TABLE OF CONTENTS

Preface to Teachers v

Editor's Introduction xi

1 Understanding Data 1

SECTION ONE: EXPLORATORY BATCH ANALYSIS 12

2 Organizing Numbers 13
3 Using Numerical Summaries 33
4 Graphs: Seeing and Setting Aside 53
5 Transforming Data 72
6 Finding the Best Transformation 100

First Review: Batch Analysis 120

SECTION TWO: FROM EXPLORATION TO CONFIRMATION 125

7 The Random Sample 126
8 Confirmatory Statistics 142
9 When σ is not Known 157
10 Comparing Several Batch Levels 171

Second Review: Confirmatory Comparison of Levels 188

SECTION THREE: *X* BY *Y* ANALYSIS 191

11 *X* by *Y* and Straight Lines 193
12 Unbending 217
13 Linear Regression 231
14 The Chi-Square Test 247

Third Review 264

SECTION FOUR: USING TWO INDEPENDENT VARIABLES 267

15 Elementary Analysis 269
16 Interaction Effects in Elementary Analyses 289

17 Two-Way Analysis of Variance 304

Fourth Review 322

18 Getting More from Residuals 324
19 Partial Correlations and Causality 339
20 Multiple Regression 348

Fifth Review 365

Appendix A: Background Math 371
Appendix B: Proofs of Statistical Formulae 374
Appendix C: Statistical Tables 377
Bibliography 383
Index 385