

LESSON  
1.1**Study Guide**

For use with pages 2–8

**GOAL** Name and sketch geometric figures.**Vocabulary**

A **point** has no dimension, a **line** has one dimension, and a **plane** has two dimensions.

**Collinear points** are points that lie on the same line.

**Coplanar points** are points that lie in the same plane.

Line  $AB$  (written as  $\overleftrightarrow{AB}$ ) passes through points  $A$  and  $B$ .

The **line segment**  $AB$ , or **segment**  $\overline{AB}$  (written as  $\overline{AB}$ ), consists of the **endpoints**  $A$  and  $B$  and all points on  $\overline{AB}$  between  $A$  and  $B$ .

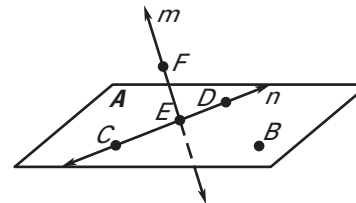
The **ray**  $AB$  (written as  $\overrightarrow{AB}$ ) consists of the endpoint  $A$  and all points on  $\overleftrightarrow{AB}$  that lie on the same side of  $A$  as  $B$ .

If point  $C$  lies on  $\overleftrightarrow{AB}$  between  $A$  and  $B$ , then  $\overrightarrow{CA}$  and  $\overrightarrow{CB}$  are **opposite rays**.

Two or more geometric figures *intersect* if they have one or more points in common. The **intersection** of the figures is the set of points the figures have in common.

**EXAMPLE 1** Name points, lines, planes, segments, and rays

- Give two other names for  $\overleftrightarrow{EF}$ .  
Give another name for plane  $A$ .
- Name three points that are collinear.  
Name four points that are coplanar.
- Give another name for  $\overline{EF}$ .
- Name a ray with endpoint  $E$  that is an opposite ray of  $\overrightarrow{EC}$ .

**Solution**

- Other names for  $\overleftrightarrow{EF}$  are  $\overleftrightarrow{FE}$  and line  $m$ . Other names for plane  $A$  are plane  $BCD$  and plane  $CDE$ .
- Points  $C$ ,  $E$ , and  $D$  lie on the same line, so they are collinear. Points  $B$ ,  $C$ ,  $E$ , and  $D$  lie in the same plane, so they are coplanar.
- Another name for  $\overline{EF}$  is  $\overline{FE}$ .
- $\overrightarrow{ED}$  is a ray with endpoint  $E$  that is an opposite ray of  $\overrightarrow{EC}$ .

LESSON  
1.1**Study Guide** *continued*  
For use with pages 2–8**Exercises for Example 1****Use the diagram in Example 1.**

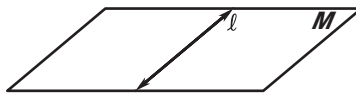
1. Give two other names for  $\overleftrightarrow{CD}$ .
2. Give another name for  $\overline{CE}$ .
3. Name a ray with endpoint  $F$ .
4. Name a point that is *not* collinear with  $C$ ,  $E$ , and  $D$ .
5. Name a point that is *not* coplanar with  $B$ ,  $C$ ,  $E$ , and  $D$ .
6. Give another name for  $\overleftrightarrow{DE}$ .

**EXAMPLE 2****Sketch intersections of lines and planes****Perform the indicated operations.**

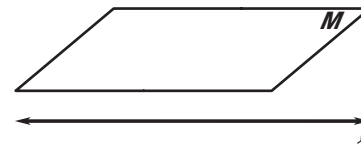
- a. Sketch a plane and a line that is in the plane.
- b. Sketch a plane and a line that does not intersect the plane.
- c. Sketch a plane and a line that intersects the plane at a point.
- d. Sketch two planes that intersect in a line.

**Solution**

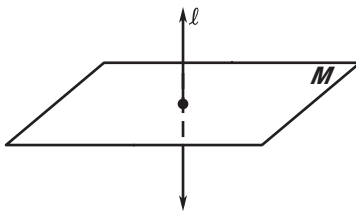
a.



b.



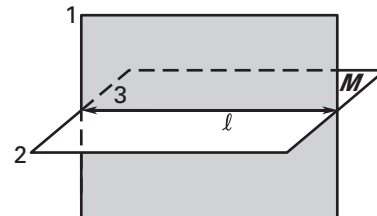
c.



d. **STEP 1** Draw one plane as if you are facing it. Shade the plane.

**STEP 2** Draw a second plane that is horizontal. Shade this plane a different color. Use dashed lines to show where one plane is hidden.

**STEP 3** Draw the line of intersection.

**Exercises for Example 2****Sketch the figure described.**

7. Two lines that lie in a plane and intersect at one point
8. One line that lies in a plane, and two lines that do not lie in the plane