Axioms of Euclidean Planar Geometry

1

At least two points belong to a line.

2

There are at least three points that do not lie on a line.

3

You can draw a line, through any two given points and that is the only line you can draw through those two points.

4

Out of three points that belong to a line, only one of them lies between the two other points.

5

Every point O of a line, splits it into two parts (rays) such that any two points of the same ray, lie on the same side from point O. Any two points from opposite rays, lie on opposite sides from point O.

6

Any line a splits a plane into two parts (half-planes) such that any two points of the same half-plane lie on the same side from a. Any two points belonging to opposite half-planes lie on opposite sides of line a.

7

When overlaying (put on top of each other) ends of two line segments, then the line segments will overlay each other.

8

On any ray, you can always draw a line segment of a given length from the beginning of that ray. That would also be the only line segment that you can draw that fits that criteria.

9

From any ray, you can draw an angle into a given half-plane which is equal to a given angle that is less than 180 °. That would be the only angle that would fit these criteria.

10

Any angle hk can be overlayed on another equal angle h_1k_1 in two ways:
1) ray h overlays with ray h_1 and ray k overlays with ray k_1.
2) ray h overlays with ray k_1 and ray k overlays with ray h_1.

11

Any shape is equal to itself.

12

If shape Φ is equal to shape Φ_1, then shape Φ_1 is equal to shape Φ.

13

If shape Φ_1 is equal to shape Φ_2 and shape Φ_2 is equal to shape Φ_3, then shape Φ_1 is equal to shape Φ_3.

14

For a given unit of measuring lengths of line segments, the length of each line segment is expressed through a positive number.

15

For a given unit of measuring lengths of line segments, for any positive number there exists a line segment the length of which is expressed through that number.

16

Through a given point, you can draw one and only one line parallel to a given line which passes through that given point.