Why

We need some basic geometric concepts.[1]

Definitions

A *point* is that which has no part.[2] A *line* is a breadthless length. The *extremities of a line*[3] are points. A *straight line* is a line which lies evenly with the points on itself. A *surface* is that which has length and breadth only. The *extremities of a surface* are lines.

A *plane surface* is a surface which lies evenly with the straight lines on itself. A *plane angle* is the inclination to one another of two lines in a plane which meet one another and do not lie in a straight line. And when teh lines containing the angle are straight, the angle is called *rectilineal*. When a straight line set up on a straight line makes the adjacent angles equal to one another, each of the equal angles is *right*, and the straight line standing on the other side is called a *perpendicular* to that on which it stands.

A *boundary* is that which is an extremity of any thing. A *figure* is that which is contained by any boundary or boundaries. A *circle* is a plane figure contained by one line such that

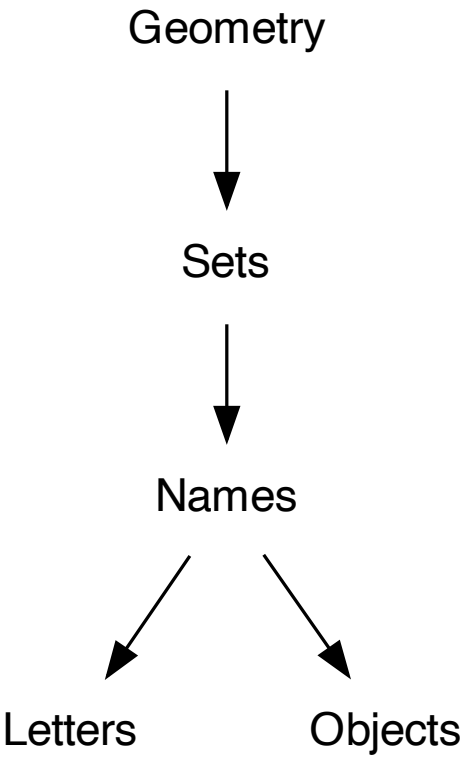
[1] This sheet will be expanded into several in future editions.

[2] This and all that follows is taken (nearly) verbatim from Heath's translation of Book I of Euclid's Elements. In future editions, there will be a reference to the Litterae manuscript of this text.

[3] We have departed from Heath and made extremity here a term.

allthe straight lines falling upon it from one point among those lying withing the figure are equal to one another. The point is called the *center* of the circle. A *diameter* of the circle is any straight line drawn through the center and terminated in both directions by the circumference of the circle, and such a straight line also bisects the circle.[4]

[4]We end here. Of course, Euclid goes on to discuss semicircles, rectilineal figures, etc.


Geometry
Sets
Names
Letters
Objects