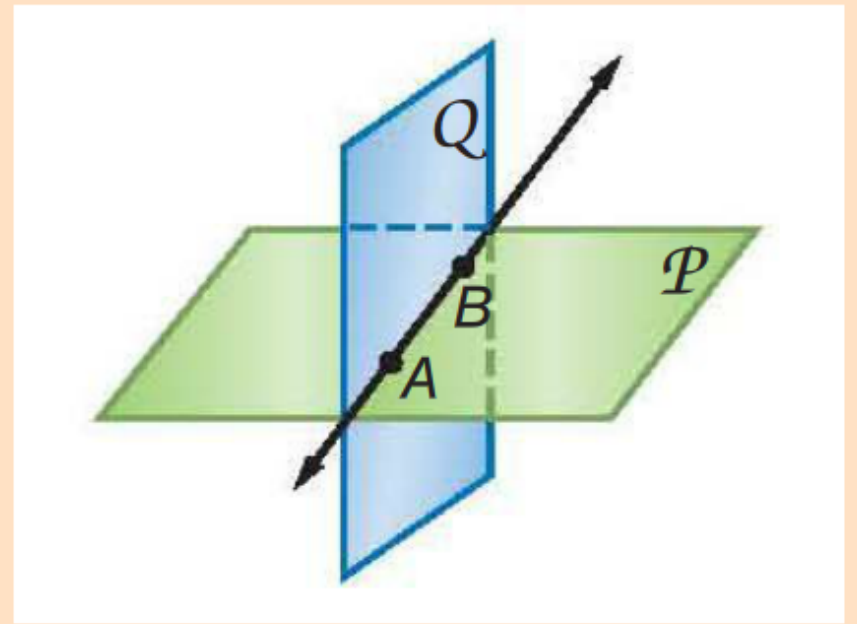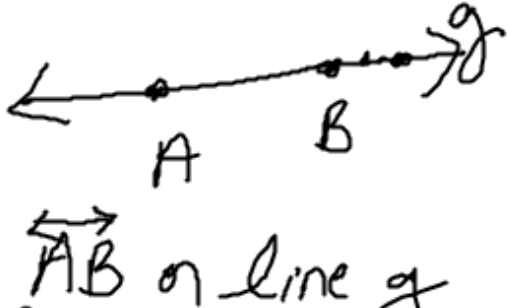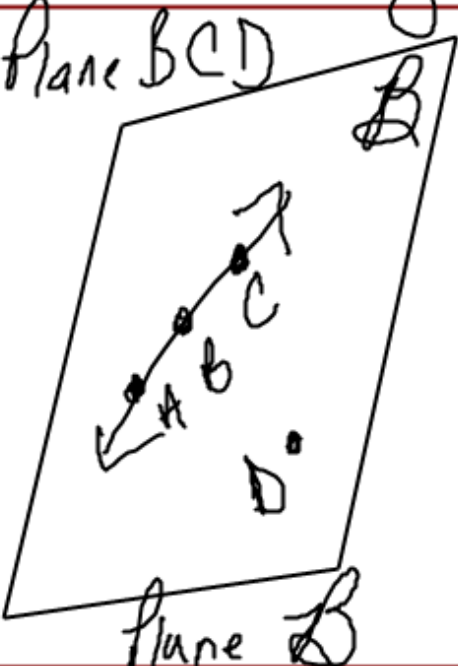# Points, Lines and Planes

You will identify and model, points, lines, and planes.
You will identify intersecting lines and planes.
You will use correct terminology to describe geometric figures.

