

Section 1-2

In this section we will discuss the undefined terms point, line, and plane. These figures are intuitive and approximate examples can be seen in our every day lives.

Point

Point - the simplest figure in geometry.

A point has no size and no dimension.

Notation: Points are named by capital letters.

Example: Points A and B

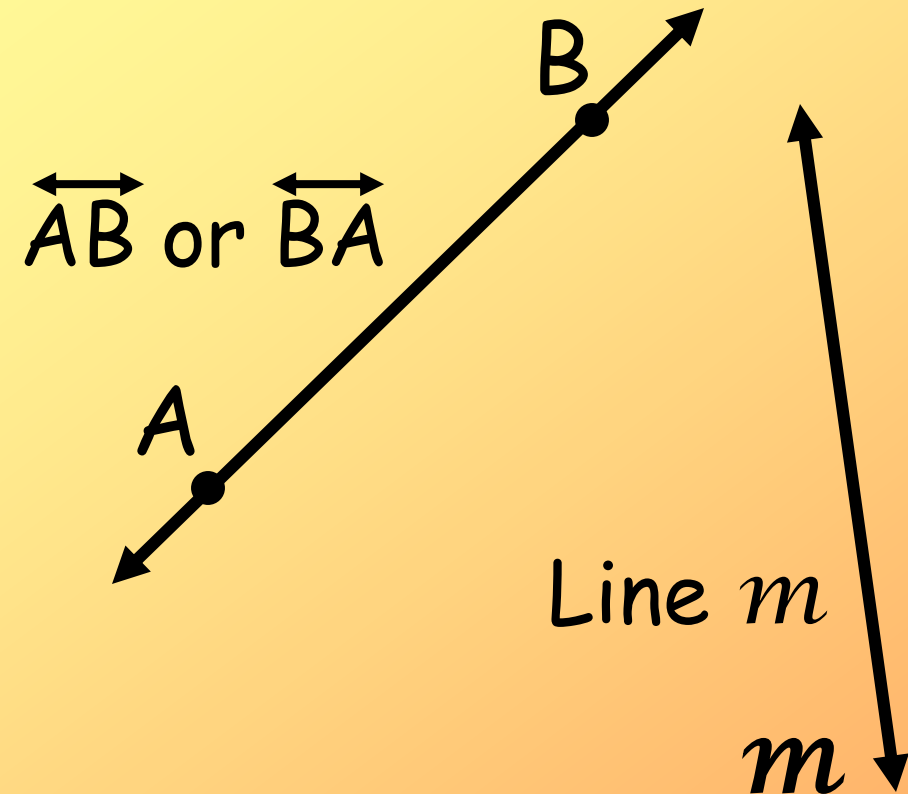
A •

B •

Line: An infinite set of points that extend in two

A line has only one dimension.

Notation: two points that lie on the line or by using a lower case letter.



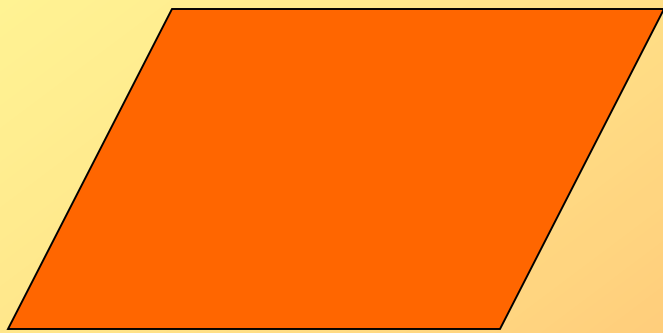
✓ Given any two points, you can draw exactly one line.

✓ You can draw an infinite amount of lines through one point.

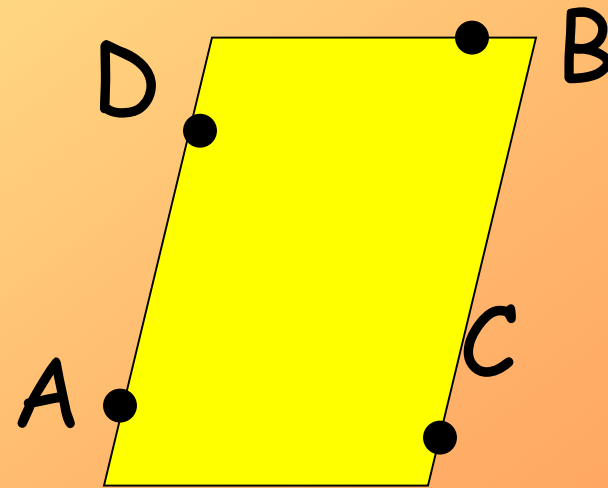
Line

Plane: two dimensional figure that extends in both dimensions forever and has no thickness.

