

# EUCLID'S ELEMENTS OF GEOMETRY.

## BOOK I.

### DEFINITIONS.

THE word DEFINITION is derived from the Latin verb *DEFINIRE*, to mark out a limit or boundary; we may then at first consider a Definition, for the most part, as a short description of the properties belonging to certain geometrical forms and figures, giving us marks whereby we are enabled to conceive an idea of them in our minds, and to trace their shapes on any flat surface.

The Definitions of Book I. of Euclid's Elements may be divided into four Sections as follows, the third admitting of further subdivision:—

- Section 1. Point, Line, and Surface ..... Def. I.—VII.
- „ 2. Angles ..... Def. VIII.—XII.
- „ 3. Figures ..... Def. XIII.—XXXIV.
  - A. The Circle and its parts ... Def. XV.—XIX.
  - B. Rectilineal Figures ..... Def. XX.—XXXIV.
    - a. Triangles ..... Def. XXIV.—XXIX.
    - b. Quadrilateral Figures. Def. XXX.—XXXIV
- „ 4. Supplementary ..... Def. XXXV.—Etc.

### SECTION I. POINT, LINE, AND SURFACE. Def. I—VII.

I. A POINT is that which has no parts, or that which has no magnitude.

Euclid's point is therefore imaginary, shewing position only: we cannot make a point, however small, without size or magnitude; the smallest dot we can make with a pen or pencil must have length and breadth to be visible.

### II. A LINE is length without breadth.

Here a line is merely an imaginary track from one point to another, whether straight or curved:—as in the case of the point, a line drawn on paper must have length and breadth to be visible. Euclid's definitions of a point and line apply only to ideal points and lines, which can exist only in imagination.

### III. The EXTREMITIES OF A LINE are points.

The points denote the position of either end of the line.