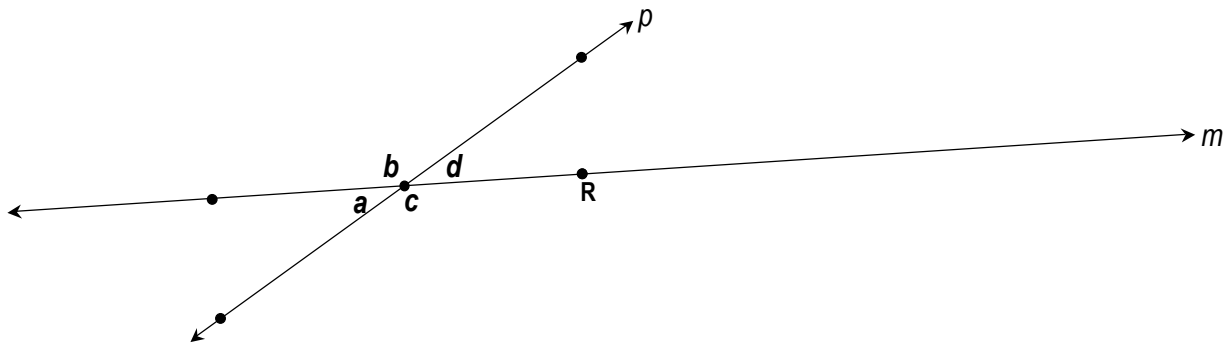
Obtain the N11 page, the descriptions, and scissors tape and glue.

(2) Rotations, transversals, and alternate interior, alternate exterior, and same side interior angles:

transparencies, dry erase markers, erasers

Trace the diagram below including all lines, points, and labels. Rotate the entire figure 180° around point R.

Draw the image points lines and labels.

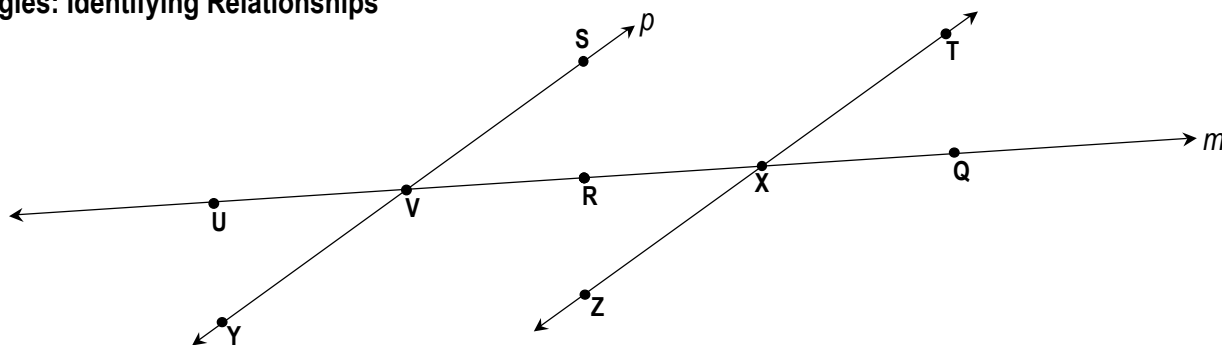


For the diagram above:

- (a) Line p and the image of line p are _____.
- (b) Line m and the image of line m are _____.
- (c) Rotations preserve _____. Use this and your notes page to describe the relationship between the angles in the diagram (measure and type of angle relationship).
 angle a and its image are _____ and they are _____ angles
 angle b and its image are _____ and they are _____ angles
 angle c and its image are _____ and they are _____ angles
 angle d and its image are _____ and they are _____ angles
- (d) Focus on the original angles c and d . Their angle measures _____ because they are a _____ of angles. So the measures of angle c and the image of angle d must also _____.
 From notes page N11, angle c and the image of angle d are _____ angles.
- (e) To summarize, rotating a line to form parallel lines shows us that:
 _____ angles are _____ when lines are parallel.
 _____ angles are _____ when lines are parallel.
 _____ angles are _____ when lines are parallel.

(3) **Angles: Identifying Relationships**

transparencies, dry erase markers, erasers



For the diagram above, name the transversal and identify all pairs of angles that have one of the three relationships you worked with in problem 2. Write an equation for each angle pair. (Remember, the angles need to be named with 3 letters.) The transversal in the diagram is _____.

Alternate Interior angles: _____

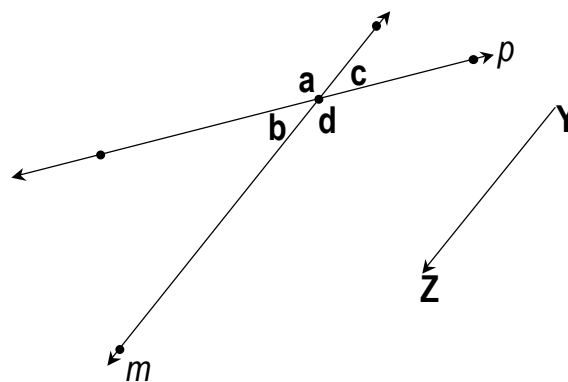
Alternate Exterior angles: _____

Same Side Interior angles: _____

 (4) **Translations, transversals, and corresponding angles**

transparencies, dry erase markers, erasers

Trace the diagram below including all lines, points, and labels. Translate the entire figure along vector YZ. Draw the image points lines and labels.



For the diagram above:

(a) Line p and the image of line p are _____.

(b) Line m and the image of line m are _____.

