***Exploring***

*Parallel Lines*

**In this activity we will be exploring parallel lines and making some conjectures about the angles that are formed by parallel lines and transversals.**

**Directions:** Refer to the drawing below and complete the following questions with your observations.

***m***

***n***

***t***

***1***

***2***

***8***

***7***

***6***

***5***

***4***

***3***

1. Use a protractor to measure all 8 of the
labeled angles in the drawing.
(Write them on the drawing.)

Line ***m*** is parallel to line ***n***. Using symbols, we can say: **m**$∥n$**.** We call line ***t*** a **transversal**.

The transversal makes 2 groups of four angles. Let’s call 1,2,3,4 the “upper group” and 5,6,7,8 the “lower group”.

1. **Corresponding angles:** $∠1$ and ∠5 are called ***corresponding angles*** because they are the “top-left” angles in each group (i.e. they are in the same position).
	1. Name 3 other pairs of corresponding angles:
	2. Observe the measurements of the angles in each of the pairs of corresponding angles.
	Write a conjecture about the measures of corresponding angles:

***m***

***n***

***t***

***1***

***2***

***8***

***7***

***6***

***5***

***4***

***3***

***Interior angles***

***Exterior angles***

***Exterior angles***

1. **Alternate Interior Angles:** ∠3 and ∠6 are called ***alternate interior angles***

	1. Name another pair of alternate interior angles:
	2. Observe the measurements of each pair of alternate interior angles.
	 Write a conjecture about the measurements of alternate interior angles:
2. **Same Side Interior Angles:** ∠3 and ∠5 are called ***same-side interior angles***

	1. Name another pair of same-side interior angles:
	2. Observe the measurements of each pair of same-side interior angles.
	Write a conjecture about the measurements of same-side interior angles.
3. Use the ideas of (3) and (4) to describe **Alternate Exterior Angles:**
	1. Name two pairs of angles that could be called “Alternate Exterior Angles”:
	2. Observe the measurements of each of these pairs of angles. Write a conjecture about the measurements of alternate exterior angles:
4. Explain how you could use all of the ideas in questions 1 through 5 to prove that ∠2 and ∠8 are supplementary?