

Reteaching with Practice

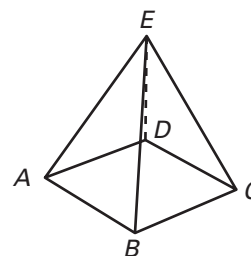
For use with pages 129–134

GOAL**Identify relationships between lines and identify angles formed by transversals****VOCABULARY**Two lines are **parallel lines** if they are coplanar and do not intersect.Lines that do not intersect and are not coplanar are called **skew lines**.Two planes that do not intersect are called **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 occupy corresponding positions.When two lines are cut by a transversal, two angles are **alternate exterior angles** if they lie outside the two lines on opposite sides of the transversal.When two lines are cut by a transversal, two angles are **alternate interior angles** if they lie between the two lines on opposite sides of the transversal.When two lines are cut by a transversal, two angles are **consecutive interior angles** (or **same side interior angles**) if they lie between the two lines 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****Identifying Relationships in Space**

Think of each segment in the diagram as part of a line.

Which of the lines appear to fit the description?

- a. parallel to \overleftrightarrow{AB} b. skew to \overleftrightarrow{AB}
 c. parallel to \overleftrightarrow{BC} d. Are planes ABE and CDE parallel?

**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} .
 d. No, the two planes are not parallel. At the very least, we can see that the two planes intersect at point E .

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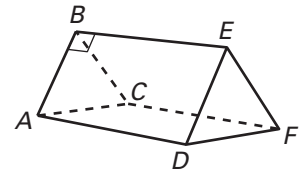
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Exercises for Example 1

Think of each segment in the diagram as part of a line.

Fill in the blank with *parallel*, *skew*, or *perpendicular*.

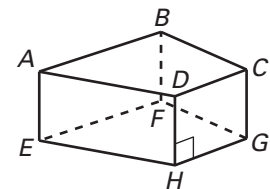
- \overleftrightarrow{DE} and \overleftrightarrow{CF} are _____.
- \overleftrightarrow{AD} , \overleftrightarrow{BE} , and \overleftrightarrow{CF} are _____.
- Plane ABC and plane DEF are _____.
- \overleftrightarrow{BE} and \overleftrightarrow{AB} are _____.



Think of each segment in the diagram as part of a line.

There may be more than one right answer.

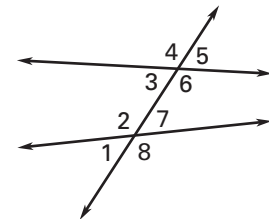
- Name a line perpendicular to \overleftrightarrow{HD} .
- Name a plane parallel to DCH .
- Name a line parallel to \overleftrightarrow{BC} .
- Name a line skew to \overleftrightarrow{FG} .



EXAMPLE 2 Identifying Angle Relationships

List all pairs of angles that fit the description.

- corresponding
- alternate exterior
- alternate interior
- consecutive interior



SOLUTION

- | | | | |
|------------------------------|------------------------------|------------------------------|------------------------------|
| a. $\angle 1$ and $\angle 3$ | b. $\angle 1$ and $\angle 5$ | c. $\angle 2$ and $\angle 6$ | d. $\angle 2$ and $\angle 3$ |
| $\angle 2$ and $\angle 4$ | $\angle 8$ and $\angle 4$ | $\angle 7$ and $\angle 3$ | $\angle 7$ and $\angle 6$ |
| $\angle 8$ and $\angle 6$ | | | |
| $\angle 7$ and $\angle 5$ | | | |

Exercises for Example 2

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

- $\angle 4$ and $\angle 8$ are _____ angles.
- $\angle 2$ and $\angle 6$ are _____ angles.
- $\angle 1$ and $\angle 8$ are _____ angles.
- $\angle 8$ and $\angle 2$ are _____ angles.
- $\angle 4$ and $\angle 5$ are _____ angles.
- $\angle 5$ and $\angle 1$ are _____ angles.

