

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 line³ 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 all the 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

 $^{^{1}\}mathrm{This}$ sheet will be expanded into several in future editions.

²This 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.

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

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