Undefined Terms

	Description	Named by	Example
Point	location in space	Capital Letter	·A
Line	series of points goes in 2 directions	Use 2 points or lower case script letter	$\overleftrightarrow{AB}$ or line g
Plane	collection of points or lines that form a flat surface	3 noncolliniear points or Capital Script letter	Plane BCD Plane B

Collinear — on the same line

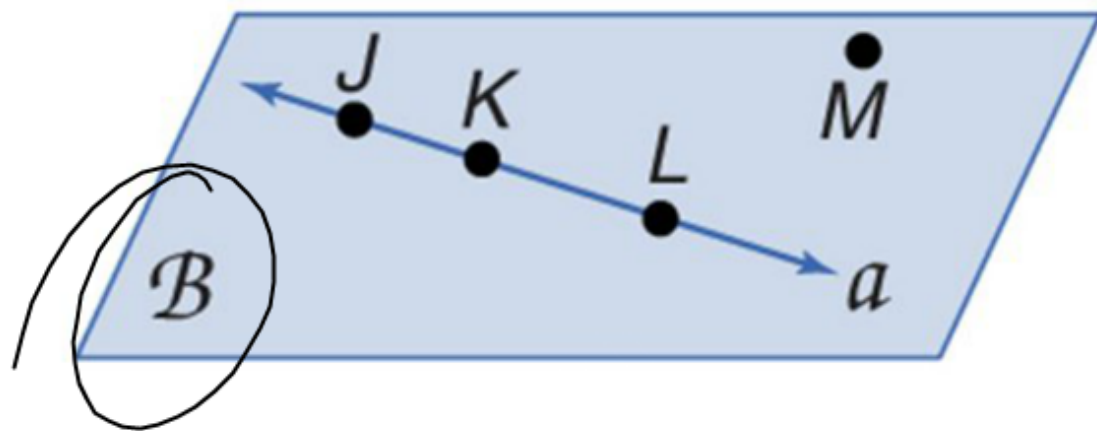**Coplanar** — in the same plane

EXAMPLE 1

A. Use the figure to name a line containing point *K*.
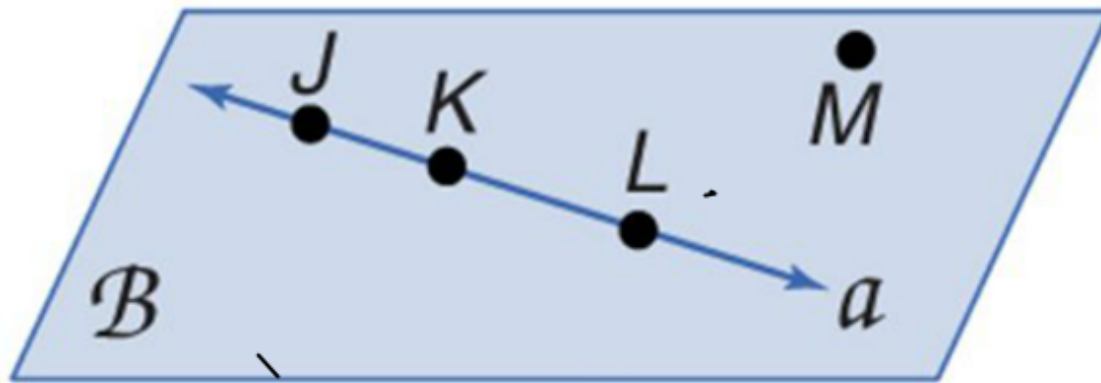
$\overrightarrow{JK}$ or line *a*

or $\overleftrightarrow{KL}$ or $\overrightarrow{JL}$, etc

EXAMPLE 1

B. Use the figure to name a plane containing point *L.*

Plane M J K   Plane B

NOT Plane JKL
Because they are collinear
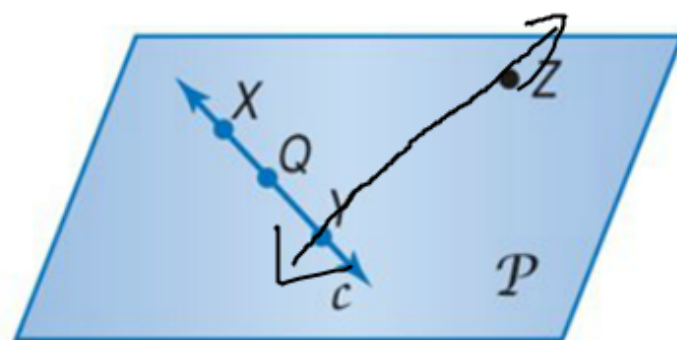
EXAMPLE 1 ✓ **Check Your Progress** ☑ **Check**Point

