

Name _____

Date _____

Are they Special Angles?

Are there any special relationships among angles created when you have parallel lines cut by a transversal?

Using the Are they Special Angles? Activity on your TI-Nspire and answer the following questions.

A line intersecting two or more other lines in the plane is called a _____. A transversal creates different types of angle pairs. Three types are listed below.

A pair of _____ is $\angle 1$ and $\angle 5$.

Name another pair of corresponding angles on your paper. _____

A pair of _____ angles is $\angle 3$ and $\angle 6$.

Name another pair of alternate interior angles on your paper. _____

A pair of _____ angles is $\angle 2$ and $\angle 7$.

Name another pair of alternate exterior angles on your paper. _____

When parallel lines are cut by a transversal, is there a special relationship among the angles?

Problem 1:

Investigate which angles are congruent.

1. Measure the eight angles in your figure on your TI-Nspire. Record you angle measure on your paper (make sure angles are labeled correctly).
2. Drag *line l* and determine which angles remain congruent. Drag the transversal and determine if the same angles are remaining congruent.
3. List ALL angles that remain congruent on your paper.

Name _____

Date _____

4. Angles FCE and CAB are a pair of corresponding angles.

a. List all the pairs of corresponding angles in your construction.

b. Write a conjecture describing what you observe about corresponding angles.

Corresponding Angles:

If two parallel lines are cut by a transversal, then corresponding angles are _____.

5. Angles ECA and CAG are a pair of alternate interior angles.

a. List all pairs of alternate interior angles in your construction.

b. Write a conjecture describing what you observe about alternate interior angles.

Alternate Interior Angles:

If two parallel lines are cut by a transversal, then alternate interior angles are _____.

6. Angles FCE and HAG are a pair of alternate exterior angles.

a. List all the pairs of alternate exterior angles in your construction.

Name _____

Date _____

b. Write a conjecture describing what you observe about alternate exterior angles.

Alternate Exterior Angles:

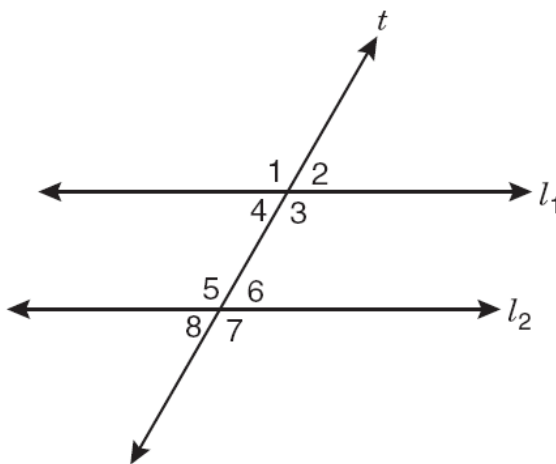
If two parallel lines are cut by a transversal, then alternate exterior angles are _____.

7. What happens if the lines you start with are not parallel? The lines below are not parallel. Move them and check whether your conjectures will work with non-parallel lines.

Do your conjectures still work for non-parallel lines cut by a transversal?

Check for Understanding:

Line t intersects parallel lines l_1 and l_2 , as shown below.



According to the information provided, which of the following pairs of angles are not always congruent?

- A Same-side interior angles 4 and 5
- B Alternate interior angles 3 and 5
- C Corresponding angles 2 and 6
- D Vertical angles 5 and 7