

**APPLIED MATHEMATICS  
FOR JUNIOR  
HIGH SCHOOLS**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649060238

Applied Mathematics for Junior High Schools by Eugene Henry Barker

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](http://www.triestepublishing.com)

**EUGENE HENRY BARKER**

**APPLIED MATHEMATICS  
FOR JUNIOR  
HIGH SCHOOLS**



APPLIED MATHEMATICS  
FOR  
JUNIOR HIGH SCHOOLS

BY

EUGENE HENRY BARKER

FORMERLY HEAD OF THE DEPARTMENT OF MATHEMATICS IN THE  
POLYTECHNIC HIGH SCHOOL, LOS ANGELES, CALIFORNIA



ALLYN AND BACON

BOSTON

NEW YORK

CHICAGO

ATLANTA

SAN FRANCISCO

318 7

COPYRIGHT, 1920, BY  
EUGENE H. BARKER

THE  
AMERICAN  
LAWYER

PAY

Norwood Press  
J. S. Cushing Co. — Berwick & Smith Co.  
Norwood, Mass., U.S.A.

## PREFACE

THIS book has been written to meet the demand for a practical course in applied mathematics which shall coördinate the schoolroom lesson and the actual problem of the industrial and commercial world. It presents the body of mathematical information which is likely to be of daily service, no matter what one's occupation may be.

*Applied Mathematics* is the outgrowth of twelve years of experimentation in a high school of over two thousand students, and the exercises in the book have stood the test of classroom trial. The examples and problems have been selected from many fields—industrial, commercial, mechanical, agricultural—and, as far as possible, are such as occur in the household, on the farm, in the factory, and at the office. The book gives in teachable form:

(1) An adequate treatment of the fundamental operations of arithmetic, with proper attention to modern methods of performing these operations.

(2) A consideration of ordinary business transactions.

(3) A sufficient acquaintance with the symbols of algebra and of algebraic operations to enable the student to interpret and apply simple formulas.

(4) Enough geometry to enable him to compute the areas and volumes of the common geometric figures.

(5) A study of graphic charts and their use.

(6) Training in the use of mathematical tables.

(7) Practice in the power to judge a computed result with reference to its reasonableness.

Having drawn on various sources for materials, the author takes this opportunity to express his indebtedness to numerous interested teachers and technical workers whose criticisms and advice have been of invaluable service in the preparation of the book. Especially does he desire to acknowledge obligation to his friend Dr. Nathaniel L. Gardner, of the University of California, for kindly assistance and sympathetic encouragement.

E. H. B.

SAN FRANCISCO, CALIFORNIA,  
March, 1920.



## CONTENTS

	PAGE
LIST OF ILLUSTRATIONS AND MAPS . . . . .	vii
CHAPTER	
I. ADDITION AND SUBTRACTION . . . . .	1
II. MULTIPLICATION AND DIVISION . . . . .	15
III. FRACTIONS AND FACTORS . . . . .	34
IV. DECIMALS. BILLS AND ACCOUNTS . . . . .	54
V. PERCENTAGE . . . . .	69
VI. DENOMINATE NUMBERS . . . . .	93
VII. THE USE OF TABLES . . . . .	124
VIII. SQUARE ROOT AND CUBE ROOT . . . . .	135
IX. MENSURATION . . . . .	146
X. GRAPHICAL REPRESENTATION . . . . .	168
XI. RATIO AND PROPORTION . . . . .	180
XII. THE USE OF FORMULAS . . . . .	196
XIII. AGRICULTURAL PROBLEMS . . . . .	202
XIV. MECHANICAL PROBLEMS . . . . .	213
XV. MISCELLANEOUS PROBLEMS . . . . .	226



## ILLUSTRATIONS AND MAPS

	PAGE
Standing Timber in Washington . . . . .	5
Oil Wells near Bakersfield, California . . . . .	8
A New England Marble Quarry . . . . .	11
Agricultural Building, Washington, D. C. . . . .	14
An Atlantic Coastwise Sailing Vessel . . . . .	17
An Ohio Pasture . . . . .	22
Twentieth Century Limited Going Sixty Miles an Hour . . . . .	31
United States Warships . . . . .	32
Tractor-drawn Reapers . . . . .	51
Motor-boat on the Pacific . . . . .	52
Steel Works at Pueblo, Colorado, where Iron Ore is Converted into Steel . . . . .	79
Paris Stock Exchange . . . . .	88
A Los Angeles Commercial Center, Showing Title Insurance Building . . . . .	89
Surveyor's Level and Transit . . . . .	97
A Steam Dredger . . . . .	99
13,000,000 Bushel Coal Shipment by Barges . . . . .	101
Giant Ore Crane Lifting Over a Ton of Ore . . . . .	108
Map Showing Time of Different Localities at a Definite Mo- ment . . . . .	110
Standard Time Map of the United States . . . . .	111
Big Trees . . . . .	113
Denver Mint . . . . .	116
Bridge Construction Work, Firth of Forth . . . . .	123
A California Foothill Orange Grove . . . . .	128
National Capitol at Washington, D. C. . . . .	169
Floor Plan of the National Capitol . . . . .	169
Egg Yields . . . . .	176
Map.— Woman Suffrage in the United States . . . . .	177
Lightning Flash . . . . .	179