Contents

Preface iii

1. Sets, Sample Spaces, and Probabilities

1.1 Random Experiments 1.2 Sets Operations and on Sets **1.4** Probabilities 1.3 Sample Spaces 1.5 Events in a Sample Space 1.6 Mutually Exclusive Events 1.7 Events That Are Not Mutually Exclusive 1.8 Independent Events 1.9 Nonindependent Events: Conditional Probabilities 1.10 Bayes' Theorem Problems

2. Binomial Experiments

2.1 The Nature of a Binomial Experiment 2.2 A Binomial Experiment with n = 5 Trials and with P = 1/2 2.3 The Number of Permutations of *n* Objects Taken *n* at a Time 2.4 The Number of Permutations of *n* Objects Taken *r* at a Time 2.5 The Number of Permutations of *n* Objects When Some of the Objects Are Alike 2.6 The Number of Combinations of *n* Objects Taken *r* at a Time 2.7 A Binomial Experiment with n - 10 Trials and with P = 1/2 2.8 Type I and Type II Errors and the Power of a Test 2.9 A Binomial Experiment with n = 15 Trials and with P = 1/3 2.10 The Binomial Expansion *Problems*

3. Discrete Random Variables

3.1 Introduction
3.2 An Example of a Discrete Random Variable
3.3 Probability Distribution of a Discrete Random Variable
3.4 Independent Random Variables
3.5 The Covariance
3.6 The Sum of *n* Random Variables
3.7 The Difference between Two Independent Random Variables
3.8 The Mean of *n* Random Variables *Problems*

1

15

32

Ranks13.7 The χ^2 Test for an $n \times N$ Table of Ranks13.8 The FTest for an $n \times N$ Table of Ranks13.9 The Coefficient of Concordance: W13.10 Relations of F and χ^2 to W13.11 The Analysisof Variance for a Randomized Block Design13.12 Sums of Squaresand Mean Squares in the Analysis of Variance13.13 Assumptions Involved in the Test of Significance13.14 Violations of Assumptionsand Conservative F Tests13.15 Carry-over EffectsProblems

14. Experiments Concerned with Change in Performance Over Trials 215

14.1 Introduction 14.2 Linear and Ouadratic Components of the 14.3 An Example involving Ten Subjects and Trial Sum of Squares 14.4 Test of Significance of Deviations from Linear Four Trials 14.5 Another Example Involving Ten Subjects and Four Regression Trials 14.6 An Experiment Involving a Treatment Factor 14.7 The Significance of the Linear Component of the Trial Sum of Squares 14.8 The Test of Significance of the Linear Component of the $A \times T$ Sum of Squares 14.9 The Test of Significance of the Quadratic Component of the $A \times T$ Sum of Squares 14.10 Conservative F Tests 14.11 Trend of Treatment Means When the Treatment Consist of Values of a Quantitative Variable Problems

DC	
<i>Rotoronco</i>	

235

G	lossar	y
---	--------	---

239

Appendix A.	A Review of Some Elementary Mathematical Rules	243
-------------	--	-----

Order of Operations and Symbols of Grouping Operations with Zero Operations with Radicals Exponents Logarithms Summation Equations

Appendix B. Tables

Table I.	Table of Random Numbers	254
Table II.	Table of Squares, Square Roots, and Reciprocals of	204
	Numbers from 1 to 1000	259
Table III.	Areas and Ordinates of the Normal Curve in Terms of	207
	$Z = (X - \mu)/\sigma$	272
Table IV.	Table of χ^2	282
Table V.	Table of t	283
Table VI.	Values of the Correlation Coefficient for Various Levels	205
	of Significance	284
Table VII.	Table of z Values for r	285
Table VIII.	The 5 and 1 Percent Points for the Distribution of F	102
Table IX.	Table of Four-Place Logarithms	280
Table X.	Values of T and T' , Whichever is the Smaller, Significant	290
Table XI	The 5 and 1 Percent Levels	292
aole XI.	The 5 and 1 Percent Points for the Distribution of W'	293
Appendix C.	Answers to the Problems	
Index of Names		294
Subject Inday		307
oger mut.		308