

For Today, You Will Need:

- Paper
 - Pencil
 - Calculator
- All of these things are on (or next to) the counter

Points, Lines, and Planes

Def. A point is a location in space with no area.

- Points are labeled with an upper case letter.

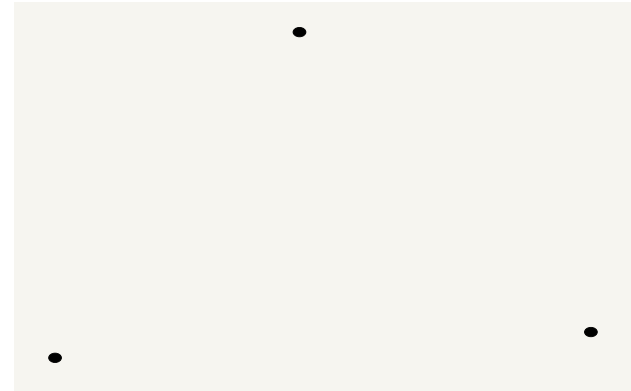
• M

This is called point M

Def. Points that lie on the same line are collinear.



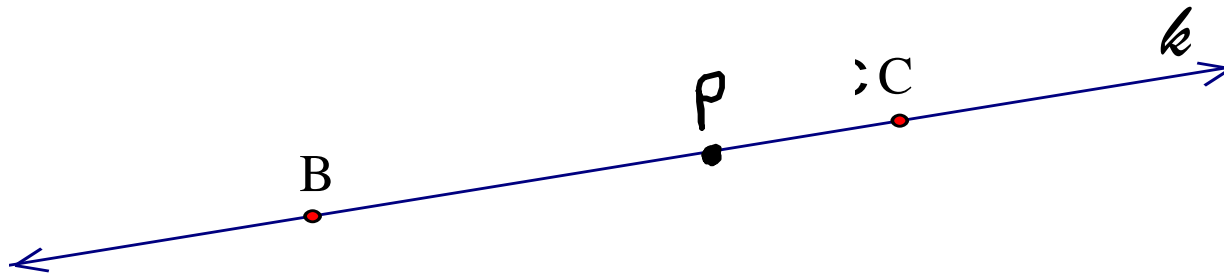
These points are collinear



These points are noncollinear

Def. A line passes through at least two points and extends forever in two directions. In diagrams, lines have arrows at both ends.

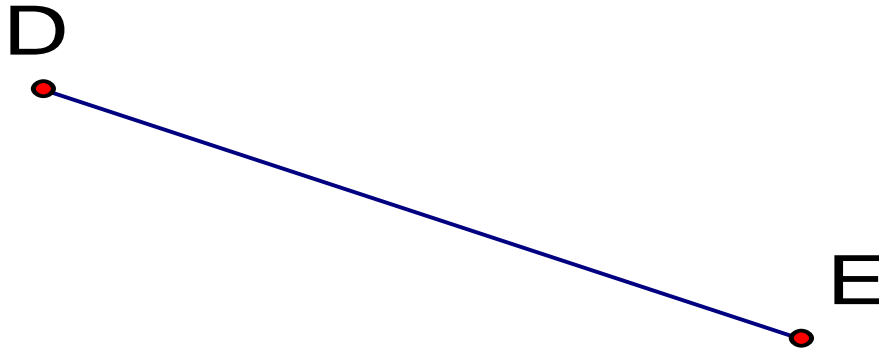
- A line can be labeled with a lower case cursive letter or by using two points on it.



This is called line l
or \overleftrightarrow{BC} \overleftrightarrow{PC}
or \overleftrightarrow{CB} \overleftrightarrow{BP}

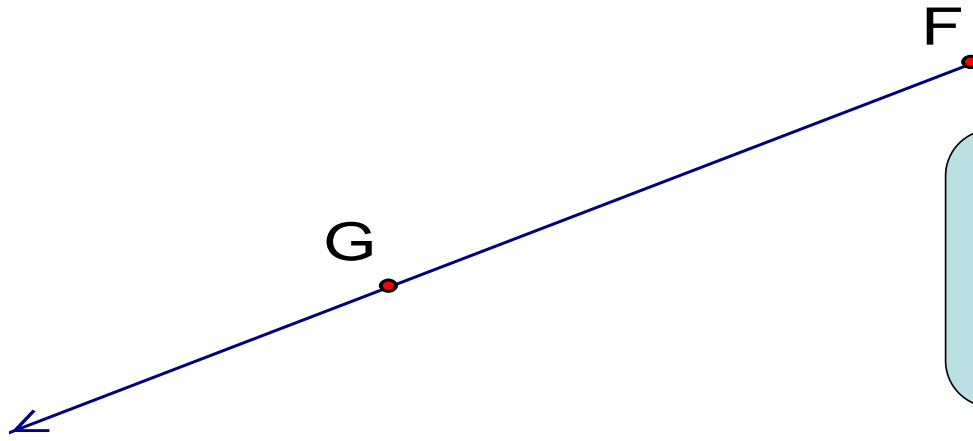
Def. A line segment is a section of line that has endpoints.

