

1.3 Points, Lines, and Planes

Objective: Use postulates and undefined terms.

A point has no dimension. It is represented by a small dot. It is named by a capital letter.

A line has one dimension. It extends without end in two directions. It is represented by a line with two arrowheads. It is named by two points (capital letters) on the line with the line symbol above or by a lower case letter.

A plane has two dimensions. It is represented by a shape that looks like a floor or wall. You have to imagine that it extends without end. It is named by a capital letter (not a point) or by three points (not on the same line) in the plane.

You need two points to describe a line.

You need three points to describe a plane.

Postulates are statements that are accepted without further justification.

Postulate 1: Through any two points there is exactly one line

Postulate 2: Through any three points not on a line there is exactly one plane.

Example 1: Look at the figure on pg. 15

A. Name three points.

B. Name two lines.

C. Name two planes.

Collinear points are points that lie on the same line.

Coplanar points are points that lie on the same plane.

Coplanar lines are lines that lie on the same plane.

Example 2: Look at the figure on pg. 15.

- A. Name three points that are collinear.

- B. Name four points that are coplanar.

- C. Name three points that are not collinear.

A segment is a portion of a line. It has two endpoints (it does not extend without end). It is named by two points with the segment symbol above.

A ray is also a portion of a line. It has one endpoint and one side that extends without end. It is named using the endpoint and another point on the line with the ray symbol above.

NOTE: \overleftrightarrow{AB} is the same as \overleftrightarrow{BA} .

\overline{AB} is the same as \overline{BA} .

\overrightarrow{AB} is not the same as \overrightarrow{BA} . The rays have two different endpoints and extend in different directions.

Example 3: Draw three noncollinear points, J, K, and L. Then draw \overleftrightarrow{JK} , \overline{KL} , and \overrightarrow{LJ} .