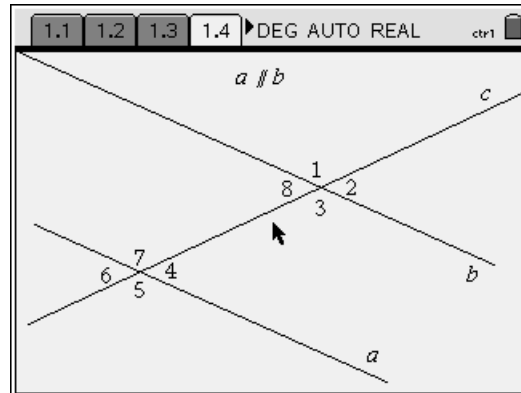


Parallel Lines and Angles

In our study of geometry, we have been defining and identifying various pairs of lines and angles. Most recently, we learned that when two lines are cut by a transversal, special pairs of angles are formed. Today we will practice identifying these special pairs of angles and will look for any relationships among the pairs of angles formed.

Problem 1

According to the diagram, lines a and b are parallel and cut by transversal line c .



- a. Identify all pairs of corresponding angles.
 \angle ___ and \angle ___, _____

- b. Identify all pairs of alternate interior angles.
 \angle ___ and \angle ___, _____

- c. Identify all pairs of alternate exterior angles.
 \angle ___ and \angle ___, _____

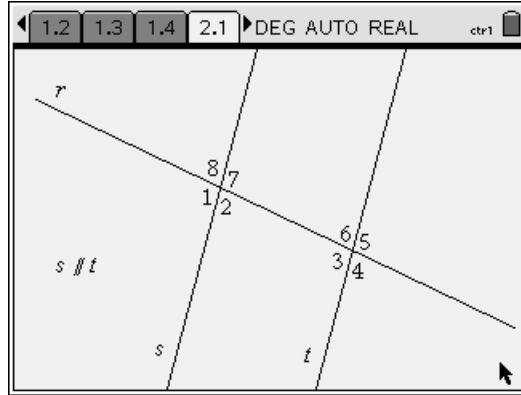
- d. Identify all pairs of consecutive (same side) interior angles.
 \angle ___ and \angle ___, _____

- e. Identify all pairs of consecutive (same side) exterior angles.
 \angle ___ and \angle ___, _____

Next measure all eight angles using your handheld. Record the measurements on the diagram.

Problem 2

According to the diagram, lines s and t are parallel and cut by transversal line r .



a. Identify all pairs of corresponding angles.
 \angle __ and \angle __, _____

b. Identify all pairs of alternate interior angles.
 \angle __ and \angle __, _____

c. Identify all pairs of alternate exterior angles.
 \angle __ and \angle __, _____

d. Identify all pairs of consecutive (same side) interior angles.
 \angle __ and \angle __, _____

e. Identify all pairs of consecutive (same side) exterior angles.
 \angle __ and \angle __, _____

Next measure all eight angles using your handheld. Record the measurements on the diagram.

What have you observed?

Considering both problems, can we make some generalizations?

If two parallel lines are cut by a transversal, then:

- corresponding angles are _____,
- alternate interior angles are _____,
- alternate exterior angles are _____,
- consecutive (same side) interior angles are _____, and
- consecutive (same side) exterior angles are _____.

Problem 3

Choose any one angle to measure.

$$m\angle __ = __$$

Then based on that one measurement, calculate the remaining seven measures.

- | | |
|--------------------|--------------------|
| $m\angle 1 = __$ | $m\angle 5 = __$ |
| $m\angle 2 = __$ | $m\angle 6 = __$ |
| $m\angle 3 = __$ | $m\angle 7 = __$ |
| $m\angle 4 = __$ | $m\angle 8 = __$ |

Now verify your calculations on your handheld.

Problem 4 Extension

Are lines f and g parallel? _____

How do you know? Be specific.
