

**CONSTRUCTIVE TEXT-BOOK
OF PRACTICAL
MATHEMATICS. VOLUME IV:
TECHNICAL TRIGONOMETRY**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649555345

Constructive Text-Book of Practical Mathematics. Volume IV: Technical Trigonometry by
Horace Wilmer Marsh

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

HORACE WILMER MARSH

**CONSTRUCTIVE TEXT-BOOK
OF PRACTICAL
MATHEMATICS. VOLUME IV:
TECHNICAL TRIGONOMETRY**

CONSTRUCTIVE TEXT-BOOK
OF
PRACTICAL MATHEMATICS

BY

HORACE WILMER MARSH

*Head of Department of Mathematics, School of Science
and Technology, Pratt Institute*

VOLUME IV
TECHNICAL TRIGONOMETRY

FIRST EDITION

FIRST THOUSAND

NEW YORK
JOHN WILEY & SONS, INC.
LONDON: CHAPMAN & HALL, LIMITED

1914

CONTENTS

THE WORK-BOOK.....	PAGE 3
--------------------	-----------

CHAPTER I

LOGARITHMS

Section 1, Logarithm of a Number Greater than Unity. Section 2, Logarithm of a Number Less than Unity. Section 3, Napierian or Hyperbolic Logarithms. Section 4, Logarithm of a Product. Section 5, Logarithm of a Quotient. Section 6, Logarithm of a Power. Section 7, Logarithm of a Root. Section 8, Solution of an Exponential Equation. Section 9, Model Solutions.....	11
---	----

CHAPTER II

THE RIGHT TRIANGLE

Section 1, Functions of an Acute Angle. Section 2, Solution of a Right Triangle. Section 3, The Isosceles Triangle. Section 4, Applied Problems.....	46
--	----

CHAPTER III

THE OBLIQUE TRIANGLE

Section 1, Functions of any Angle. Section 2, The Four Laws of Solution. Section 3, Solution of Triangles. Section 4, Applied Problems.....	117
---	-----

CHAPTER IV

RELATION OF FUNCTIONS

	PAGE
Section 1, Functions of Compound Angles. Section 2, Functions of Multiple Angles	187

CHAPTER V

USE OF THE SLIDE RULE

Section 1, Scales. Section 2, Sines and Tangents. Section 3, Powers and Roots. Section 4, Multiplication. Section 5, Division. Section 6, Reciprocals. Section 7, Trigonometric Computations	200
--	-----

REFERENCE TABLES

I. Measures of Length	220
II. Measures of Area	221
III. Measures of Volume	222
IV. Measures of Weight	223
V. Decimal Equivalents	224
VI. U. S. and Metric Equivalents	225
VII. Wire-gage Sizes	226

TECHNICAL TRIGONOMETRY

TECHNICAL TRIGONOMETRY

THE WORK-BOOK

1. Description. The constructive form of this text requires that each student shall prepare the work daily in accordance with the suggestions, questions, and directions in numerous developing exercises, which force a student not only to do his own thinking but to express his thought in written form.

For this purpose the mathematics' work-book is used, which both in size and form is the result of sixteen years of experiment with over 2000 students. It consists of a note-book cover, the daily record sheet described in a subsequent paragraph, and 250 removable sheets of 16-pound, unruled, linen paper measuring $5\frac{1}{2} \times 8\frac{1}{2}$ inches, with fasteners for attaching the sheets to the back cover and the student's written work to the front cover.

2. Instruments. In order to prepare the work in a satisfactory manner and to secure the greatest educational benefit each student will require the following equipment:

- 12-inch triangular scale with U. S. and metric graduations,
- medium lead pencil,
- ink and pencil erasers,
- fountain pen,
- ruling pen,
- compasses,

protractor,
red, black, and India ink,
slide-rule.

3. Value of Careful Work. It is obvious that skill is never acquired by careless, indifferent effort. Therefore, as in manual training, the desideratum in every exercise, example, and problem in this text, is perfection in the finished work.

The instructions in the two subsequent paragraphs and throughout the text have accordingly been written to stimulate each student to a servicable ideal of excellence and efficiency and to give him an increasing ability and enthusiasm for its realization.

4. Instructions for Work-book Entries. (1) **WHAT TO DO FIRST.** On the inside of the front cover of the work-book write your full name, home and rooming address, and name of school and course.

Attach all record sheets except one, to the back cover under the blank sheets.

(2) **USE OF INK.** With the exception of the drawing and the first exercise in lettering, all work is to be done directly with pen and ink whether in the classroom or outside.

(3) **DATE, AND PAGE NUMBER.** Enter date on which work is prepared, in the upper right corner of the page about one and one-half inches from the top.

Number each page in the lower right corner when finished.

(4) **HEADINGS.** Enter all work under the same heading as in the text or as otherwise specified.

Begin paragraph numbers and headings about one-half inch from the left margin.

(5) **LETTERING.** The greater legibility of lettered headings and the practical value of the ability to letter neatly and rapidly, justify the requirement that title pages,