

**THOMSON'S GRADED SERIES.
NEW RUDIMENTS OF
ARITHMETIC: COMBINING
MENTAL AND SLATE EXERCISES
FOR INTERMEDIATE DEPARTMENT**

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Thomson's Graded Series. New Rudiments of Arithmetic: Combining Mental and Slate Exercises for Intermediate Department by James B. Thomson

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JAMES B. THOMSON

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THOMSON'S NEW GRADED SERIES, 2.

NEW

RUDIMENTS

OF

ARITHMETIC:

COMBINING

MENTAL AND SLATE EXERCISES

FOR

INTERMEDIATE DEPARTMENTS.

Revised
By JAMES B. THOMSON, LL. D.,

AUTHOR OF DAY & THOMSON'S ARITHMETICAL SERIES; EDITOR OF DAY'S
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THOMSON'S NEW GRADED SERIES.

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IN THREE BOOKS.

- I. NEW MENTAL ARITHMETIC.
(For Primary Departments.)
- II. NEW RUDIMENTS OF ARITHMETIC. (For Intermediate Departments.)
- III. NEW PRACTICAL ARITHMETIC.
(For Grammar Departments.)

THOMSON'S SUPPLEMENTARY COURSE.

FOR HIGHER INSTITUTIONS. (*In preparation.*)

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P R E F A C E .

THE "New Graded Series," of which this is the second book, is divided into three parts. The object of this arrangement is *convenience* and *economy*.

While there may be objections to an "indeterminate series of school-books," it must be admitted that exercises in reading, arithmetic, etc., which are adapted to the capacity of beginners, are totally unfit for advanced classes. In view of this fact, it requires no arguments to show that a "limited series," adapted to the different capacities of learners, is a dictate of common sense.

Each book in this Series is *complete* in itself. The definitions and principles, so far as each extends, are expressed in the *same language*, but the *examples* are all *different*.

The present work consists of a course of *Mental* and *Written Exercises combined*. It is designed:

1st. To develop the *elementary principles* of the science by *oral* examples.

2d. To familiarize the pupil with the *application* of these principles to the solution of problems requiring the use of the slate.

3d. To lead him to *generalize* the principles thus developed, and to put the steps of particular solutions into a *concise statement*, or *General Rule*.

4th. To secure *accuracy* and *rapidity* in the combination of numbers.

Finally, the work is specially adapted to intermediate classes, who are beginning to "cipher." The New Rudiments, it is hoped, may facilitate the progress of pupils, and merit the approval of teachers.

JAMES B. THOMSON.

NEW YORK, July, 1872.

SUGGESTIONS.

1. PARTICULAR attention should be paid to the assignment of Lessons. They should be neither too long, nor too short; but adapted to the capacity of the class, and the time they have for preparation.

2. *Thoroughness* should be insisted on, at every step. The acceptance of an imperfect lesson, whether from sympathy, or inattention, is a *positive injury* to the pupil.

3. The most effective auxiliaries of thoroughness are *frequent reviews* and *Tabular drills*. "Practice makes perfect."

4. A perfect recitation implies both *promptitude* and *correctness*. In reciting problems, the analysis should be *logical*, and the language *correct*.

5. Pupils should be encouraged to study out *different solutions* of the same problem, and to exercise their judgment in selecting the most *simple, logical, and concise*.

6. Care should also be taken to prevent the *habit of adding* by counting the fingers. *Counting* is not *addition*. Pupils should be taught to add numbers as a *whole*, and be able to name the *sum* of any two given digits, instantly.

7. The *definitions* should be carefully explained, and thoroughly committed to memory. Each principle and rule should be dwelt upon until the pupil comprehends it, and is able to give a *correct account* of it, in his own language, or that of the author.

8. Cultivate the *habit of self-reliance* in the solution of problems. It is better for the pupil to solve *one example, independent* of the answer and all extraneous aid, than a *dozen* by the help of a teacher, or a key.

9. Special pains should also be taken to cultivate the *perceptive faculties*, and correct the *erroneous ideas* of learners as to distance, surface, weight, etc.

10. In developing the idea of *Fractions*, and the *Units of Weights and Measures*, let the pupil *divide* some object into halves, thirds, etc., and, if possible, let him *see* and *handle* the *actual standards* of length, surface, capacity, and weight. These simple acts will give him a *more exact idea* of *Fractions*, and of *Weights and Measures*, than a score of pictures, or a talk an hour long.

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RUDIMENTS.

DEFINITIONS.

1. What is Arithmetic?

Arithmetic is the science of numbers.

2. What is a single thing called?

A *Unit*, or *One*.

3. If another is put with it, what?

Two.

4. If another, and another, etc., what?

Three, four, five, six, etc.

5. What is number?

Number is a unit, or a collection of units.

6. When a number is not applied to any object, what is it called?

An *Abstract Number*.

7. When it is applied to some object, what?

A *Concrete Number*. Give examples.

8. When numbers express units of the *same kind*, as, 3 apples and 4 apples, 5 and 7, etc., what are they called?

Like Numbers.

9. When they express *units of different kinds*, as, 4 books and 6 pencils, what?

Unlike Numbers.