

ISE 2211 Statistics for Engineers

Homework #1A - Chapter 1 (Montgomery & Runger, 5ed)

Chapter 1 The Role of Statistics in Engineering

Reading Assignment: pages 1 - 16

Study Assignment: Reference Learning Objectives, page 2: Have you mastered each of the objectives?

Homework #1B - Chapter 6 (Montgomery & Runger, 5ed)

Chapter 6 Descriptive Statistics

Reading Assignment: pages 191 - 196, 203 - 207, 210 - 217

Problems: (Answers to odd-numbered problems can be found in Appendix B.)

Section 6-1 Data Summary and Display

Pages 196 - 197, Problems 9, 11, 17, 19

Reference Problem 6-19, Page 197

- Convert the temperature data to Degrees Celsius. $C = 5/9(F - 32)$
- Predict (rather than calculate) how both the mean and the standard deviation will be affected.
- Compute the sample mean and sample standard deviation for the converted data.
- Compare your results to the answers for problem 6-19 a.
- How do your results compare to your predictions?
- Develop a rule as to what happens to the mean and the standard deviation if you add a constant to each data point or multiply each data point by a constant.

Section 6-3 Frequency Distributions and Histograms

Use the data from Table 6-2, page 198.

- Create a Frequency Table (9 groups, 20 units wide)
- Use your table to create a Histogram
- Create a Relative Frequency Table and Chart
- Create an Cumulative Relative Frequency and Graph
- Check your results see Table 6-4, page 204; and Figure 6-7, page 205; and Figure 6-10, page 206.

Note: Table 6-4 is displayed horizontally as compared to our vertically illustrated example in class.

Use Microsoft Excel or a similar application program or even a statistical analysis program to calculate the mean, standard deviation, and variance for the data from Table 6-2, page 198. Use the same data to create a histogram; experiment by changing the number of groups and/or the width of the group intervals. See <http://office.microsoft.com/en-us/excel-help/present-your-data-in-a-histogram-HA010342785.aspx?CTT=1> for an on-line tutorial which demonstrates how to use Excel's histogram feature.

Note: Table 6-2 data values are available at <http://www.cs.wright.edu/~dkender/ise2211/table6-2.docx>

Homework #1C - Chapter 3 (Montgomery & Runger, 6ed)

Chapter 3 - Section 3-4 Mean and Variance of a Discrete Random Variable (Expected Value)

Reading Assignment: pages 74 - 75

Problems:

Example Problems pages 75 - 76, Examples 3-9, 3-10, 3-11

Homework Problems page 76, Problems 3-47, 3-49, 3-61

Use the results from page 205, Figure 6-7, to estimate the mean and standard deviation for the Compressive Strength data. Arithmetically calculate the mean and standard deviation and compare the results to your estimates.