

**MATHEMATICS FOR  
COMMON SCHOOLS: A  
MANUAL FOR TEACHINGS**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649430598

Mathematics for Common Schools: A Manual for Teachings by John H. Walsh

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**JOHN H. WALSH**

**MATHEMATICS FOR  
COMMON SCHOOLS: A  
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*MATHEMATICS FOR COMMON SCHOOLS*

A

MANUAL FOR TEACHERS

INCLUDING

DEFINITIONS, PRINCIPLES, AND RULES  
AND SOLUTIONS OF THE MORE  
DIFFICULT PROBLEMS

BY

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BROOKLYN, N. Y.

PRIMARY ARITHMETIC



D. C. HEATH & CO., PUBLISHERS.

1900

LT31534  
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**Notwood Press :**  
**J. S. Cushing & Co. — Berwick & Smith,**  
**Boston, Mass., U.S.A.**

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(PRIMARY AND ELEMENTARY ARITHMETIC MANUAL.)

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## MANUAL FOR TEACHERS



### I

#### INTRODUCTORY

**Plan and Scope of the Work.**—In addition to the subjects generally included in the ordinary text-books in arithmetic, *Mathematics for Common Schools* contains such simple work in algebraic equations and constructive geometry as can be studied to advantage by pupils of the elementary schools.

The arithmetical portion is divided into thirteen chapters, each of which, except the first, contains the work of a term of five months. The following extracts from the table of contents will show the arrangement of topics:

#### FIRST AND SECOND YEARS

**Chapter I.**—Numbers of Three Figures. Addition and Subtraction.

#### THIRD YEAR

**Chapters II and III.**—Numbers of Five Figures. Multipliers and Divisors of One Figure. Addition and Subtraction of Halves, of Fourths, of Thirds. Multiplication by Mixed Numbers. Pint, Quart, and Gallon; Ounce and Pound. Roman Notation.

## FOURTH YEAR

Chapters IV. and V. — Numbers of Six Figures. Multipliers and Divisors of Two or More Figures. Addition and Subtraction of Easy Fractions. Multiplication by Mixed Numbers. Simple Denominate Numbers. Roman Notation.

## FIFTH YEAR

Chapters VI. and VII. — Fractions. Decimals of Three Places. Bills. Denominate Numbers. Simple Measurements.

## SIXTH YEAR

Chapters VIII. and IX. — Decimals. Bills. Denominate Numbers. Surfaces and Volumes. Percentage and Interest.

## SEVENTH YEAR

Chapters XI. and XII. — Percentage and Interest. Commercial and Bank Discount. Cause and Effect. Partnership. Bonds and Stocks. Exchange. Longitude and Time. Surfaces and Volumes.

## EIGHTH YEAR

Chapters XIII. and XIV. — Partial Payments. Equation of Payments. Annual Interest. Metric System. Evolution and Involution. Surfaces and Volumes.

While all of the above topics are generally included in an eight years' course, it may be considered advisable to omit some of them, and to take up, instead, during the seventh and eighth years, the constructive geometry work of Chapter XVI. Among the topics that may be dropped without injury to the pupil are Bonds and Stocks, Exchange, Partial Payments, and Equation of Payments.

**Grammar School Algebra.** — Chapter X., consisting of a dozen pages, is devoted to the subject of easy equations of one unknown quantity, as a preliminary to the employment of the equation in so much of the subsequent work in arithmetic as is rendered more simple by this mode of treatment. To teachers desirous of dispensing with rules, sample solutions of type examples, etc., the algebraic method of solving the so-called "problems" in percentage, interest, discount, etc., is strongly recommended.

In Chapter XV., intended chiefly for schools having a nine years' course, the algebraic work is extended to cover simple equations containing two or more unknown quantities, and pure and affected quadratic equations of one unknown quantity.

No attempt has been made in these two chapters to treat algebra as a science; the aim has been to make grammar-school pupils acquainted, to some slight extent, with the great instrument of mathematical investigation, — the equation.

**Constructive Geometry.** — Progressive teachers will appreciate the importance of supplementing the concrete geometrical instruction now given in the drawing and mensuration work. Chapter XVI. contains a series of problems in construction so arranged as to enable pupils to obtain for themselves a working knowledge of all the most important facts of geometry. Applications of the facts thus ascertained, are made to the mensuration of surfaces and volumes, the calculation of heights and distances, etc. No attempt is made to anticipate the work of the high-school by teaching geometry as a science.