Preface

Book 1

DEFINITIONS.

I A point if that which haſ no partſ.

II A line if length without breadth.

III The extremitieſ of a line are pointſ.

IV A ſtraight or right line if that which lieſ evenly between itſ extermitieſ.

V A ſurface if that which haſ length and breadth only.

VI The extremitieſ of a ſurface are lineſ.

VII A plane ſurface if that which lieſ evenly between itſ extremitieſ.

VIII A plane angle ſ the inclination of two lineſ to one another, in a plane, which meet together, but are not in the ſame direction.

IX A plane rectilinear angle ſ the inclination of two ſtraight lineſ to one another, which meet together, but are not in the ſame ſtraight line.

X When one ſtraight line ſtanding on another ſtraight linem makeſ the adjacent angleſ equal, each of theſe angleſ ſ called a right angle, and each of theſe lineſ ſ ſaid to be perpendicular to the other.

XI An obtuſe angle ſ an angle greater than a right angle.

XII An acute angle ſ an angle leſſ than a right angle.

XIII A term of boundary ſ the extremity of any thing.

XIV A figure ſ a ſurface encloſed on all ſideſ by a line or lineſ.

XV A circle ſ a plane figure, bounded by one continued line, called itſ circumference or periphery; and having a certain point within t, from which all ſtraight lineſ drawn to itſ circumference are equal.

XVI The point (from which the equal lineſ are drawn) ſ called the centre of the circle.

XVII A diameter of a circle ſ a ſtraight line drawn through the centre, terminating both wayſ in the circumference.

XVIII A ſemicircle iſ the figure contained by the diameter, and the part of the circle cut off by the diameter.

XIX A ſegment of a circle iſ a figure contained by a ſtraight line, and the part of the circumference which cutſ it off.

XX A figure contained by ſtraight lineſ only, iſ called a rectilinear figure.

XXI A triangle iſ a rectilinear figure encloſed by three ſideſ.

XXII A quadrilateral figure iſ one which iſ bounded by four ſideſ. The ſtraight lineſ and connecting the verticeſ of the oppoſite angleſ of a quadrilateral figure, are called itſ diagonalſ.

XXIII A polygon iſ a rectilinear figure bounded by more than four ſideſ.

XXIV A traingle whoſe three ſideſ are equal, iſ ſaid to be equilateral.

XXV A triangle which haſ only two ſideſ equal iſ called an iſoſceleſ triangle.

XXVI A ſcalene triangle iſ one which haſ no two ſideſ equal.

XXVII A right angled triangle iſ that which haſ a right angle.

XXVIII An obtuſe angled triangle iſ that which haſ an obtuſe angle.

XXIX An acute angled triangle is that which has three acute angles.

XXX Of four-sided figures, a square is that which has all its sides equal, and all its angles right angles.

XXXI A rhombus is that which has all its sides equal, but its angles are not right angles.

XXXII An oblong is that which has all its angles right angles, but has not all its sides equal.

XXXIII A rhomboid is that which has its opposite sides equal to one another, but all its sides are not equal, nor its angles right angles.

XXXIV All other quadrilateral figures are called trapeziums.

XXXV Parallel straight lines are such as are in the same plane, and which being produced continually in both directions, would never meet.

POSTULATES.

I Let it be granted that a straight line may be drawn from any one point to any other point.

II Let it be granted that a finite straight line may be produced to any length in a straight line.

III Let it be granted that a circle may be described with any centre at any distance from that centre.

AXIOMS.

I Magnitudeſ which are equal to the ſame are equal to each other.

II If equalſ be added to equalſ the ſumſ will be equal.

III If equalſ be taken away from equalſ the remainderſ will be equal.

IV If equalſ be added to unequalſ the ſumſ will be unequal.

V If equalſ be taken away from unequalſ the remainderſ will be unequal.

VI The doubleſ of the ſame or equal magnitudeſ are equal.

VII The halveſ of the ſame or equal magnitudeſ are equal.

VIII Magnitudeſ which coincide with one another, or exactly fill the ſame ſpace, are equal.

IX The whole if greater than itſ part.

X Two ſtraight lineſ cannot include a ſpace.

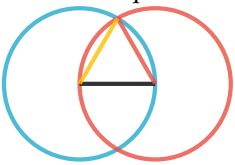
XI All right angleſ are equal.

XII If two ſtraight lineſ () meet at a third ſtraight lineſ () ſo aſ to make the two interior angleſ (and) on the ſame ſide leſſ than two right angleſ, theſe two ſtraight lineſ will meet if they be produced on that ſide on which the angleſ are leſſ than two right angleſ.

ELUCIDATIONS.

PROPOSITIONS.

Propoſition 1. On a given finite ſtraight line (——) to deſcribe an equlateral triangle.



Proof. Deſcribe ◯ and ◯ (poſtulate 3.); draw —— and —— (poſt. 1.). then will △ be equilateral.

For —— = —— (def. 15.)
and —— = —— (def 15.)
∴ —— = —— (axiom. 1.)

Q.E.D.