

**COMPLETE GRADED
ARITHMETIC, PART
FIRST. FOR FOURTH
AND FIFTH GRADES**

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Complete Graded Arithmetic, Part First. For Fourth and Fifth Grades by George E. Atwood

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GEORGE E. ATWOOD

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PART FIRST

FOR FOURTH AND FIFTH GRADES

BY
GEORGE E. ATWOOD

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PREFACE.

THE two objects to be sought in teaching arithmetic are skill and power: skill in arithmetical operations, and a well-developed power to apply the principles of the science in the solution of the practical problems of every-day life. Either of these results is of little value without the other. Skill is attained only by repeated doing, and intellectual power is developed by the steady and continued exercise of the intellectual faculties. It is therefore evident that, during the first part of the course, there should be daily drill to develop skill in the fundamental processes; and throughout the course there should be constant work the object of which is to train and develop the reason. Teachers recognize these truths, but to accomplish the desired results, they have found it necessary, on account of the usual arrangement of arithmetics, to provide much supplementary work for their classes. Teachers appreciate the importance of a constant review, and yet the topical arrangement of most text-books in arithmetic makes it certain that in most cases the necessary review will not be given. The exceptional teacher, however, who insists that every lesson shall include a review of some topic previously studied finds himself burdened with the work of planning and providing the extra work. Teachers have therefore felt the need of a text-book in arithmetic the work of which can be pursued in regular order, and the use of which will give the desired skill and

power with the minimum amount of care and labor on their part. They want a book in which each day's work has its review as well as new work. They want a book in which all needed work is planned, prepared, and arranged for them. They want a book the work of which will in no case need to be supplemented.

This work has been prepared to meet these demands. The plan and arrangement are different from that of any other text-book on the subject, but it is believed that teachers will welcome the departure. The topical arrangement has been discarded, especially in the lower grades. The work has not been prepared on the assumption that one topic is to be presented, studied, and mastered before another topic is taken up. It is prepared rather in accordance with the well-established principle that with children long-continued practice is necessary to develop skill and fix principles. The work is divided into grades, the work of a grade being the work for one year. Each grade is divided into three terms, and each term into fifty lessons. This book contains the work for the fourth and fifth grades. The course of study and contents will show the kind and amount of work in each grade.

The work is planned for the teacher in every respect. It has been the aim to relieve the teacher of all care except to see that each lesson is well done. The order and time of taking up new work are indicated by notes to the teacher, given at the end of the lessons. These notes generally indicate also that new work will begin in the following lesson. As new topics are taken up, no space is given to simple questions and problems to which the term, "inductive method," has been applied. Neither is any space given to formal explanations or analyses of problems. Pupils rarely look at these things, and teachers who know the subject have their own way of presenting it and are wholly inde-

pendent of the book. It is therefore seriously doubted whether all this material is of the least value either to teachers or to pupils.

There is a difference of opinion among teachers as to the value of definitions and rules in teaching arithmetic, but most teachers are convinced that pupils should memorize the best form of definitions and principles, for they are the basis of much of the reasoning done in the work. It is undoubtedly true also that the memorizing of clear and concise rules aids materially in fixing arithmetical processes in mind. This does not mean that rules should be memorized in advance of all knowledge of the processes, but that they should always follow more or less practice. All definitions, principles, and rules are given in the back part of the book and are numbered. Notes to the teacher, before referred to, indicate when they are to be taught, and the first number in many of the lessons indicates which ones are to be learned.

A prominent feature of the work is the number and character of the problems. Only a careful examination and use of the same can reveal the effort that has been put forth to prepare and arrange work that shall always compel the closest attention of pupils, and the faithful doing of which must result in increasing independence, self-reliance, and power. No problems, especially in the fundamental rules, either in simple numbers, denominate numbers, or United States money, are arranged ready for solution. The greatest possible variety in the statement of problems will also be found. A special feature of the problems is that very often only the conditions of a transaction are given, no question being asked. Pupils are thus required to determine for themselves *what* can be found as well as *how* to find it. This idea is in harmony with practical life; for when pupils leave school, only given conditions are presented to

them, and they must reason out the conclusions for themselves.

No pains have been spared to make a book that can be used with the minimum amount of labor on the part of the teacher, and which will at the same time give the best possible results. It is hoped that teachers may find it in line with educational progress and worthy of use.

TARRYTOWN, N. Y.,
August, 1893.

GEORGE E. ATWOOD.

CONTENTS.

FOURTH GRADE—FIRST TERM.

Addition, numbers expressed in words.
Addition, numbers expressed in figures.
Addition of denominate numbers.
Addition of United States money.
Subtraction, numbers expressed in figures.
Subtraction of denominate numbers.
Subtraction of United States money.
Multiplication, numbers expressed in figures.
Multiplication of denominate numbers.
Multiplication involving United States money.
Division, numbers expressed in figures.
Division of denominate numbers.
Division involving United States money.
Concrete problems involving addition.
Concrete problems involving subtraction.
Concrete problems involving multiplication.
Concrete problems involving division.
Expression of numbers in words.
Use of parenthesis and vinculum.

FOURTH GRADE—SECOND TERM.

ALL WORK OF FIRST TERM CONTINUED.

Fractional parts of numbers, simple and denominate.
Area of rectangular surfaces, when the dimensions are expressed in the same unit and when they are expressed in different units.
Reduction ascending.
Reduction descending.