- Line segments are named for their endpoints.

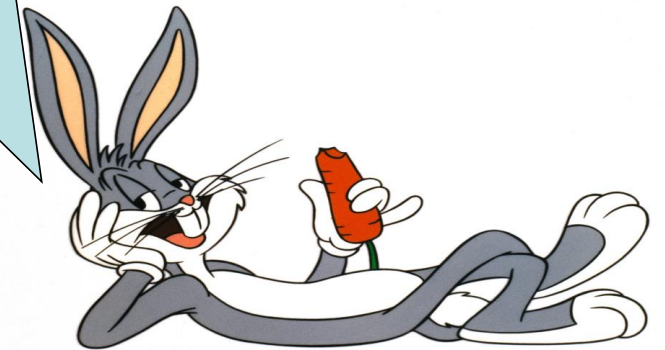


This is called
 \overline{DE} \overline{ED}

Def. The ray \overrightarrow{FG} consists of an initial point F and all points on \overleftrightarrow{FG} that lie on the same side of F as point G .

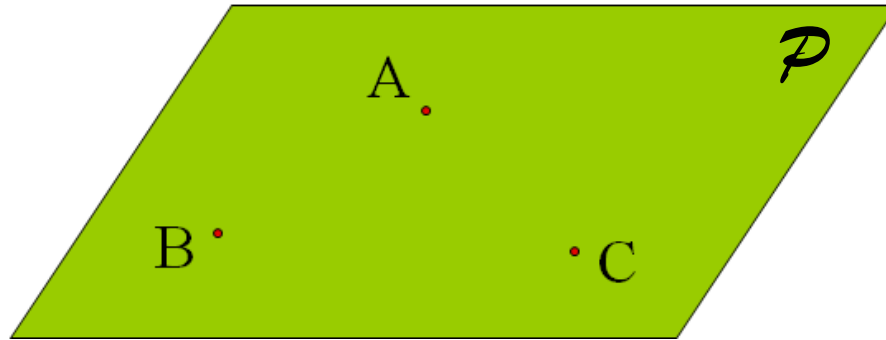


A ray is half of a line.



Def. A plane is a flat surface in space that extends indefinitely in all directions.

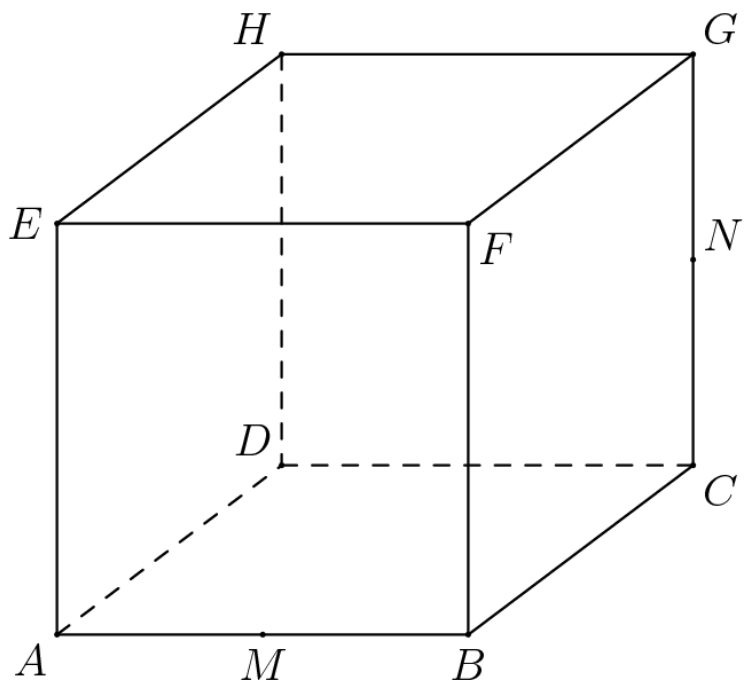
- A plane can be labeled with an upper case cursive letter or by using three points on it.



This is called plane \mathcal{P} or plane ABC

Def. Points that lie on the same plane are coplanar.

Ex. Name a point that is coplanar with points H , G , and F .



E

Def. The measure of \overline{AB} is the distance from A to B . This measure is written AB (without the bar).

