Section Overview
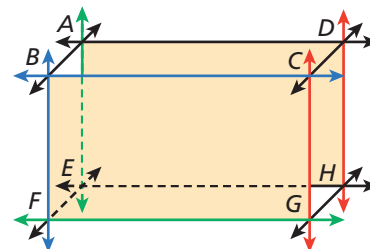
Exploring Lines and Angles

Why? Basic postulates about lines and planes will provide essential concepts for the deductive development of geometry.

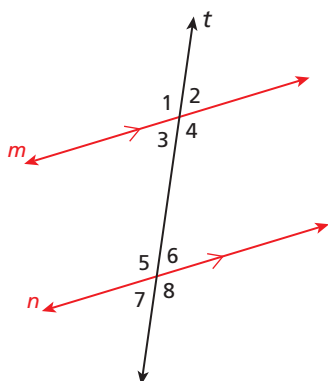| Definition	Examples
Parallel lines lie in the same plane and do not intersect.	$\overleftrightarrow{CG} \parallel \overleftrightarrow{BF}$
Perpendicular lines intersect at right angles.	$\overleftrightarrow{BC} \perp \overleftrightarrow{BF}$
Skew lines are not coplanar, are not parallel, and do not intersect.	$\overleftrightarrow{FG}$ and $\overleftrightarrow{AE}$ are skew.
Parallel planes do not intersect.	plane *BCG* ∥ plane *ADH*

Exploring Parallel Lines and Transversals

Why? Students will use properties of parallel lines and related angles to justify theorems about triangle congruence and similarity.

Given: two lines *m* and *n* cut by a transversal *t*

$m \parallel n$

Corresponding ∠s
$\angle 1 \cong \angle 5 \quad \angle 3 \cong \angle 7 \quad \angle 2 \cong \angle 6 \quad \angle 4 \cong \angle 8$

Alternate interior ∠s
$\angle 3 \cong \angle 6 \quad \angle 4 \cong \angle 5$

Alternate exterior ∠s
$\angle 1 \cong \angle 8 \quad \angle 2 \cong \angle 7$

Same-side interior ∠s are supplementary.
$m\angle 3 + m\angle 5 = \angle 180° \quad m\angle 4 + m\angle 6 = \angle 180°$

Exploring Perpendicular Lines

Why? Students will apply their knowledge of perpendicular lines when they study properties of polygons, quadrilaterals, solids, and circles.

If $\angle 1 \cong \angle 2$, then $\ell \perp m$.

If $\ell \perp p$ and $p \parallel m$, then $\ell \perp m$.

If $p \perp \ell$ and $\ell \perp m$, then $p \parallel m$.