

# 3-1

## Lines and Angles

### Content Standards

G.CO.1 Know precise definitions of . . . parallel line.  
 Prepares for G.CO.9 Prove theorems about lines and angles.

**Objectives** To identify relationships between figures in space

**Essential Understanding** Not all lines and not all planes intersect.

Take note

### Key Concept Parallel and Skew

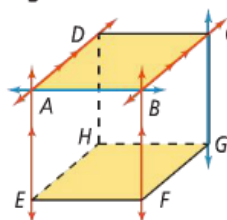
**Definition**

**Parallel lines** are coplanar lines that do not intersect. The symbol  $\parallel$  means "is parallel to."

**Symbols**

$\overleftrightarrow{AE} \parallel \overleftrightarrow{BF}$   
 $\overleftrightarrow{AD} \parallel \overleftrightarrow{BC}$

**Diagram**



Use arrows to show  $\overleftrightarrow{AE} \parallel \overleftrightarrow{BF}$  and  $\overleftrightarrow{AD} \parallel \overleftrightarrow{BC}$ .

**Skew lines**

are noncoplanar; they are not parallel and do not intersect.

$\overleftrightarrow{AB}$  and  $\overleftrightarrow{CG}$  are skew.

**Parallel planes** are planes that do not intersect.

plane  $ABCD \parallel$  plane  $EFGH$



### Problem 1 Identifying Nonintersecting Lines and Planes

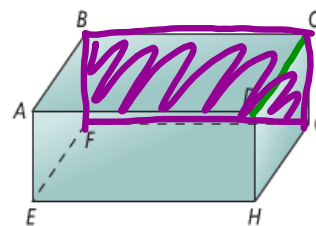
In the figure, assume that lines and planes that appear to be parallel are parallel.

A Which segments are parallel to  $\overline{AB}$ ?

$\overline{DC}$   $\overline{EF}$   $\overline{HG}$

B Which segments are skew to  $\overline{CD}$ ?

$\overline{EH}$   $\overline{FG}$   $\overline{AE}$   $\overline{BF}$



C. What are 2 pairs of  $\parallel$  planes?

$ABCD \parallel EFGH$   $BCFG \parallel ADHE$

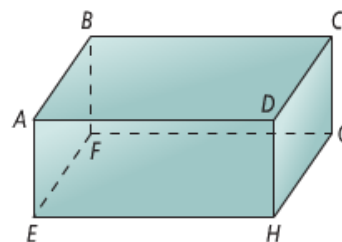
D What are two segments parallel to plane  $BCGF$ ?

$\overline{AD}$   $\overline{EH}$   $\overline{DH}$   $\overline{AE}$



**Got It?** 1. Use the figure in Problem 1.

- Which segments are parallel to  $\overline{AD}$ ?
- Reasoning** Explain why  $\overline{FE}$  and  $\overline{CD}$  are *not* skew.
- What is another pair of parallel planes?
- What are two segments parallel to plane  $DCGH$ ?



a.  $\overline{BC}$   $\overline{EH}$   $\overline{FG}$

b. coplanar

c.  $DCGH \parallel ABFE$

d.  $\overline{AB}$   $\overline{EF}$   $\overline{AE}$   $\overline{BF}$

Name

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Notes 3.1 Day 2