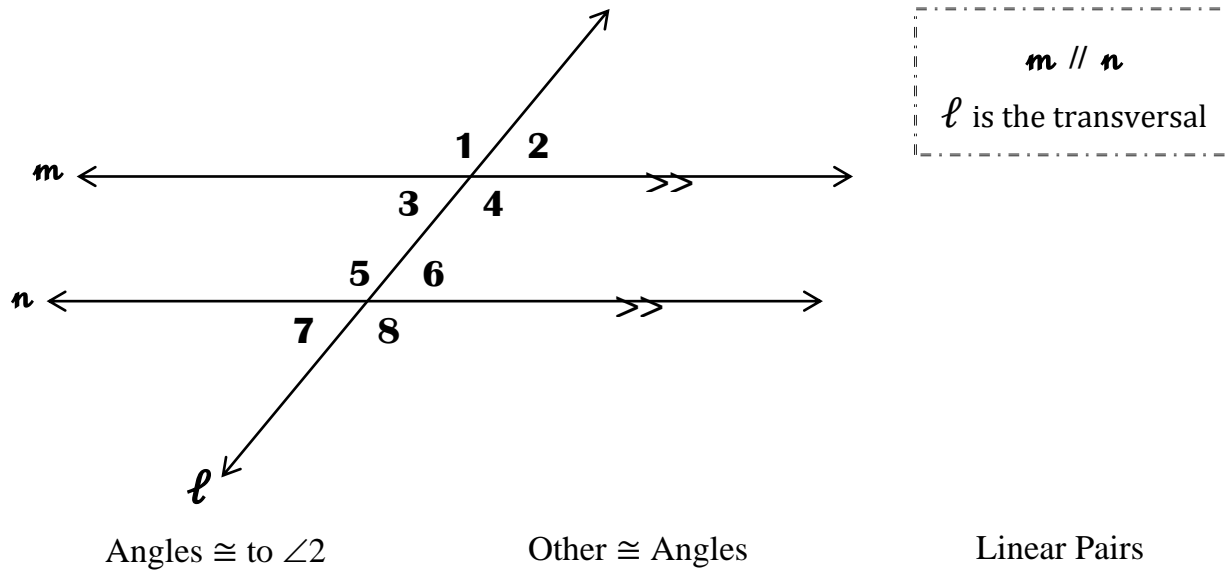


2.4 Angle Postulates & Theorems

OBJECTIVE: IDENTIFY DIFFERENT TYPES OF ANGLE RELATIONSHIPS FORMED BY INTERSECTING LINES AND PARALLEL LINES

Investigation:

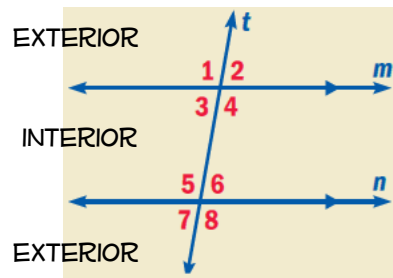
- Using the provided transparency of $\angle 2$ and transformations – rotations, reflections, and translations – decide which angles are congruent to $\angle 2$.
- Record all pairs of congruent angles.
- Are there any other pairs of congruent angles that are not congruent to $\angle 2$?
- What other angle relationships are present in the diagram?



Follow-Up Questions

1. What angle pair is represented by $\angle 2$ & $\angle 3$?
2. What does the investigation suggest about this angle pair? Is this true for other angle pairs of this type in the diagram?
3. What angle pair is represented by $\angle 1$ & $\angle 2$? What is the relationship between their measures?
4. What other pairs of angles have the same relationship?

There are interior angles and exterior angles and corresponding angles.

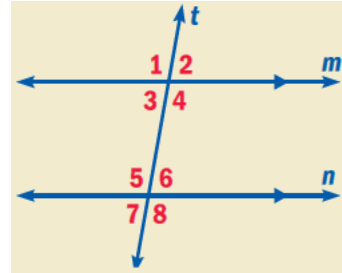


Corresponding Angles:
One is on the inside, the other is on the outside; both are on the same side and they are not adjacent.

