Homework 8: Stem-and-leaf plot, dotplot, histogram, distribution

Instructions: To complete the homework problems, use only the functions we covered in the class.

1. (15 points) The accompanying specific gravity values for various wood types used in construction appeared in the article **"Bolted Connection Design Values Based on European Yield Model"** (*J. of Structural Engr.*, **1993: 2169–2186**):

|								
.31	.35	.36	.36	.37	.38	.40	.40	.40
.41	.41	.42	.42	.42	.42	.42	.43	.44
.45	.46	.46	.47	.48	.48	.48	.51	.54
.54	.55	.58	.62	.66	.66	.67	.68	.75

The data can be found in the file **gravity.xlsx**.

  a. (5 points) Using functions stem( ) and stem.leaf( ) from aplpack, construct stem-and-leaf plots for the data. How would you describe the shape of the data (symmetric, positively or negatively skewed, unimodal, bimodal, multimodal)?

  b. (10 points) Using function hist( ), make a density plot for the gravity data. Your plot should be similar to the following one.

Density Histogram for gravity
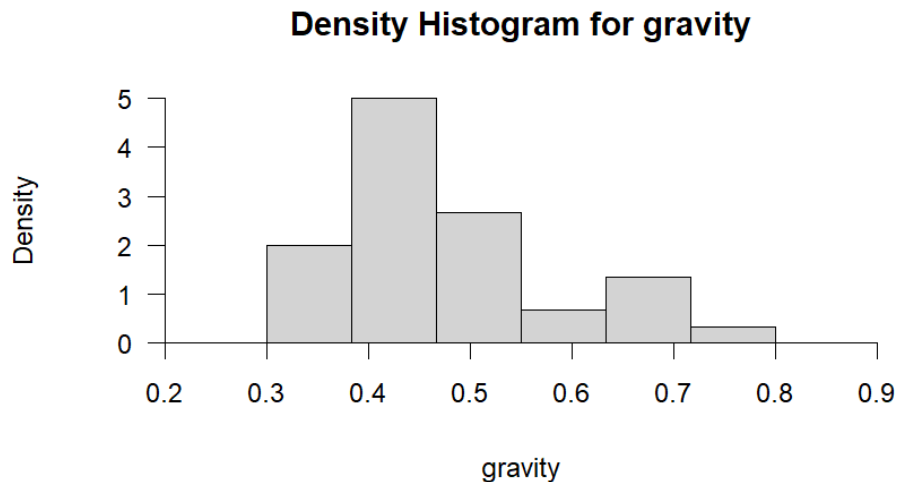
2. (20 points) To assist in estimating the amount of lumber in a tract of timber, an owner decided to count the number of trees with diameters exceeding 12 inches in randomly selected 50x50-foot squares. Seventy 50x50 squares were randomly chosen from the tract and the number of trees (with diameters in excess of 12 inches) were counted for each. The data are in the file **diameters.xls.**

  a. (10 points) Construct a dot plot for the data using the function covered in the class (so, you have to use base package only!). Do not forget to add all necessary labels and title(s) to your plot. Make your plot similar to the following one. How would you describe the shape of the data (symmetric, positively or negatively skewed, unimodal, bimodal, multimodal)?

The dotplot for Diameters
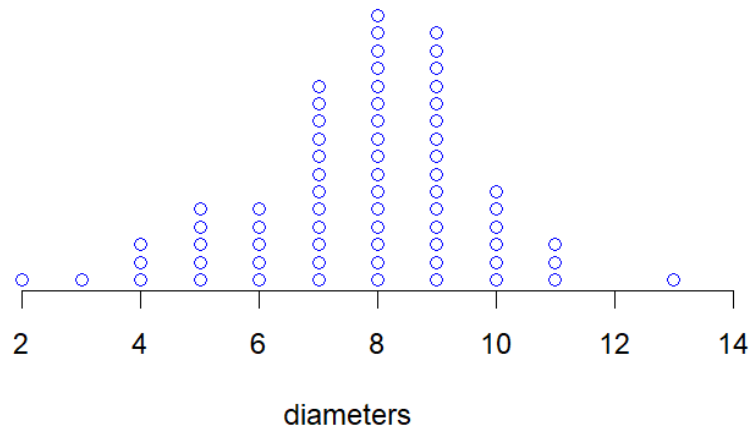
b. (10 points) Use function hist( ) to make a relative frequency histogram for the data. Your plot should be similar to the following one.

Relative Frequency Histogram for Diameters