

**THE APPLETON
SCHOOL BOOKS.
ARITHMETIC, BOOK III**

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J. W. A. YOUNG & LAMBERT L. JACKSON

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©

ARITHMETIC

BY

J. W. A. YOUNG, PH. D.

ASSISTANT PROFESSOR OF THE PEDAGOGY OF MATHEMATICS,
THE UNIVERSITY OF CHICAGO

AND

LAMBERT L. JACKSON, A. M.

HEAD OF DEPARTMENT OF MATHEMATICS, STATE NORMAL SCHOOL,
BROCKPORT, NEW YORK

BOOK III



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PREFACE

1. **The dominating thought** in the preparation of this series has been that not only is it one of the chief functions of the teaching of arithmetic to lead the child to think, but also that this thinking should usually relate to concrete materials adapted to his comprehension and interest. The controlling method is therefore inductive rather than deductive; concrete rather than abstract.

2. **The framework** around which the subject is built consists of the essential processes of arithmetic, which the child must learn to perform with accuracy, speed and intelligence. The authors have followed what they believe to be the most natural path to the accomplishment of these ends, *viz.*, that leading *from the concrete to the abstract*.

3. To be **really concrete** it is not sufficient to use named units instead of unnamed ones. If $379 + 486$ is abstract, $379 \text{ bu.} + 486 \text{ bu.}$ is no less so. Data for problems have therefore often been sought in the child's own activities—weighing, measuring, observing, drawing, building, inquiring, reading.

4. While **motor activity** is emphasized, the manual work is not pushed to an extreme. No special material is required. Optional work is occasionally suggested, making use of simple materials and instruments easily procured or improvised.

5. **Exercises for abstract drill** have been included at suitable points. The teacher can readily dictate similar exercises if more are needed to secure the requisite practice.

6. **Related problems.** Usually the problems of each page are grouped about a *central thought*, so as to secure a certain unity in the subject-matter. The reviews are, of course, miscellaneous.

7. **Form study** thoroughly graded is made an integral part of the work.

8. **The commercial applications** receive due attention without being given exaggerated importance. Reduced *photographic fac-similes* of a number of business forms are given.

9. **Much information** is incidentally included in the problems.

10. **The problems are natural.** Factitious and unreal problems have been excluded. (E. g., "How many seconds in 8,372 mo.? How many oz. Troy in a long ton avoirdupois? Divide $\frac{1}{2}$ of $\frac{4}{5}$ of $\frac{1}{10}$ of $\frac{1}{2}$ by $\frac{2}{3}$ of $\frac{1}{2}$ of $\frac{1}{10}$ of $\frac{3}{4}$."") The child's environment offers a wealth of material for problems relative to real conditions, more than ample for the development and mastery of all needed processes of arithmetic, and for the attainment of all the disciplinary benefits of its study.

11. **Obsolete processes or types of problems** have been omitted. The numerical needs of modern life are so many and so varied that no time can be spared for the antiquated or the artificial.

12. **Small numbers** are generally used. Every operation of arithmetic, however complex, consists of a succession of operations with very small numbers. If these are first thoroughly mastered, their repetition in longer problems offers no difficulty. Large numbers are not prematurely forced on the child, but, when prepared for them, he is led to them gradually and naturally in problems relating to actual conditions.

13. **Much oral work** precedes the written work in each topic.

14. **Frequent reviews** and occasional **general reviews** are given.

15. The **order of topics** has been determined to meet the needs of the child-mind. Its craving for variety and change is healthy and normal and must be heeded, but it can not be properly satisfied by a disjointed and fragmentary treatment. Nor, on the other hand, may the child-mind be forced to follow the practice of highly trained adult-minds in the complete and final treatment of each topic at one time. In due course, however, each leading subject is made the center of instruction, and its principles are summarized and emphasized.

16. The need to **teach through the eye** has been constantly borne in mind. The illustrations are, however, never simply pictorial, but always *illustrative* and usually integral parts of the text.

17. **Omissions** ranging from single problems or pages to entire chapters or topics can readily be made. Pages entitled "problems" present no new principles, and any such pages may be omitted without breaking the continuity of the course. A shorter course retaining all the characteristic topics may be formed by omitting some or all of pages 25, 27, 46-50, 66-71, 90, 91, 112, 116, 124-131, 142-144, 184, 185, 187-189, 191, 193-198, 201-205, 211, 214-218, 231-245.

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