

Points, Lines, and Planes

Point

• A

- Undefined
- A point has no size, no dimension.
- It is a location in space.
- Points are named using capital letters.

Line

\overleftrightarrow{AB} ℓ

- Undefined
- A line is made up of an infinite number of points that go on without end in both directions.
- A line has one dimension, length.
- A line can be named with a single lowercase script letter or by two points on the line.

Ray

\overrightarrow{AB}

- Part of a line
- A ray has a definite starting point and extends without end in one direction.
- A ray is named using the endpoint first, then another point on the ray.

Line Segment

\overline{AB}

- A line segment is part of a line containing two endpoints and all points between them.
- A line segment is named using the endpoints.

Collinear

- Points that lie on the same line.

Non-collinear

- Points that do not lie on the same line.

Plane

\mathcal{M} ABC

- Undefined
- A flat surface that extends without end in all directions.
- It has two dimensions, length and width.
- A plane can be named by three non-collinear points or by a single uppercase script letter.
- A parallelogram is used to model a plane.

Coplanar

- Points that lie in the same plane.

Non-coplanar

- Points that do not lie in the same plane.

Space

- Boundless, three-dimensional set of all points

Parallel lines

- Lines in the same plane that are always the same distance apart.
- They do not intersect.

Skew lines

- Lines that are not in the same plane and do not intersect.

Intersection

- The set of points that are in both figures.

Concurrent lines

- Three or more lines that pass through the same point.

Postulates: (Statements that are accepted as true without proof).

- Two points determine a unique line.
- If two distinct lines intersect, then their intersection is a point.
- Three non-collinear points determine a unique plane.
- If two distinct planes intersect, then their intersection is a line.

Important words: *contains, determine, on, in, a, distinct, can, will.*