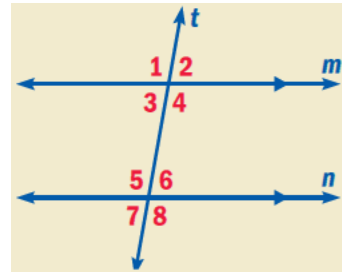
❖ **Transversals & Parallel Lines**

➤ When a transversal intersects two parallel lines, certain pair of angles that are formed are congruent or supplementary.

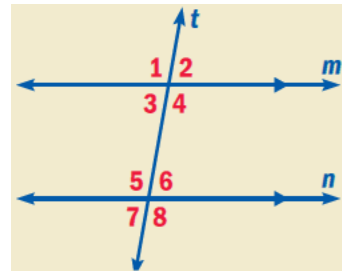
- Corresponding angles are congruent



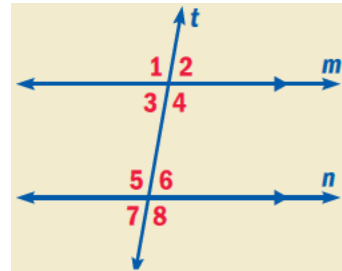
- Alternate interior angles are congruent



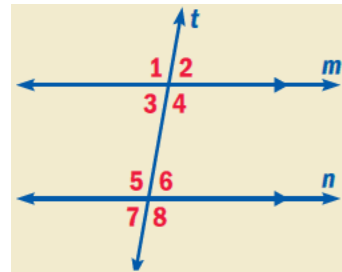
- Alternate exterior angles are congruent



- Same-side interior angles are supplementary

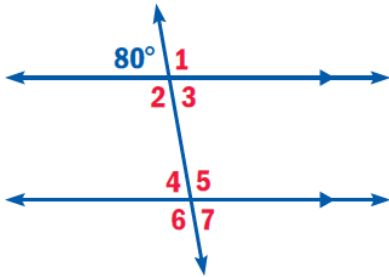


- Same-side exterior angles are supplementary

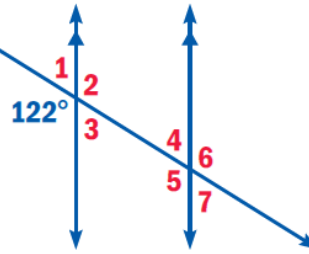


Find the measures of the numbered angles in the diagram.

1.



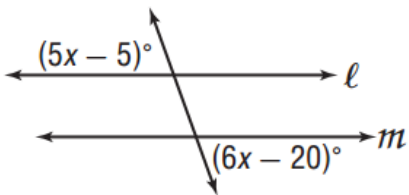
2.



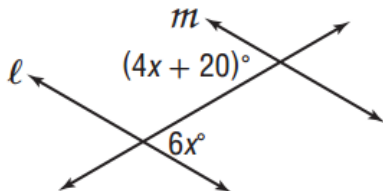
Given: $\ell \parallel m$

Identify the angle pair: alternative interior/exterior, same-side interior/exterior, or corresponding. Use its relationship to set up and solve an equation to find the value of x .

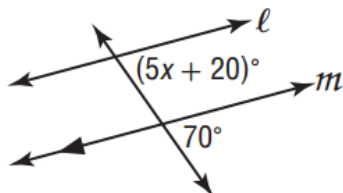
3.



4.



5.



Each of these relationships is represented by a postulate or a theorem.

- ❖ Corresponding Angle Postulate
 - If two parallel lines are intersected by a transversal, then corresponding angles are congruent
- ❖ Alternate Interior Angle Theorem
 - If two parallel lines are intersected by a transversal, then alternate interior angles are congruent.
- ❖ Alternate Exterior Angle Theorem
 - If two parallel lines are intersected by a transversal, then alternate exterior angles are congruent.
- ❖ Same-Side Interior Angle Theorem
 - If two parallel lines are intersected by a transversal, then interior angles on the same side of the transversal are supplementary.
- ❖ Same-Side Exterior Angle Theorem
 - If two parallel lines are intersected by a transversal, then exterior angles on the same side of the transversal are supplementary.