A WSS Senior High School Book Series

STATISTICS AND PROBABILITY

for Senior High School

A Comprehensive Approach

K to 12 Curriculum Compliant

Winston S. Sirug, Ph.D.

STATISTICS AND
PROBABILITY
for Senior High School – Core Subject
A Comprehensive Approach

89,209898498980989808989809898/98O8Z989809BO999899989809898989898989BOSO8DO09

A WSS Senior High School Book Series

Winston S. Sirug, Ph.D.
Professor

STATISTICS AND PROBABILITY

for Senior High School – Core Subject

A Comprehensive Approach

Winston S. Sirug

COPYRIGHT 2021
Winston S. Sirug

ISBN: 978-621-406-094-8

ALL RIGHTS *RESERVED.* No part of this work covered by the
,oyright thereon may be reproduced, used in any from OF
any means– graphic, electronic or mechanical, including
b,tocopying, recording, or information storage and
J?t'ifieval systems - without written permission from the
Vplisher and the author

©

/lished by:
I
MINDSHAPERS CO., INC.
Rm. 108, Intramuros Corporate Plaza Bldg.,
Recoletos St. Intramuros, Manila
Philippines 1002
Telefax: (02) 85276489
Tel. No.: (02) 82546160
E-mail: mindshap_~rsco@yahoo.com

If'ver Design/Lay out Artist: **Winston S. Sirug**

oo Contents oo

Preface iii
Dedication **v**

Chapter 1

Random Variables and Probability Distributions 1

Unit 1.1: Basic Concepts **2**
Unit 1.2: Properties of Random Variables **9**
Unit 1.3: Mean and Variance of Discrete Random Variables **12**
Unit 1.4: Some Special Discrete Probability Distributions **15**
Unit 1.5: MS Excel Software Application 24
Unit Exercises 27
Chapter 1 Review Problems 41

Chapter 2

Normal Distribution 43

Unit 2.1: Basic Concepts 4
Unit 2.2: Properties of a Normal Distribution **46**
Unit 2.3: Standard Normal Distribution **46**
Unit 2.4: Application of a Normal Distribution **53**
Unit 2.5: MS Excel Software Application **60**
Unit Exercises 65
Chapter 2 Review Problems **71**

Chapter 3

Sampling and Sampling Distributions 73

Unit 3.1: Basic Concepts 75
Unit 3.2: Sampling Techniques 75
Unit 3.3: Sampling Distribution of the Sample Mean 78
Unit 3.4: Central Limit Theorem 89
Unit Exercises 93
Chapter 3 Review Problems 99

Chapter 4

Estimation of Parameters 101

Unit 4.1: Basic Concepts 103
Unit 4.2: Interval Estimate of Population Mean **103**
Unit4.3: Interval Estimate of Sample Mean **109**
Unit 4.4: Interval Estimate of Population Proportion **112**
Unit 4.5: MS Excel Software Application **116**
Unit Exercises **127**
Chapter 4 Review Problems **137**