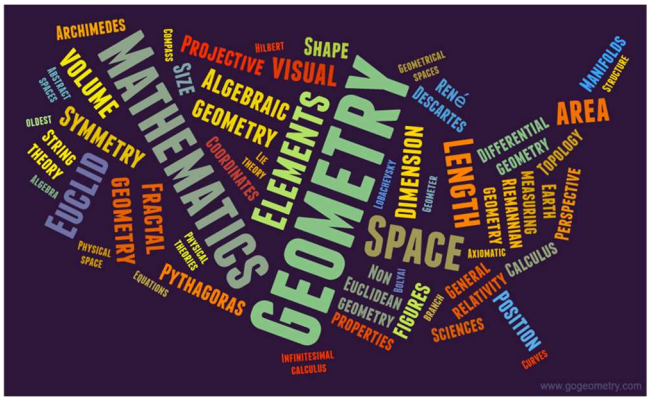
TOOLS OF GEOMETRY



Unit Overview

In this unit, students will be able to define, identify, and label the following terms: points, lines, segments, rays, and planes.

Key Vocabulary

Ray	line with a start point but no end point (it goes to infinity)
Circle	a shape with all points the same distance from its center
Line segment	the line that connects two points
Point	specific location that has no dimension and is represented by a dot
Plane	flat surface; has no thickness and it extends forever in all directions

Point

A point is an exact location. It has no size, only position. Points usually have a name, often a letter like "A," or even "W."

Term	*Geometric Figure*	*Ways to Name*
A **point** is a specific location. It has no dimension and is represented by a dot.	• *P*	point *P*

Click on the icon to understand the importance of Points in Geometry.

Line

In geometry a line:

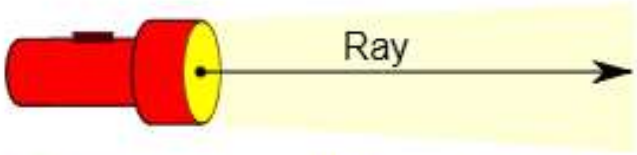
- is straight (no curves),
- has no thickness, and
- extends in both directions without end (infinitely).

A line has **no ends** !

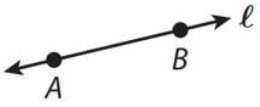
Line Segment

When it **does** have ends it is called a "**Line Segment**".

Ray



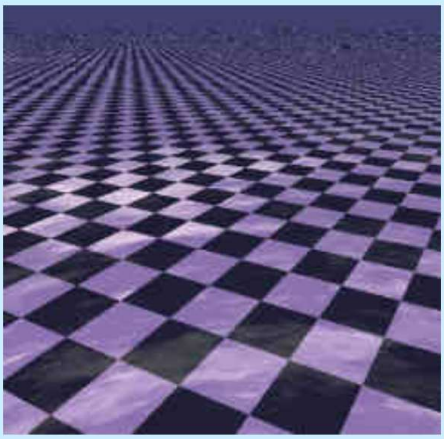
When it has just **one end** it is called a "**Ray**"

Term	*Geometric Figure*	*Ways to Name*
A **line** is a connected straight path. It has no thickness and it continues forever in both directions.		line ℓ, line AB, line BA, $\overleftrightarrow{AB}$, or $\overleftrightarrow{BA}$

Click on the icon to understand the importance of Lines in Geometry.

Plane

A plane is a flat surface with no thickness.



Our world has three dimensions, but there are **only two dimensions on a plane**:

- **length** and **width** make a plane
- **x** and **y** also make a plane

A plane has no thickness, and goes on forever.

Examples

It is actually hard to give a real example!

When we draw something on a flat piece of paper we are drawing on a plane ...

... except that the paper itself is not a plane, because it has thickness! And it should extend forever, too.

Term	Geometric Figure	Ways to Name
A **plane** is a flat surface. It has no thickness and it extends forever in all directions.		plane $\mathcal{R}$ or plane *XYZ*

Click on the icon to understand the importance of Planes in Geometry.

Let's Practice

Point

A **point** is pictured by a dot. It is named with a capital letter. This is point ***A***.

Line Segment

A **line segment** is a straight path between 2 points. This is line segment ***BC*** or ***CB***. It is written $\overline{BC}$ or $\overline{CB}$.

Line

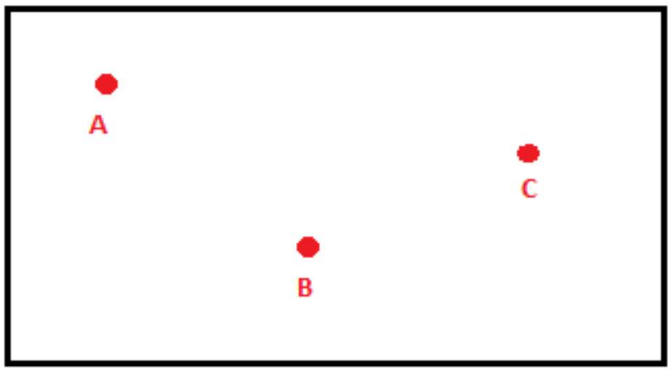
A **line** is a straight path that goes on forever in **both** directions. This is line ***DE*** or ***ED***. It is written $\overleftrightarrow{DE}$ or $\overleftrightarrow{ED}$.

Ray

A **ray** is a straight path that goes on forever in **one** directions. This is ray ***FG***. It is written $\overrightarrow{FG}$.

Practice Activity 1: Points, Line Segments, Lines, and Rays

A plane extends infinitely in two dimensions. It has no thickness. An example of a plane is a coordinate plane. A plane is named by three points in the plane that are not on the same line. Here below we see the plane ABC.



Practice Activity 2: Points, Lines, and Planes

Below are additional educational resources and activities for this unit.

Click on the BrainPOP icon to view the movie.

Click on the icon to complete the BrainPOP Quiz.

[Dots Game]

[Graphic Organizer]