

Geometry

What is geometry? What do we study in geometry?

Undefined Terms

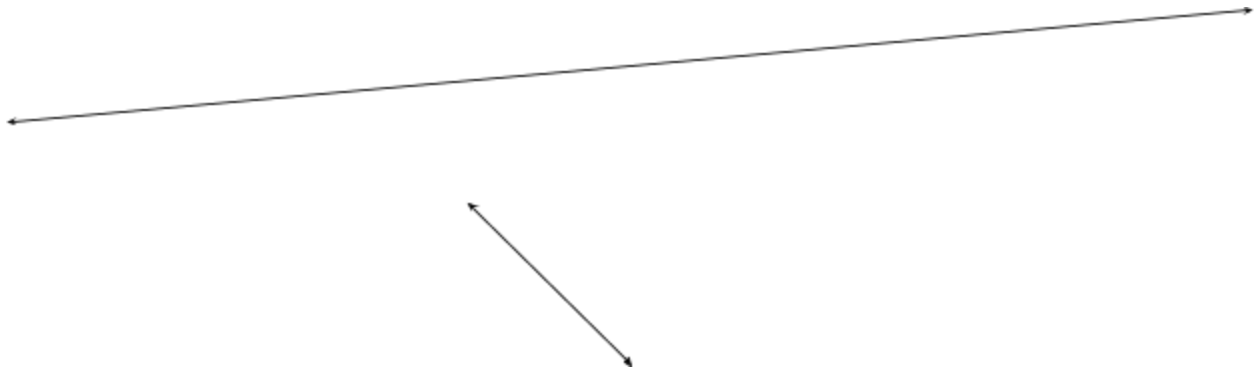
Point:

1. No size at all (no height, no width)
2. Which one of the balls is a point?
3. Think of it as a location (place)
4. We use capital letters, such as P, Q, R to name it.



Line:

1. As wide as a point
2. Infinitely long in both directions
3. Straight
4. We use small letters such as l, m, n to name it.



Not a line:

Plane:

1. No height
2. Unlimited width and length

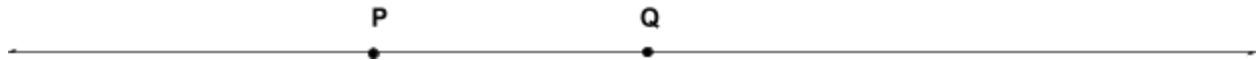
Axioms of Incidence

An *axiom* is something that we can't prove, we take it to be true and use it to prove theorems.

Incidence = intersection

Distinct = different

1. For every two distinct points A and B, there exists a unique line l that contains both of them.



2. There are at least two points on any line.
3. There exist at least three points that do not all lie on a line.

Axioms of Order

1. If $A*B*C$, then the points A, B, C are three distinct points of a line, and $C*B*A$.
2. For two points B and D, there are points A, C, and E such that $A*B*D$, $B*C*D$, $B*D*E$.
3. Of any three points on a line there exists no more than one that lies between the other two.
4. (Plane Separation Postulate) For every line l and points A, B, and C not on l
 - a. If A and B are on the same side of l and B and C are on the same side of l , then A and C are on the same side of l .
 - b. If A and B are on opposite sides of l and B and C are on opposite sides of l , then A and C are on the same side of l .

Plan:

1. Draw pictures with help from the girls to understand what each axiom says and what situations may exclude.
2. For Axiom of Order 2, ask how many points are there on a line.
3. For 4, ask about 2 and 4 points situation.