Some notes from class

2018-01-08

Geometry is. . .

Points, lines, planes, distance, angles, segments, circles,
"is on," "contains," "belongs to"

1. For any two distinct points A and B, there is exactly one line ℓ such that A is on ℓ and B is on ℓ.

2. For any two points A and B, there is a unique nonnegative real number $d(A, B)$ satisfying . . .

Def. A *ray* is . . . **Def.** An *angle* is . . .

Theorem. If A, B, and C are non-collinear points, then . . .

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1. Undefined terms
2. Relations
3. Axioms / Postulates
4. Definitions
5. Theorems

Example of an axiom system: Silly geometry

Undefined terms: blip, trek
Relations: "belongs to," "contains"
Axioms:

1. A blip belongs to a trek if and only if the trek contains the blip.
2. There are exactly five blips.
3. Every trek contains exactly two blips.
4. Every blip belongs to at most two treks.

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Some questions:

a. Can we somehow visualize this geometry?
b. Are there any contradictions hiding within these axioms?
c. Are all the axioms really contributing? (redundancy?)
d. Is there any choice / variability in the sort of object(s) described by these axioms?