\overline{AB} \rightarrow picture of the segment

AB \rightarrow length of the segment

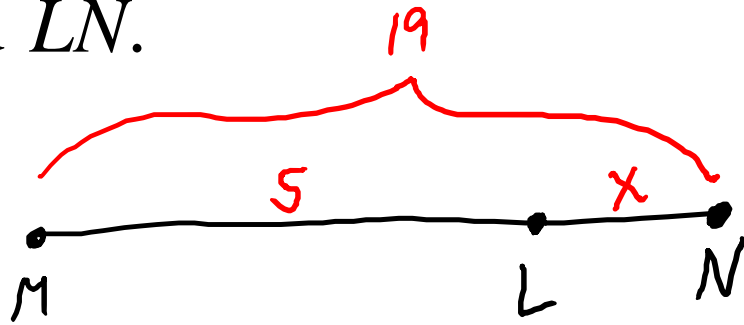
Postulate 1: Segment Addition Postulate

Let A , B , and C be collinear points. If B is between A and C , then $AB + BC = AC$.



PART + THE REST = WHOLE THING

Ex. Let L be between M and N . If $ML = 5$ and $MN = 19$, find LN .

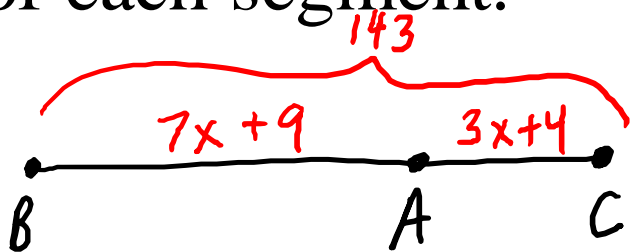


Part + Rest = Whole

$$\begin{array}{r} 5 + x = 19 \\ -5 \\ \hline \end{array}$$

$$\boxed{x = 14}$$

Ex. Assume A is between B and C . If $AB = 7x + 9$, $AC = 3x + 4$, and $BC = 143$, find x and the length of each segment.



$$AC = 3(13) + 4 = 43$$
$$AB = 7(13) + 9 = 100$$
$$BC = 143$$

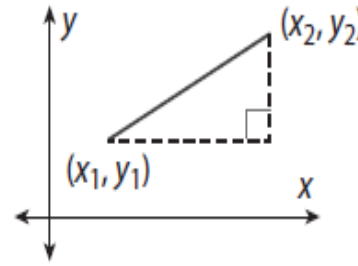
$$7x + 9 + 3x + 4 = 143$$

$$10x + 13 = 143$$
$$\begin{array}{r} -13 \\ \hline 10x = 130 \end{array}$$

$$\frac{10x}{10} = \frac{130}{10}$$
$$x = 13$$

The Distance Formula

The distance between two points (x_1, y_1) and (x_2, y_2) on the coordinate plane is $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.

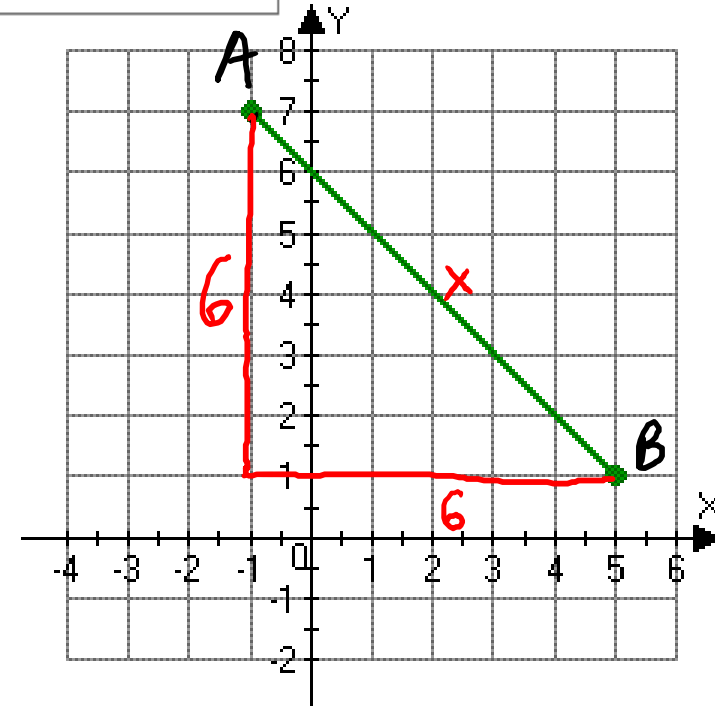


$$a^2 + b^2 = c^2$$

Ex. If $A(-1, 7)$ and $B(5, 1)$, find AB .

$$\begin{aligned} a^2 + b^2 &= c^2 \\ 6^2 + 6^2 &= x^2 \\ 36 + 36 &= x^2 \\ \sqrt{72} &= \sqrt{x^2} \end{aligned}$$

$$\begin{aligned} \sqrt{72} &= x \\ x &= 8.5 \end{aligned}$$



Pract. Find JK.

$$a^2 + b^2 = c^2$$

$$2^2 + 3^2 = x^2$$

$$4 + 9 = x^2$$

$$\sqrt{13} = \sqrt{x^2}$$

$$x = \sqrt{13} = 3.6$$