Notation: by one capital letter or by three to four points that lie in the plane.



Plane M



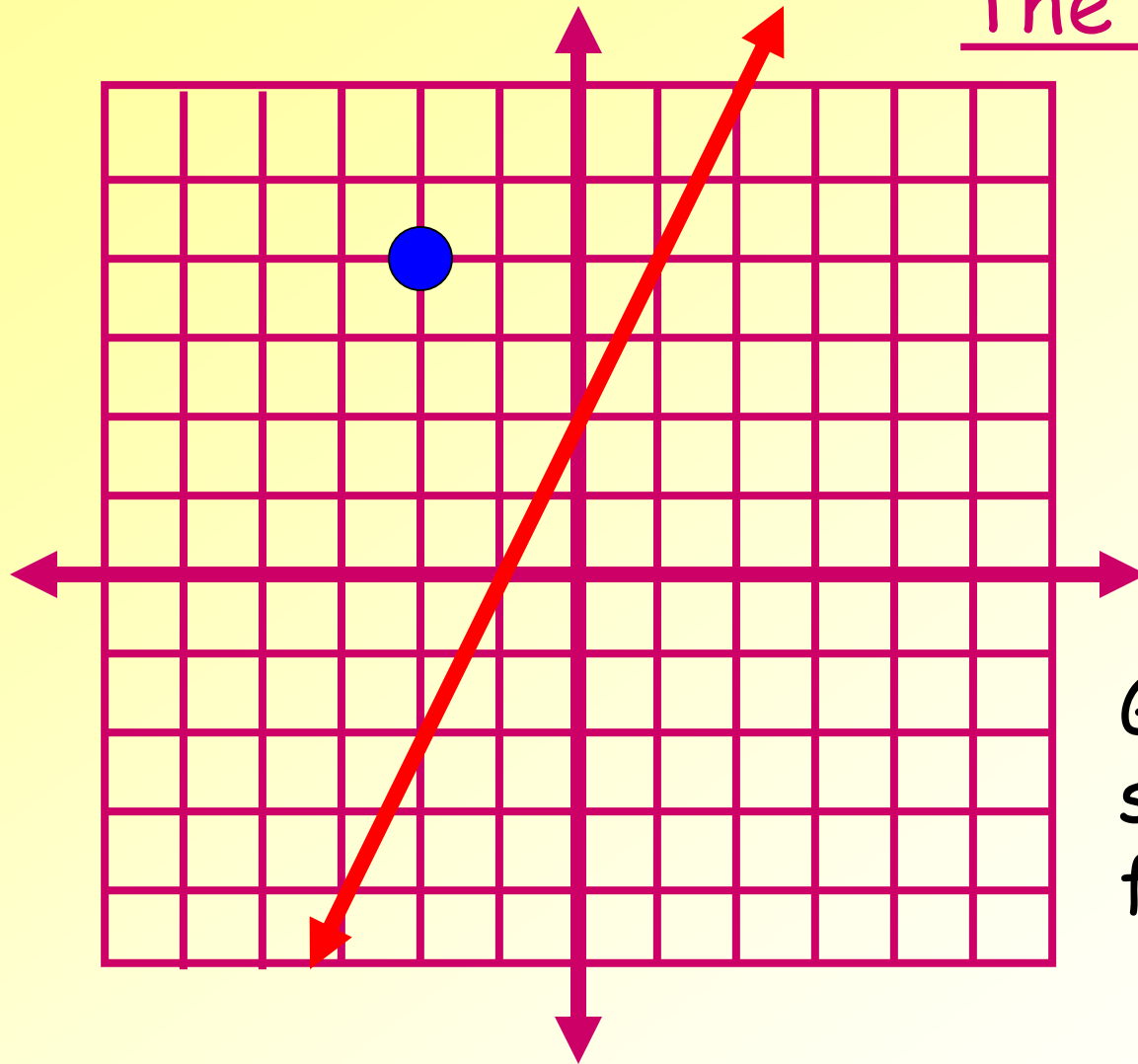
Plane ABC

or Plane ABCD

Plane

Where have you seen points, lines, and planes before in math class?

