

**THE NEW
ELEMENTARY
ARITHMETIC**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649095131

The new elementary arithmetic by John W. Cook & N. Cropsey

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

www.triestepublishing.com

JOHN W. COOK & N. CROPSEY

**THE NEW
ELEMENTARY
ARITHMETIC**

NO. 1001
1903

GA 102
C7
1903
Educ.
dept.

COPYRIGHT 1893, 1895, 1899, 1903,
By SILVER, BURDETT AND COMPANY
EDUCATION DEPT.

PREFACE TO THE REVISED EDITION

THE present edition of "The New Elementary Arithmetic" will be found to differ from the earlier edition principally in an increase in the amount of drill work given upon the fundamental operations. This change, it is believed, recognizes a tendency of present-day arithmetic work which has the approval of the best authorities.

In a few other respects also the book has been changed, notably in the direction of simplification and the bringing of the book into harmony with the advance which has been made in the teaching of arithmetic since the first edition appeared.

In making these changes, the arrangement of the matter has been altered, a large number of new exercises have been added, and the problems in many cases have been rewritten or replaced.

It is hoped that the present book will be found thoroughly abreast of the best practice in the teaching of arithmetic, and that in its new form the work will continue to enjoy the confidence and appreciation which have been so kindly extended to it up to the present time.

PREFACE TO THE FIRST EDITION.

IT has seemed to the authors of the **NORMAL COURSE IN NUMBER** that there is room for another series of Arithmetics, notwithstanding the fact that there are many admirable books on the subject already in the field.

The **ELEMENTARY ARITHMETIC** is the result of the experience of a supervisor of primary schools in a leading American city. Finding it quite impossible to secure satisfactory results by the use of such elementary arithmetics as were available, she began the experiment of supplying supplementary material. An effort was made to prepare problems that should be in the highest degree practical, that should develop the subject systematically, and that should appeal constantly to the child's ability to think. The accumulations of several years have been carefully re-examined, re-arranged, and supplemented, and are now presented to the public for its candid consideration.

Not the least valuable feature of this book is the careful gradation of the examples, securing thereby a natural and logical development of number work. No space is occupied with the presentation of theory,—that side of the subject being left to the succeeding book. The first thoughts are *what* and *how*,—these so presented that the processes shall be easily comprehended and mastered. Subsequently, the *why* may be intelligently considered and readily understood.

INTRODUCTION.

It has been said that the "new education" proceeds to give the child an experience, instead of presupposing one for him. Pupils become practical, not by learning forms of reasoning, but by exercising the reason upon their own plane of comprehension. In such a spirit this ELEMENTARY ARITHMETIC has been prepared. It presents three-years' work, based upon carefully graded exercises which may be used as a means of training pupils to think, and of teaching at the same time the practical application of numbers to ordinary business transactions.

It is very important that children should master the fundamental processes so thoroughly that they come to serve thought without loss of time or energy. The patient following of these graded exercises and drills should secure this result. In general, division and multiplication, as converse processes, are followed by addition and subtraction on the same general plan. As the work becomes more complex, it is difficult to make this alternation with perfect regularity without detriment to the efficiency of the work. Stress must be laid upon such a complex subject as long division, a very difficult subject for children, which requires an amount of practice that, at first view, might seem out of proportion to the practice given in other subjects.

The primary facts of addition and subtraction are presented in the first twenty pages. Neither accuracy nor rapidity in calculation can be secured until these combina-

tions can be given with readiness. These facts are used again in the tables of "endings," for application to numbers above *twenty*. These tables have a practical value and should be as thoroughly applied as the multiplication and division tables. These tables in subtraction give an opportunity for reviewing the primary facts, and for using this knowledge with numbers above *twenty*, but they have no such direct application as the tables in addition. Any reasonable system of teaching addition can be used with the graded examples of the ELEMENTARY ARITHMETIC.

The first and hardest step in solving an arithmetical question is to determine the processes required; the second, to state the different steps of the solution in proper arithmetical form. Children can give results long before they are conscious of the process by which the results are obtained. The statement of the process by means of arithmetical signs and figures is a new language to the pupil; it is not surprising that the mastery of this language takes time and skillful teaching. The statement of the result, in a concrete problem, is probably all that should be required in the second school year. It may be desirable to introduce a simple statement of the process early in the third year. Such a statement can be added to the sentence giving the result, as on page 16, example 1: $4 \text{ cents} \times 3 = 12 \text{ cents}$. No formula should be taught with the thought that it will do the thinking for the pupil. Let the problem be pictured, and this picturing followed by the expression in figures, before any formal expression in words is attempted. The object of picturing problems is not to teach children to make pictures (though all this work should be done with reasonable care), but to give a method of representation by which they can make their thoughts clear to themselves. It is

a means, not an end, and should be so regarded. When problems can be stated clearly and solved correctly there is no further necessity for picture representation, except as a means of testing the pupil's comprehension of spoken or written forms. Let not objective work be undervalued, however. It is a very necessary means, which, rightly used, will secure accurate knowledge and a correct use of terms, thus saving much time and confusion later on. Pupils should learn early to show objectively the difference between *six* and *one-sixth of six*, between one-sixth of *six* and one-sixth of *one*, etc.

Problems which may be worked out orally in the recitation will often be found too difficult for a written test. "Miscellaneous problems" should be used with discrimination, the teacher selecting such as seem suited to the capacity of the class.

All measures introduced should be learned by actual use. The standards in common use, such as the *yard*, *foot*, *ounce*, *pound*, *quart*, etc., can be obtained easily, and should form a part of the regular school supplies. Exercises in estimating volume and extension train the judgment while giving practical results in knowledge, and there is no time in the course when pupils can better afford to do this work than during the first years of the elementary school course.

Rules may be made by the pupils after the process is learned from which the rule is derived.

This book has grown from *experience*, and is offered to fellow-teachers as a systematic work-book.

