

**HARVEY'S ESSENTIALS OF ARITHMETIC:
WITH EVERYDAY PROBLEMS RELATING
TO AGRICULTURE, COMMERCE, AND
OTHER VOCATIONS. SECOND BOOK.
PART II**

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Harvey's Essentials of Arithmetic: With Everyday Problems Relating to Agriculture, Commerce, and Other Vocations. Second Book. Part II by L. D. Harvey

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L. D. HARVEY

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SECOND BOOK. PART II**

HARVEY'S ESSENTIALS OF ARITHMETIC

With Everyday Problems Relating to Agriculture,
Commerce, and Other Vocations

SECOND BOOK

PART II

BY

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PREFACE

THIS book is intended to cover, in particular, the work of the seventh and eighth years. It begins, however, with a brief review of the work through decimals. Great care has been taken to eliminate useless and obsolete subjects and to fill their places with matters relating to the present-day interests of the pupils and to modern business problems.

The main purpose of the book is to secure accuracy and speed in the handling of numbers, and sureness in the interpretation of such problems as come within the range of the pupils' experience. There is thorough drill in abstract number processes. In their concrete application an effort has been made to substitute for unreal or unstimulating conditions many problems of a prevocational character relating directly to the pupils' experience, such as problems in manual training and household arts, commerce, agriculture, etc.

Many problems suggested by recent national legislation have also been included, such as problems relating to Postal Savings Banks, the Federal Income Tax, the Tariff of 1913, and the new Federal Banking law.

The reviews throughout the book are cumulative and thorough. They insure the pupil against forgetting what he has learned, while his energies are concentrated on the mastery of a new process.

Attention is also called to the following features :

1. The work is carefully graded. While the exercises increase gradually in difficulty, and while they are strong enough to test the pupils' power, they are not so hard as to cause discouragement or fatigue.

2. Great emphasis is placed on correct interpretation of problems and on analysis of the reasoning involved. Pupils are, furthermore, encouraged to study problems with the idea of choosing the most economical method of solution, and are advised to make mental estimates, whenever practicable, to be compared with the results of their written work.

3. The chapter on the "Use of Symbols" tests the pupils' power of reasoning and serves as an introduction to the study of algebra.

4. Suggestions to teachers are scattered throughout the book wherever they may serve useful purposes.

5. The importance of self-activity is recognized in asking the pupils to frame problems for themselves and to draw figures that help toward the comprehension of number relations. The "Problems without Numbers" encourage the pupils to construct their own formulas for the solution of various types of problems. They serve as a further aid in the development of the power of reasoning and give the pupils practice in generalization, which will prove invaluable in later mathematical work.

SUGGESTIONS

BEFORE beginning any recitation, the teacher should bear in mind the following four fundamental propositions:

- (1) Each lesson should have a definite purpose.
- (2) The teacher must clearly realize what must be known and done to accomplish this purpose.
- (3) The teacher must consider how much of this material the pupil has already mastered.
- (4) The teacher must then determine what the pupil has still to learn and how the known may best be related to the unknown.

The teacher should be sure that the meaning of new and unusual words and expressions is understood by the pupils before they undertake the mastery of the lesson.

A new topic is frequently introduced by what is called the "Study Recitation." The matter under this heading should be mastered by the pupils under the immediate direction and stimulation of the teacher. The teacher should always thoroughly master the treatment of the subject matter under the "Study Recitation" in advance, and should be able to give the illustrations and applications without reference to the book, and to extend or modify them as may be found necessary. These exercises are given where special preparation for further work by the pupils is deemed necessary. The time required for such preparatory work is time saved, even if an entire recitation period is necessary, because the pupils will do the following assigned work more

intelligently, with greater interest, and more rapidly than would be possible without such preparation.

At the close of the most important subjects, a set of review questions is given. As the pupils proceed in their work upon a topic it is an excellent plan for the teacher to assign as a part of the lesson such of these questions as have been covered by the work already done. In this way pupils will be required to prepare upon not more than one or two questions a day, and will need but little time, when the subject is finished, to prepare for a complete summary of it.

Training in the statement of arithmetical facts, conditions, operations, and relations, correct in matter and form, should be carried on throughout the study of the subject, the requirements in this respect being adapted to the pupils' capacity. Definitions are statements of fact, and rules are statements of processes and of operations involving these processes. Unless the pupil can improve upon the form of these statements, he should learn them and make them a part of his arithmetical vocabulary.

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