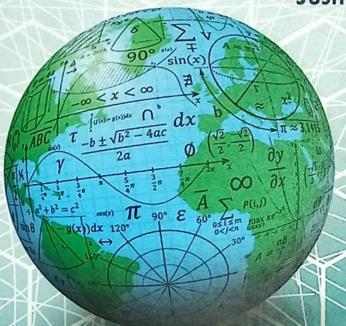


MATHEMATICS in the Modern World

Ethel Cecille Baltazar Carmelita Ragasa Justina Evangelista



MATHEMATICS in the Modern World

Ethel Cecille Baltazar Carmelita Ragasa Justina Evangelista





C & E Publishing, Inc.

C& E Publishing, Inc. was established in 1993, and in a member of ABAP, PBAL ASDB, and PEPA.

> Mathematics in the Modern World Published in 2018 by C & E Publishing, Inc. 839 EDSA, South Triangle, Quezon City Tel. No.: (02) 929-5088 E-mail: info@cebookshop.com

> Copyright © 2018 by C & E Publishing, Inc., Ethel Baltazar, Carmelita Ragasa, and Justina Evangelista

ALL RIGHTS RESERVED. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means—electronic, mechanical, photocopying, recording, or otherwise—without the prior written permission of the publisher.

Cataloguing in Publication Date

	Cataloguing-in-Publication Data
QA	Baltazar, Ethel
.2 .B35 2018	Mathematics in the modern world/Ethel Baltazar, Carmelita Ragasa, and Justina Evangelista.—Quezon City: C & E Publishing Inc., ©2018.
	viii, 270 p. : ill. ; cm.
	Includes bibliography and index.
	ISBN: 978-971-98-1072-8.
	Mathematics. I. Ragasa, Carmelita. II. Evangelista, Justina. III. Title.

Book Design: Paul Andrew L. Pagunsan Cover Design: Ruth Anne D. Ellorin

Contents

Preface vi	i
Chapter 1: The Nature of Mathematics 1	
1.1 Mathematics in our World	2
1.2 Fibonacci Numbers	5
1.3 The Golden Ratio	1
Chapter 2: Mathematical Language and Symbols	0
2.1 The Language of Mathematics	
2.2 Expressions vs. Sentences	
2.3 Unary and Binary Operations	
2.4 Some Fundamentals of Logic	1
Chapter 3: Problem Solving and Reasoning 4	1
3.1 Inductive Reasoning	2
3.2 Deductive Reasoning	6
3.3 Problem Solving with Patterns	8
3.4 Polya's Problem-Solving Strategy	3
Chapter 4: The Statistical Tools 6	
4.1 Correlation	7
4.2 Testing of Hypotheses	
4.3 Regression	6

Chapter 5: The Mathematics of Graphs 93
5 1 Introduction to Graph Theory
5.2 Euler Paths and Circuits
5.3 Hamiltonian Paths and Circuits 103
5.4 Graph Coloring
5.5 Trees
Chapter 6: Apportionment and Voting 126
6.1 Introduction to Apportionment
6.2 Introduction to Voting
Chapter 7: The Mathematics
of Patterns and Symmetries
7.1 Transformation and Isometries
7.2 Symmetry
7.3 Tesselations
7.4 Fractals
Chapter 8: The Beauty of Codes
8.1 Coding
8.2 Cryptography
Chapter 9: Linear Programming
9.1 Basic Concept of Linear Programming 210
9.2 Solution of LP Problems by the Graphical Method 217
Chapter 10: Mathematical System
10.1 Introduction
10.2 Mathematical System in Geometry
10.3 Algebraic Mathematical System
10.4 Abstract Mathematical System
References
Index
The Authors

The Book

What is mathematics? Where can it be found? What is it for? What is it about? How is it done? Who uses it? These are just some of the essential questions that Mathematics in the Modern World aims to answer. The book covers the mandated topics and some of the elective ones which are all organized in a logical fashion. In particular, topics include the nature of mathematics, mathematical language and symbols, problem solving and reasoning, statistical tools, graphs, apportionment and voting, patterns and symmetries, coding, linear programming, and mathematical system. Written in a lucid manner, the book will surely enable students to understand not only the concepts presented but more importantly their application to everyday lives. Finally, it offers a wide array of exercises designed to reinforce lessons, introduce topics, and recognize and celebrate the place of mathematics in the modern world.



Excello™ is a continuously expanding aggregation of high-quality learning assessments designed to help students master the Philippine curriculum's key skills and provide teachers with easy-to-use test creation tools.



EssayJack is an interactive web platform that pre-structures student essays, reduces writing anxiety, and allows educator customization and feedback.