A. Use the figure to name a line containing the point **X**.

A. line X

B. line c

C. line Z

D. $\overleftrightarrow{YZ}$

EXAMPLE 1   ✓ **Check Your Progress**   ✓**Check**Point

B. Use the figure to name a plane containing point Z.
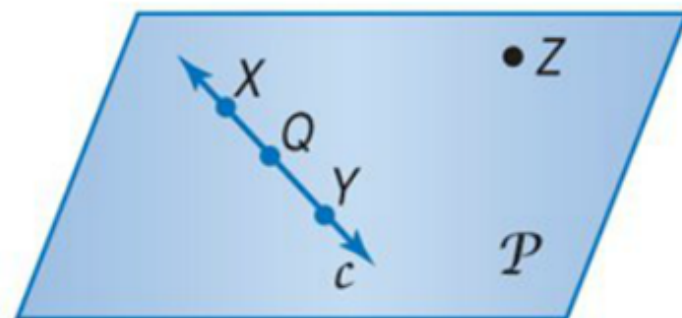
A. plane *XY*

B. plane *c*

C. plane *XQY*

D. plane *P*

A. Name the geometric shape modeled by a colored dot on a map used to mark the location of a city.

A. point

B. line segment
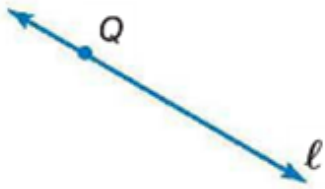
C. plane

D. none of the above

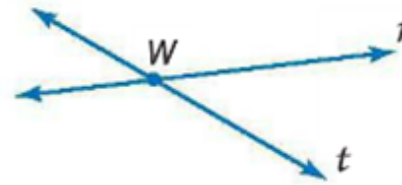**B.** Name the geometric shape modeled by the ceiling of your classroom.
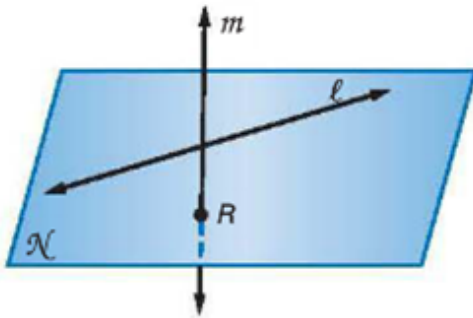
A. point

B. line segment

C. plane

D. none of the above

Point Q is on ℓ.
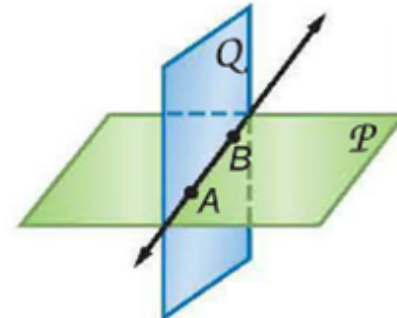
Line ℓ contains Q.

Line ℓ passes through Q.

Lines r and t intersect at W.

Point W is the intersection of r and t.

Point W is on r. Point W is on t.

Line ℓ and point R are in $\mathcal{N}$.

Point R lies in $\mathcal{N}$.

Plane $\mathcal{N}$ contains R and ℓ.

Line m intersects $\mathcal{N}$ at R.

Point R is the intersection of m with $\mathcal{N}$.

Lines ℓ and m do not intersect.

$\overrightarrow{AB}$ is in P and Q.

Points A and B lie in both P and Q.

Planes P and Q both contain $\overleftrightarrow{AB}$.

Planes P and Q intersect in $\overleftrightarrow{AB}$.

