Name _____ Date _____

LESSON 3.1

Study Guide

For use with pages 146–152

GOAL **Identify angle pairs formed by three intersecting lines.**

Vocabulary

Two lines are **parallel lines** if they do not intersect and are coplanar.

Two lines are **skew lines** if they do not intersect and are not coplanar.

Two planes that do not intersect are **parallel planes.**

A **transversal** is a line that intersects two or more coplanar lines at different points.

When two lines are cut by a transversal, two angles are **corresponding angles** if they have corresponding positions.

When two lines are cut by a transversal, two angles are **alternate interior angles** if they lie between the two lines and on opposite sides of the transversal.

When two lines are cut by a transversal, two angles are **alternate exterior angles** if they lie outside the two lines and on opposite sides of the transversal.

When two lines are cut by a transversal, two angles are **consecutive interior angles** if they lie between the two lines and on the same side of the transversal.

Postulate 13 Parallel Postulate: If there is a line and a point not on the line, then there is exactly one line through the point parallel to the given line.

Postulate 14 Perpendicular Postulate: If there is a line and a point not on the line, then there is exactly one line through the point perpendicular to the given line.

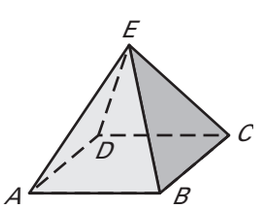
EXAMPLE 1 ## Identify relationships in space

Think of each segment in the diagram as part of a line. Which line(s) in the diagram appear to fit the description?

a. Parallel to $\overleftrightarrow{AB}$

b. Skew to $\overleftrightarrow{AB}$

c. Parallel to $\overleftrightarrow{BC}$



Solution

a. Only $\overleftrightarrow{CD}$ is parallel to $\overleftrightarrow{AB}$.

b. $\overleftrightarrow{ED}$ and $\overleftrightarrow{EC}$ are skew to $\overleftrightarrow{AB}$.

c. Only $\overleftrightarrow{AD}$ is parallel to $\overleftrightarrow{BC}$.

Copyright © by McDougal Littell, a division of Houghton Mifflin Company.

Name _____ Date _____

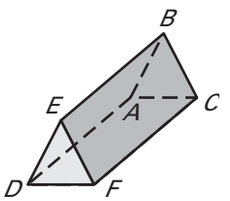
LESSON 3.1

Study Guide *continued*

For use with pages 146–152

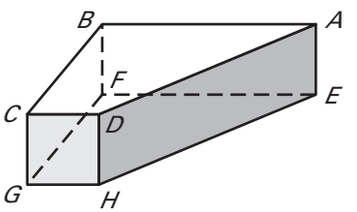
Exercises for Example 1

Think of each segment in the diagram as part of a line. Fill in the blank with *parallel*, *skew*, or *perpendicular*.



1. $\overleftrightarrow{DE}$ and $\overleftrightarrow{CF}$ are __?__.
2. $\overleftrightarrow{AD}$, $\overleftrightarrow{BE}$, and $\overleftrightarrow{CF}$ are __?__.
3. Plane ABC and plane DEF are __?__.
4. $\overleftrightarrow{BE}$ and $\overleftrightarrow{AB}$ are __?__.

Think of each segment in the diagram as part of a line. There may be more than one right answer.

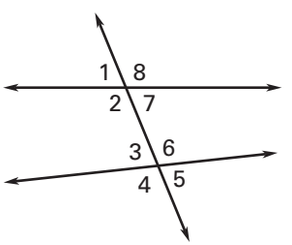


5. Name a line perpendicular to $\overleftrightarrow{HD}$.
6. Name a plane parallel to plane DCH.
7. Name a line parallel to $\overleftrightarrow{BC}$.
8. Name a line skew to $\overleftrightarrow{FG}$.

EXAMPLE 2 Identify angle relationships

Identify all pairs of angles of the given type.

a. Corresponding
b. Alternate interior
c. Alternate exterior
d. Consecutive interior



Solution

a. $\angle 1$ and $\angle 3$
$\angle 2$ and $\angle 4$
$\angle 8$ and $\angle 6$
$\angle 7$ and $\angle 5$

b. $\angle 2$ and $\angle 6$
$\angle 7$ and $\angle 3$

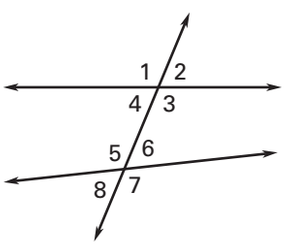
c. $\angle 1$ and $\angle 5$
$\angle 8$ and $\angle 4$

d. $\angle 2$ and $\angle 3$
$\angle 7$ and $\angle 6$

Exercises for Example 2

Complete the statement with *corresponding*, *alternate interior*, *alternate exterior*, or *consecutive interior*.

9. $\angle 3$ and $\angle 5$ are __?__ angles.
10. $\angle 2$ and $\angle 6$ are __?__ angles.
11. $\angle 1$ and $\angle 7$ are __?__ angles.
12. $\angle 4$ and $\angle 5$ are __?__ angles.



Copyright © by McDougal Littell, a division of Houghton Mifflin Company.