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FIRST YEAR ALGEBRA

BY

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FIRST YEAR ALGEBRA



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PREFACE

THIS book has been written to meet the growing demand for a High School Algebra that contains only the first year's work. While the order of topics resembles in general that found in the author's other algebras, yet a number of changes have been made, for the purpose of *simplifying* the work and deferring difficulties until the pupil is able to cope with them.

One of the hardest ideas for the young student to grasp is that of negative numbers; and the common practice of presenting them at the very beginning of the book results not only in the bewilderment but also in the discouragement of the student. In this book, therefore, the pupil is first taught the symbols and the fundamental operations as applied to positive numbers, and not until he has become thoroughly familiar with these is he introduced to negative numbers. He can thus concentrate his entire attention on the one new idea, and it becomes a pleasure to him to extend his knowledge by applying the principles he has already learned to the new concept. Again, the troublesome operation of removing and inserting signs of aggregation is deferred until the pupil's gain in power of manipulating algebraic numbers renders the work comparatively easy.

On the other hand, in order to arouse from the first the interest of the pupil, simple problems to be solved both arithmetically and algebraically, as well as easy solutions of simultaneous equations and of quadratic equations by factoring, are presented very early in the course, while the more difficult phases of these subjects are discussed later. Throughout the work, indeed, the greatest emphasis is placed on equations and problems, which furnish the most apt illustrations of the *practical uses of algebra*.

The treatment of every principle is based on the pupil's knowledge of *arithmetic*. This close correlation of the two subjects not only illuminates both of them, but adds further to the simplicity of the book.

The *problems* are based on interesting facts gathered from a variety of sources, including physics, geometry, and commercial life. A few problems of the older style are included for the purpose of familiarizing the pupil with them and for their disciplinary value.

Graphs are presented in a simple and comprehensive manner, but the chapters are introduced in such a way as to render practicable their omission, without disturbing the continuity of the course.

Factoring is thoroughly taught, and the study is greatly simplified by the careful classifying and summarizing of the various cases.

New terms are illustrated or defined wherever they are needed, the object of this plan being to prevent the confusion that results in the pupil's mind from the massing of large collections of definitions at the beginning of each chapter. Formal definitions of all terms are placed at the end of the book in a glossary arranged in alphabetical order.

Abstract and concrete work is well balanced, so that the drills in algebraic processes and representation are as plentiful as the exercises for the development of the reasoning faculties.

Accuracy is secured by the numerous checks, tests, and verifications that are required of the student, and thoroughness is acquired through the frequent and exhaustive reviews.

In the preparation of the work, careful consideration has been given to the courses of study outlined by the Regents of the State of New York and by educational authorities elsewhere. The book will be found to meet the requirements of these courses in every particular.

WILLIAM J. MILNE.

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