

Lesson 1-2: Points, Lines, and Planes

What are the building blocks of geometry?

Today we are going to start off by learning about the basic building blocks of Euclidean geometry.

Now I said “Euclidean” geometry. Does anyone know what “Euclidean” means?

- Euclid: ~300BC, Greek Mathematician
- Wrote a series of books called the Elements
- Books 1-6 are on plane geometry or what we now call Euclidean geometry.

Definitions

Point:

- The basic unit of geometry
- A point has no size
- Only has location.
- It is represented by a small dot and is named by a capital letter
- In Euclidean geometry, a point is undefined

Space:

- The collection of all points.

Line:

- Straight arrangement of points that extend forever in two directions.
- Has infinite length but no thickness.
- You can name a line by:
 - Any two points on the line with a double headed arrow over the letters.
 - A lowercase letter.
- In Euclidean geometry, a line is undefined.

Collinear points: points that lie on the same line.

>> Example 1

Plane:

- You can think of a plane as a flat surface that has no thickness. Parallelogram...
- A plane contains many lines & extends forever in the directions of its lines.
- You name a plane using at least 3 noncollinear points in the plane, or by a single capital letter.
- In Euclidean geometry, a plane is undefined.

>> Example 2

Coplanar: objects (lines, points, geometric shapes, etc) that lie in the same plane.

Lesson 1-2: Points, Lines, and Planes

Definitions

- Axiom: an accepted statement of fact. Also known as a postulate.

Postulate 1-1

Through any two points there is exactly one line.

Postulate 1-2

If two lines intersect, then they intersect in exactly one point.

Postulate 1-3

If two planes intersect, then they intersect in exactly one line.

Postulate 1-4

Through any three noncollinear points there is exactly one plane.

Assign homework

p. 13 1-43 odd, 47-71 odd, 74, 76