$\overleftrightarrow{AB}$ is the intersection of P and Q.

Points, Lines, and Planes

Refer to the figure.

1. Name a line that contains point *E*.

line *q*   *BE*
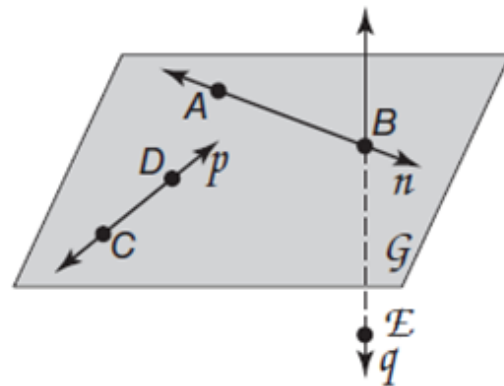
2. Name a point contained in line *n*.

A or B

3. What is another name for line *p*?

CD

4. Name the plane containing lines *n* and *p*.

Plane *y*   Plane *DAB*

There are several possible answers for each of these — You only have to give one.
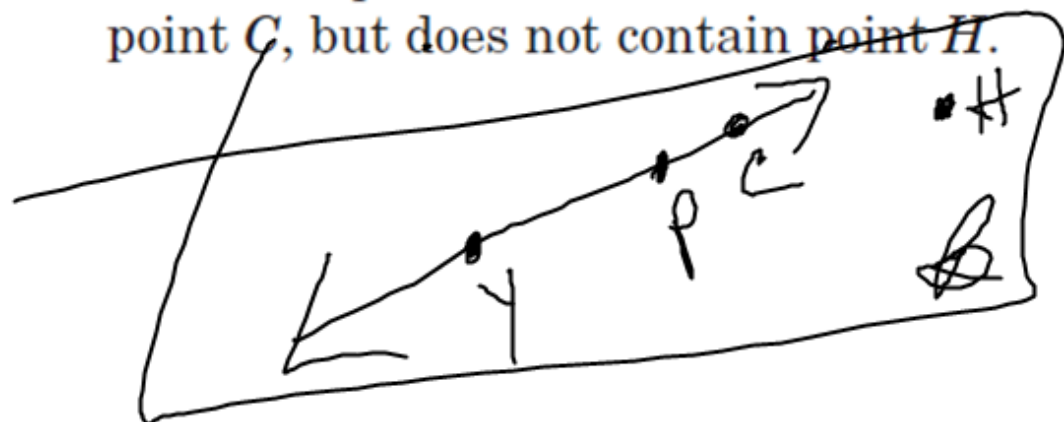
Draw and label a figure for each relationship.

5. Point K lies on $\overleftrightarrow{RT}$.

6. Plane $\mathcal{J}$ contains line s.

7. $\overleftrightarrow{YP}$ lies in plane $\mathcal{B}$ and contains point C, but does not contain point H.
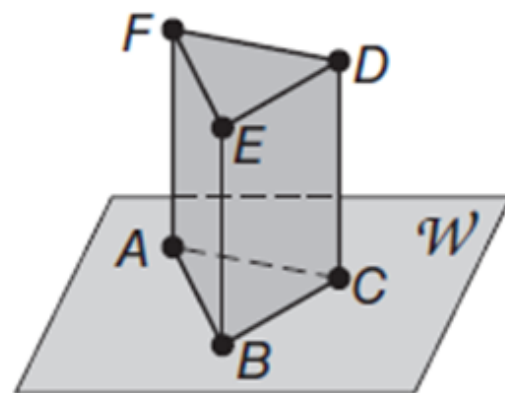

8. Lines q and f intersect at point Z in plane $\mathcal{U}$.

Refer to the figure.

9. How many planes are shown in the figure?

5

10. How many of the planes contain points *F* and *E*?

2

11. Name four points that are coplanar. (other answers also)

A, E, F, B

12. Are points *A*, *B*, and *C* coplanar? Explain.

yes, they are all in Plane W