

Geometry SOL Practice

Topic #4: Angles with Parallel Lines

Notes

When parallel lines a and b ($a \parallel b$) are intersected by a transversal line t , eight angles are formed. These eight angles are grouped into two clusters: angles 1-4 (top cluster) and angles 5-8 (bottom cluster). The rules and vocabulary of angles with parallel lines are based on pairs of angles: one from the top cluster and one from the bottom cluster.

Note: Any two angles chosen are either \cong or supplementary (sum is 180°).

Corresponding (\cong) – angles in the same relative position in each cluster

Example: $\angle 1$: upper left of top cluster

$\angle 5$: upper left of bottom cluster

Alternate Interior (\cong) – angles between the parallel lines and on different sides of the transversal.

Example: $\angle 4$: left interior of top cluster

$\angle 6$: right interior of bottom cluster

Alternate Exterior (\cong) – angles outside of the parallel lines and on different sides of the transversal.

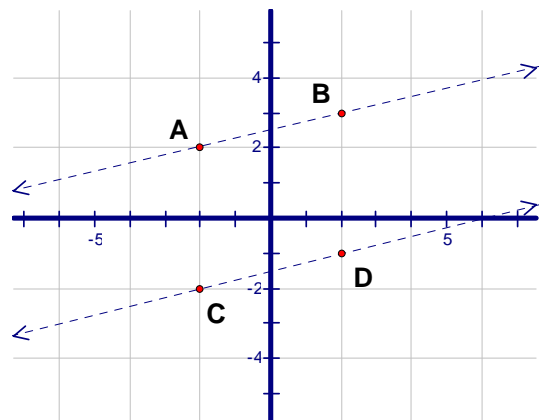
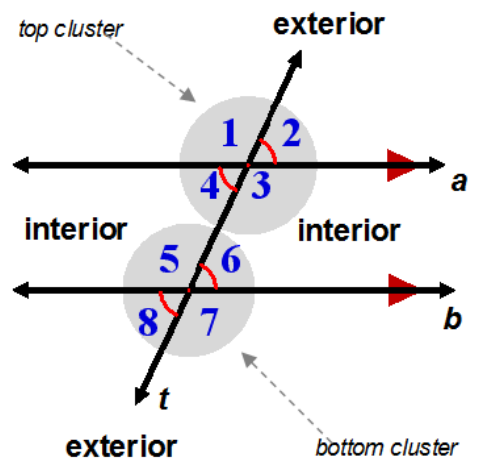
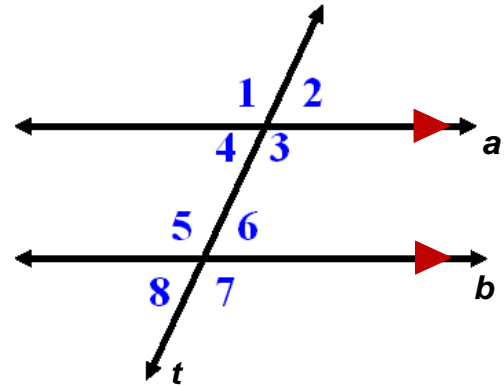
Example: $\angle 2$: right exterior of top cluster

$\angle 8$: left exterior of bottom cluster

Consecutive Interior (180°) – angles between the parallel lines and on the same side of the transversal.

Example: $\angle 4$: left interior of top cluster

$\angle 5$: left interior of bottom cluster



Slopes: Parallel Lines have *equal* slopes.

$A = (-2, 2)$, $B = (2, 3)$, $C = (-2, -2)$, $D = (2, -1)$

$$\text{Slope of } \overline{AB} = \frac{(2) - (3)}{(-2) - (2)} = \frac{1}{4}$$

$$\text{Slope of } \overline{CD} = \frac{(-2) - (-1)}{(-2) - (2)} = \frac{1}{4}$$