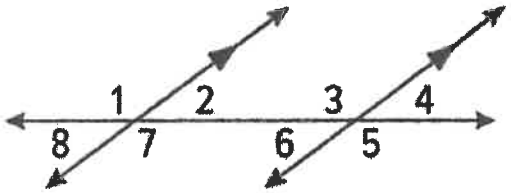
Explore Relationships Between Angles and Parallel Lines

Use dynamic geometry software to complete the Explore.

INQUIRY How do parallel lines affect the relationships between special angle pairs?

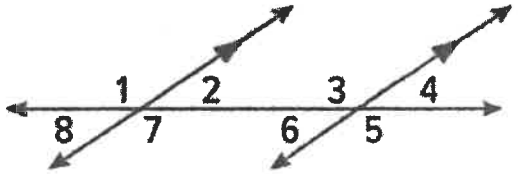
Learn Angles and Parallel Lines

If two lines are parallel and cut by a transversal, then there are special relationships in the angle pairs formed by the lines.



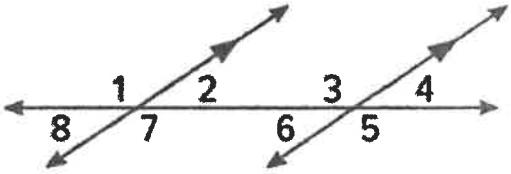
Theorem ⟶ **Corresponding Angles Theorem**

If two parallel lines are cut by a transversal, then each pair of corresponding angles is congruent.



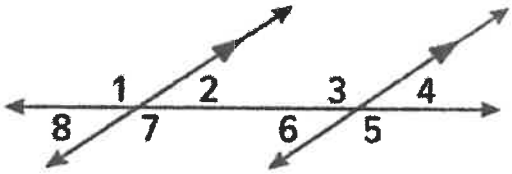
Theorem ⟶ **Alternate Interior Angles Theorem**

If two parallel lines are cut by a transversal, then each pair of alternate interior angles is congruent.



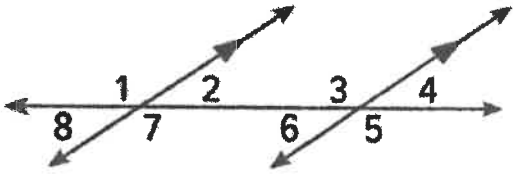
Theorem ⟶ **Consecutive Interior Angles Theorem**

If two parallel lines are cut by a transversal, then each pair of consecutive interior angles is supplementary.



Theorem ⟶ **Alternate Exterior Angles Theorem**

If two parallel lines are cut by a transversal, then each pair of alternate exterior angles is congruent.



Theorem 3.18: Perpendicular Transversal Theorem

In a plane, if a line is perpendicular to one of two parallel lines, then it is [ ] to the other.

Example If $a \parallel b$ and $a \perp t$, then $b \perp t$.