



## How the Solutions Were Produced

**All answers have been-double-checked for accuracy. However, we cannot be absolutely certain that there are no errors. When and if we discover mistakes we will post corrected answers on our web page. (See page 8 in the textbook for the address.) If you find any errors, please email the author (address on web page). We will be happy to acknowledge you with the discovery.**

### Chapter 2

Excel was employed to draw the histograms, bar charts, pie charts, line charts, and scatter diagrams.

### Chapter 4

Excel was used to draw box plots and compute the descriptive statistics for exercises with data sets.

### Chapters 6 through 9

Probabilities were computed manually. Probability trees were used where possible.

### Chapters 10 through 19 and 21

Calculations for exercises that provided statistics either in the exercise itself or in Appendix A were completed manually. The solutions to exercises requiring the use of a computer were produced using Excel. Confidence interval estimates used critical values obtained from the tables in Appendix B. In some cases we were required to use approximations. As a consequence some confidence interval estimates will differ slightly from those produced by computer. In tests of hypothesis where the sampling distribution is normal, p-values were computed manually using Table 3. Excel was employed to calculate the p-value for all other tests.

Chapters 13, and Appendixes 13 to 17, and 19

We employed the F-test of two variances at the 5% significance level to decide which one of the equal-variances or unequal-variances t-test and estimator of the difference between two means to use to solve the problem. Additionally, for exercises that compare two populations and are accompanied by data files, our answers were derived by defining the sample from population 1 as the data stored in the first column (often column A in Excel and column 1 in Minitab). The data stored in the second column represent the sample from population 2. Paired differences were defined as the difference between the variable in the first column minus the variable in the second column.

Chapter 19 and Appendix 19

In the exercises whose datasets contained interval data we used a nonparametric technique after examining the relevant histograms and subjectively judging the variable to be “extremely nonnormal.”

Chapters 17 and 18

Excel produced all the solutions to these exercises.

Chapter 20

Most solutions were produced manually. Excel solved the more time-consuming exercises.

Chapter 21

All control charts were produced by Excel.

## Chapter 22

Solutions to these exercises were completed manually.