The Coordinate Plane

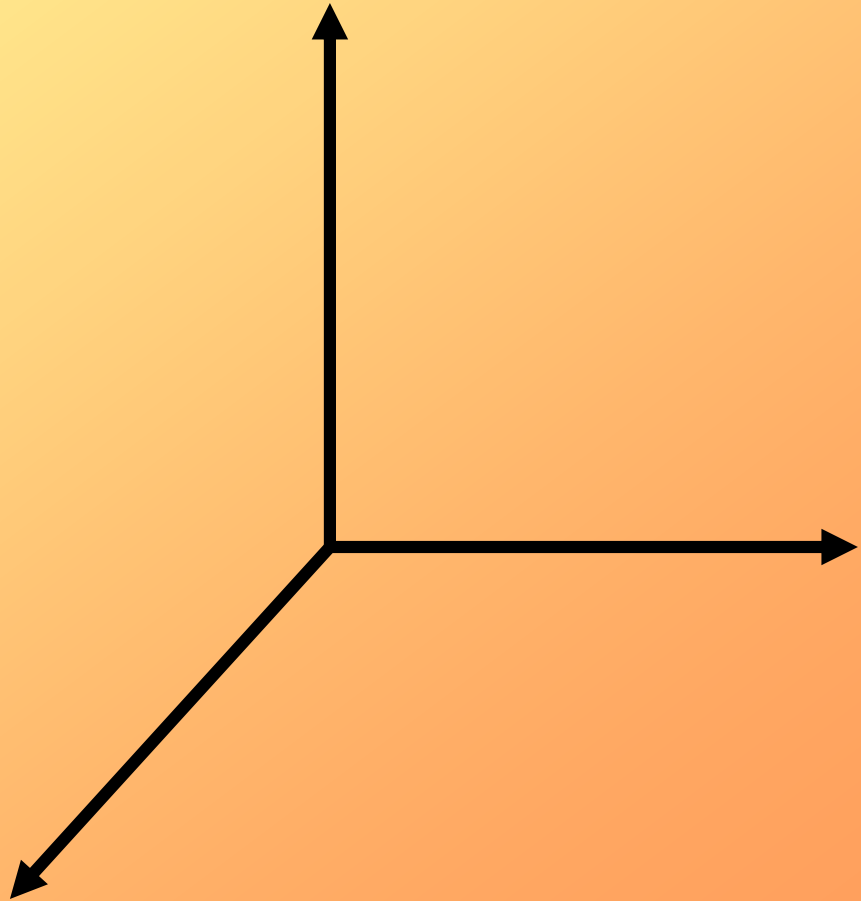


Plotting Points.
Ex. $(-2, 4)$

Graphing Lines in
slope-intercept
form. Ex. $y = 2x + 2$

Space is the set of all points. Space has three dimensions.

