ELEMENTS OF GEOMETRY

A POINT

Definition Point

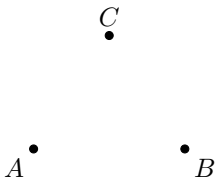
A **point** is a single location in space, represented by a dot.

Definition Point Notation

A point is named using a capital letter, written as A.

Points have no size, shape, or dimension. They simply mark a position.

Ex: The diagram below shows three points labeled A, B, and C:



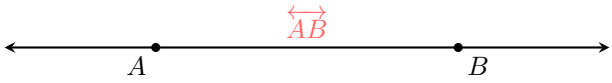
B LINES, SEGMENTS AND RAYS

Definition Line

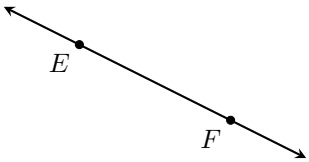
A **line** is a straight collection of points that extends infinitely in both directions.

Definition Line Notation

A line is named using two points on it, written as $\overleftrightarrow{AB}$.



Ex: Name the line shown below:



Answer: The line is $\overleftrightarrow{EF}$.

Definition Line Segment

A **line segment** is a part of a line with two endpoints. It has a definite length.

Definition Line Segment Notation

A line segment is named by its endpoints, written as $\overline{AB}$.

Ex: Name the segment shown below:

Answer: The segment is $\overline{EF}$.

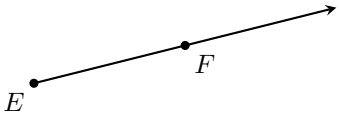
Definition Ray

A **ray** is a part of a line that starts at one endpoint and extends infinitely in one direction.

Definition Ray Notation

A ray is named by its endpoint and another point on it, written as $\overrightarrow{AB}$.

Ex: Name the ray shown below:

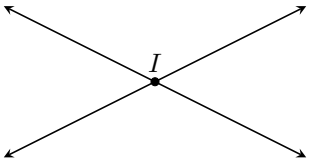


Answer: The ray is $\overrightarrow{EF}$.

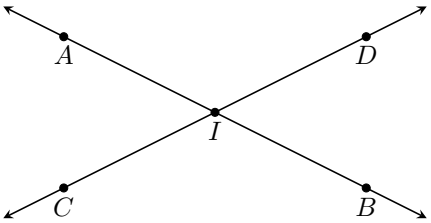
C INTERSECTION POINT

Definition Intersection Point

An **intersection point** is a point where two or more geometric objects, such as lines or segments, meet.



Ex: Find the intersection point of the lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$.

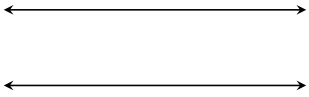


Answer: The intersection point is I.

D PARALLEL LINES

Definition Parallel Lines

Two **parallel lines** are lines that never intersect, no matter how far they extend.



Definition Parallel Line Notation

Parallel lines are indicated using matching arrowheads on each line.