THE ESSENTIALS OF GEOMETRY (PLANE)

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The Essentials of Geometry (Plane) by Webster Wells

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THE

ESSENTIALS OF GEOMETRY

(PLANE)

BY

WEBSTER WELLS, S.B.

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PREFACE.

In the *Essentials of Geometry*, the author has endeavored to prepare a work suited to the needs of high schools and academies. It will also be found to answer as well the requirements of colleges and scientific schools.

In some of its features, the work is similar to the author's *Revised Plane and Solid Geometry;* but important improvements have been introduced, which are in line with the present requirements of many progressive teachers.

In a number of propositions, the figure is given, and a statement of what is to be proved; the details of the proof being left to the pupil, usually with a hint as to the method of demonstration to be employed.

The propositions and corollaries left in this way for the pupil to demonstrate, in the Plane Geometry, will be found in the following sections: —

Book I., §§ 51, 75, 76, 78, 79, 96, 102, 110, 111, 112, 115, 117, 136.

Book II., §§ 158, 160, 165, 170, 172 (Case III.), 174, 176, 177, 193 (Case III.), 195, 200, and 201.

Book III., §§ 251, 257, 261, 264, 268, 278, 282, 284, and 286.

Book IV., §§ 312 and 316.

Book V., §§ 345, 347, and 350.

There are also Problems in Construction in which the construction or proof is left to the pupil.

Another important improvement consists in giving figures and suggestions for the exercises. In Book I., the pupil has a figure for every non-numerical exercise; after that, they are only given with the more difficult ones.

In many of the exercises in construction, the pupil is expected to discuss the problem, or point out its limitations.

In Book I., the authority for each statement of a proof is given directly after the statement, in smaller type, enclosed in brackets. In the remaining portions of the work, the formal statement of the authority is omitted; but the number of the section where it is to be found is usually given.

In a number of cases, however, where the pupil is presumed, from practice, to be so familiar with the authority as not to require reference to the section where it is to be found, there is given merely an interrogation-point.

In all these cases the pupil should be required to give the authority as carefully and accurately as if it were actually printed on the page.

Another improvement consists in marking the parts of a demonstration by the words *Given*, *To Prove*, and *Proof*, printed in heavy-faced type. A similar system is followed in the Constructions, by the use of the words *Given*, *Required*, *Construction*, and *Proof*.

A minor improvement is the omission of the definite article in speaking of geometrical magnitudes; thus we speak of "angle *A*," "triangle *ABC*," etc., and not "the angle *A*," "the triangle *ABC*," etc.

Symbols and abbreviations have been freely used; a list of these will be found on page 4.

Particular attention has been given to putting the propositions in the first part of Book I. in a form adapted to the needs of a beginner.

The pages have been arranged in such a way as to avoid the necessity, while reading a proof, of turning the page for reference to the figure.

The Appendix to the Plane Geometry contains propositions on Maxima and Minima of Plane Figures, and Symmetrical Figures; also, additional exercises of somewhat greater difficulty than those previously given.

The author wishes to acknowledge, with thanks, the many suggestions which he has received from teachers in all parts of the country, which have added materially to the value of the work.

WEBSTER WELLS.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY,
1898.

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