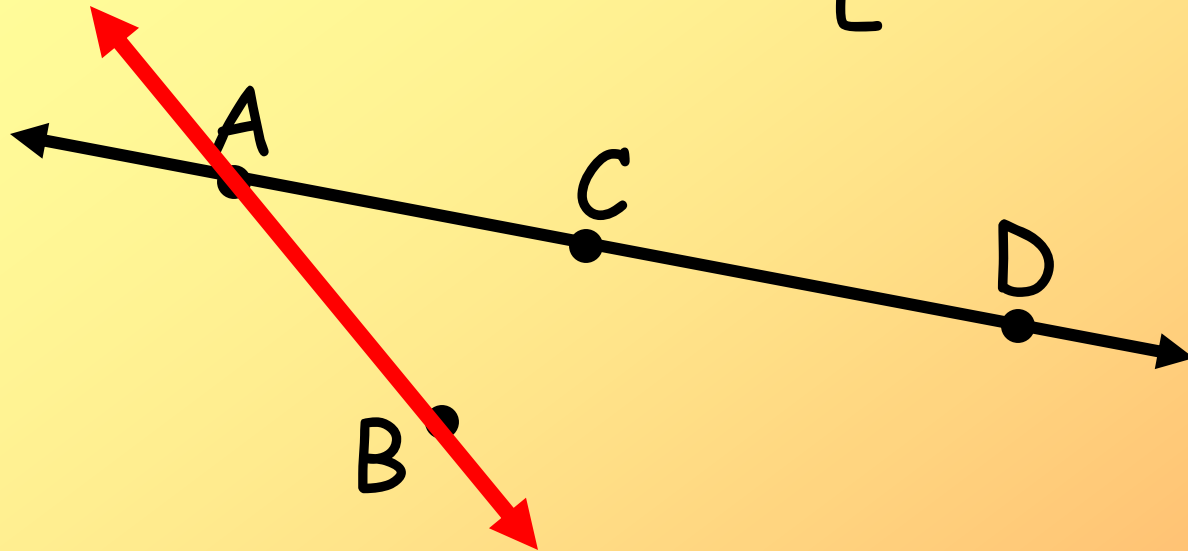
Space



Collinear Points: points that lie on the same line.

• E

Are A and B collinear points?



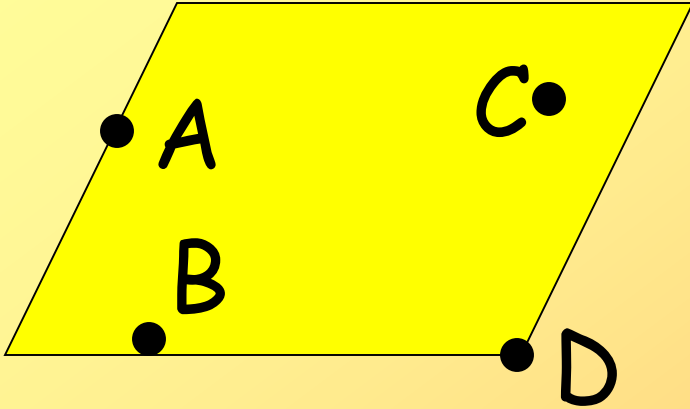
Yes!! In fact any two points are collinear. We can always draw exactly one line between two given points.

A, C, and D are collinear points.

B, C, and D are noncollinear points.

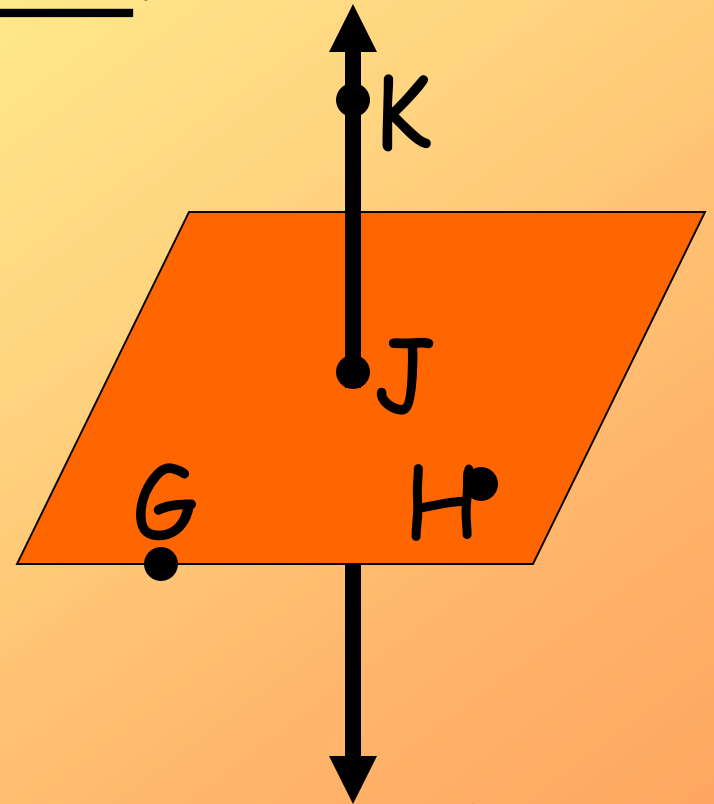
Collinear Points

Coplanar Points: points that lie on the same plane.



A, B, C, and D are coplanar points.

A plane can be drawn through any three non-collinear points.



K, J, G, and H are noncoplanar points.

