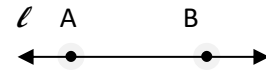# Notes 6.1 Points, Lines, and Planes

- A **point** has no dimension. It is usually represented by a small dot.
- When naming a point use a capital letter.
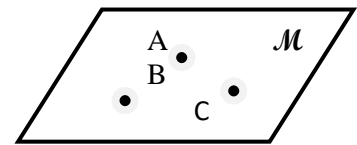- When referring to the point in the example write "point A"

Example:

A •

- A **line** is one dimensional. It is usually represented by a straight line with two arrowheads to indicate that the line extends without end in two directions.
- When naming a line use script lower case letter or two points on the line.
- When referring to the line in the example write "line ℓ " or $\overleftrightarrow{AB}$ or $\overleftrightarrow{BA}$

Example:

ℓ A   B

- A **plane** is two dimensional. It is usually represented by a shape that looks like a tabletop or wall. You must imagine that the plane extends without end, even though the drawing of a plane appears to have edges.
- When naming a plane use a script capital letter or three points in the plane.
- When referring to the line in the example write "plane $\mathcal{M}$ " or "plane ABC"
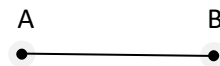
Example:

A
        $\mathcal{M}$
B
    C

- **Collinear points** are points that lie on the same line.
- **NonCollinear points** are points that <u>do not</u> lie on the same line.

- **Coplanar points** are points that lie on the same plane.
- **NonCoplanar points** are points that <u>do not</u> lie on the same plane.
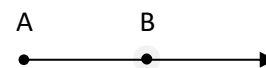

- A **line segment** or **segment** is part of a line which consist of two **endpoints**.
- When naming a line segment use the two endpoints on the line.
- When referring to the line segment in the example write $\overline{AB}$

Example:

A   B

- A **ray** consist of an **initial point** and extends in one direction only.
- When naming a ray use the endpoint as the first letter and then any point on the ray.
- When referring to the ray in the example write $\overrightarrow{AB}$.
- The <u>wrong ways</u> to refer to the ray in the example are: $\overleftrightarrow{AB}, \overline{BA}, \overrightarrow{BA}$

Example:

A   B

- **Opposite rays** are two rays going in opposite directions that share an initial point.
- When referring to the opposite rays in the example they are $\overrightarrow{BA}$ and $\overrightarrow{BC}$. Notice that they have the same initial point.

Example:

A   B   C