(c) Translations preserve _____. Use this and your notes page to describe the relationship between the angles in the diagram (measure and type of angle relationship).

angle a and its image are _____ and they are _____ angles

angle b and its image are _____ and they are _____ angles

angle c and its image are _____ and they are _____ angles

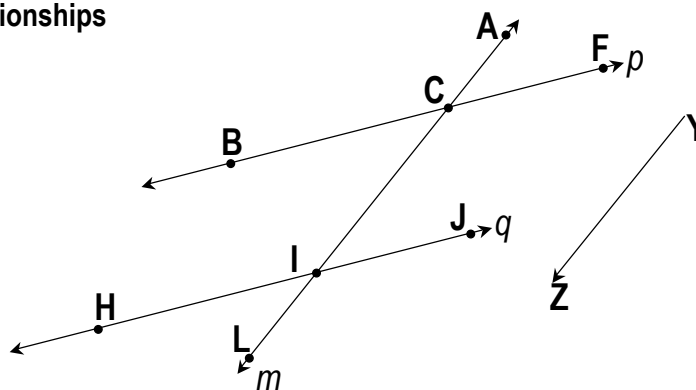
angle d and its image are _____ and they are _____ angles

(e) To summarize, translating a line to form parallel lines shows us that:

_____ angles are _____ when lines are parallel.

(5) **Angles: Identifying Relationships**

transparencies, dry erase markers, erasers



For the diagram above, name the transversal and identify all pairs of angles that are corresponding. Write an equation for each angle pair. (Remember, the angles need to be named with 3 letters.) The transversal in the diagram is _____.

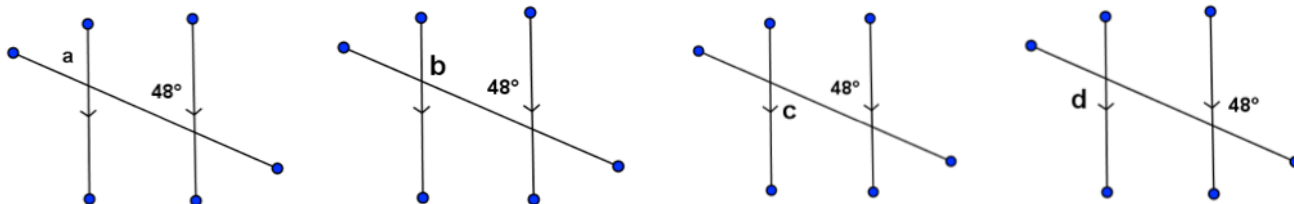
Corresponding angles: _____

(6) **Finding angle measures with transversals and parallel lines**

transparencies, dry erase markers, erasers, compass

Use your angle notes sheet to name a relationship, write an equation, and solve the problem.

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



$m\angle a = \underline{\hspace{2cm}}$ because it is $\underline{\hspace{2cm}}$ with the $\underline{\hspace{2cm}}^\circ$ angle and the lines are $\underline{\hspace{2cm}}$

$m\angle b = \underline{\hspace{2cm}}$ because it is $\underline{\hspace{2cm}}$ with the $\underline{\hspace{2cm}}^\circ$ angle and the lines are $\underline{\hspace{2cm}}$

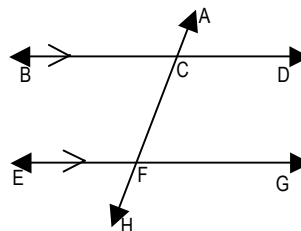
$m\angle c = \underline{\hspace{2cm}}$ because it is $\underline{\hspace{2cm}}$ with the $\underline{\hspace{2cm}}^\circ$ angle and the lines are $\underline{\hspace{2cm}}$

$m\angle d = \underline{\hspace{2cm}}$ because it is $\underline{\hspace{2cm}}$ with the $\underline{\hspace{2cm}}^\circ$ angle and the lines are $\underline{\hspace{2cm}}$

(6) **Exit Ticket**

In the diagram, find a pair of angles that have the given relationship and write an equation that relates their measures.

- (a) Alternate Interior angles
- (b) Alternate Exterior angles
- (c) Same Side Interior angles
- (d) Corresponding angles

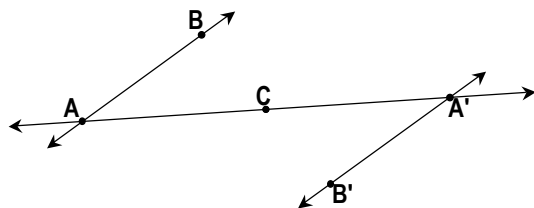


(4) **Homework** (next page)

(4) **Homework**
 (1) Refer to your work in today's do now to complete the tasks below.

 (a) Rotating a line 180° around a point that is NOT on the line results in a line _____ to the original.

 (b) Rotations preserve _____ and _____ (see N10).

 (c) Use the diagrams to answer the questions below.


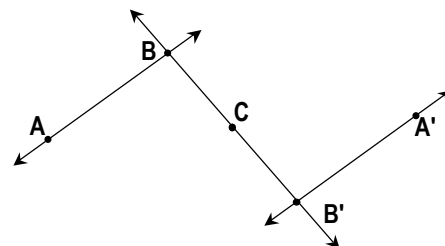
(i) _____ is the transversal in the diagram

Show that $\angle BAA' \cong$ _____

with congruence marks:

mark the other pair of

alternate interior angles with



(ii) _____ is the transversal in the diagram

Show that $\angle ABB' \cong$ _____

with congruence marks

mark the other pair of

alternate interior angles with

(d) These pairs of angles are called **alternate interior** angles because they are inside/outside (circle one) of the parallel lines AND they are on the same/opposite (circle one) side of the transversal. The pair of alternate interior angles in (i) are congruent because _____ maps to _____ under rotation and because rotation preserves _____.

 (2) Redraw the diagrams from problem 1 and show with congruence marks all pairs of

(a) Alternate exterior angles

(b) Same side interior angles

(c) Corresponding angles