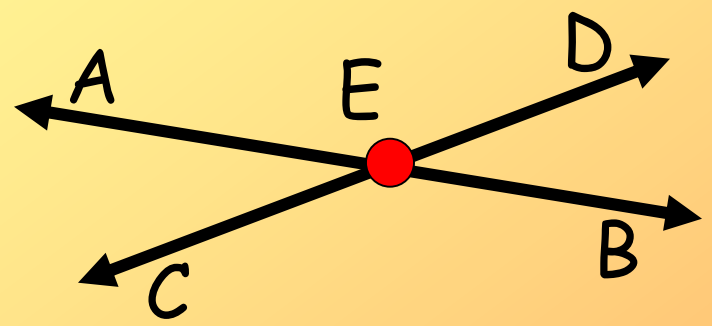
Coplanar Points

The intersection of two figures is the set of points that are in both figures.

Intersection of Figures

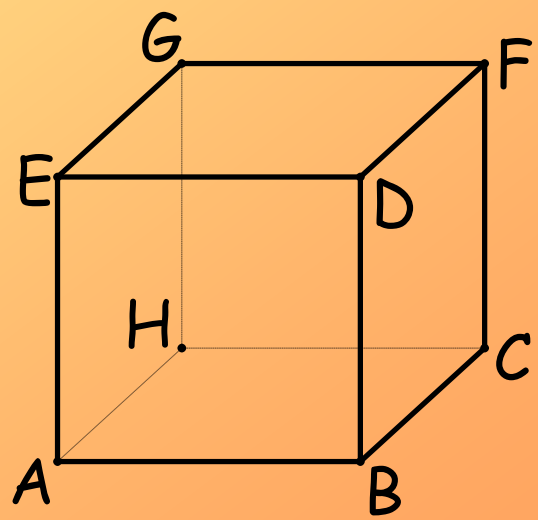
The symbol for "to intersect" is \cap

If two lines intersect, then they intersect at a point.



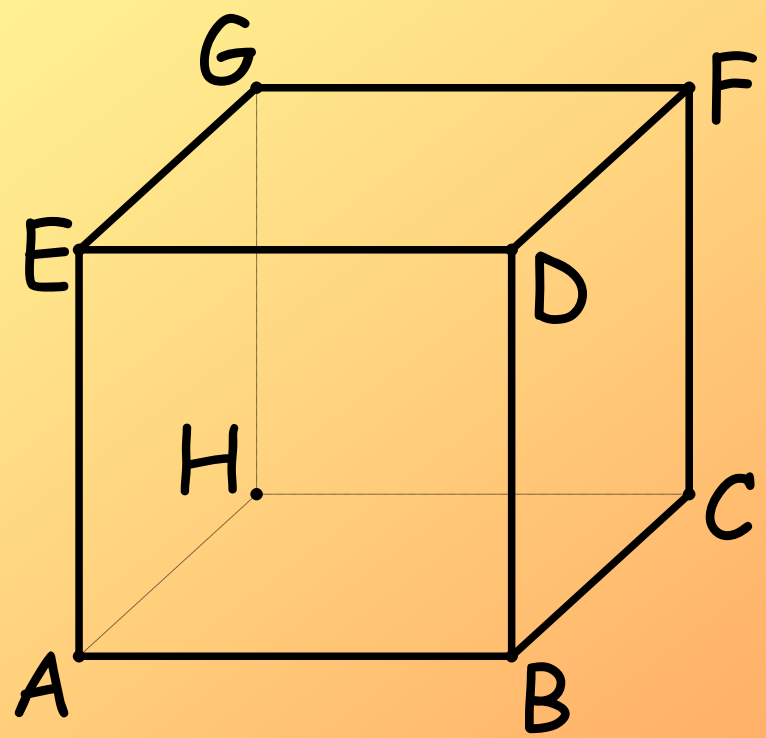
$\overleftrightarrow{AB} \cap \overleftrightarrow{CD}$ at point E.

If two planes intersect, then they intersect at a line.



Plane ABDE \cap Plane GFDE at \overleftrightarrow{DE} .

Intersection Examples:



1. Plane $GEDF \cap$ Plane $DFBC$ at \overleftrightarrow{DF} .
2. Plane $EDBA \cap$ Plane $GEAH$ at \overleftrightarrow{EA} .
3. $\overleftrightarrow{DB} \cap \overleftrightarrow{DF}$ at Point D .
4. $\overleftrightarrow{EF} \cap \overleftrightarrow{EA}$ at Point E .