

## Stat 328 Lab 1 Summer 2003

In all of these problems, use JMP in any ways that you find helpful.

### Chapter 1 of MMD&S:

Do Problems 1.20, 1.53, 1.55, 1.72, 1.75, 1.76, 1.79, 1.90, 1.91, 1.95

(For 1.90, you will find JMP's "Overlay Plot" function under the "Graph" menu helpful.)

### Chapter 3 of MMD&S:

Do Problems 3.9, 3.11

(For 3.9, you can put the numbers 1 through 440 into Column 1 using the "Formula" option under "New Property" and choosing "Row" from the menu of "Row" functions. Then applying "Col Shuffle" under the menu of "Random" functions will put these 440 numbers in a random order. The first 10 then constitute a SRS of size 10.)

(For 3.11, use JMP as indicated for 3.9 to choose the entire lists of mid-size and small accounts. Don't bother to use the random digit table for this problem.)

### Chapter 4 of MMD&S:

Do Problems 4.3, 4.7, 4.14, 4.16, 4.17, 4.20, 4.22, 4.30, 4.34, 4.44, 4.46\*, 4.47, 4.67\*, 4.99, 4.108  
(The starred problems are recommended, but not required. See the boxes on page 266 and 272 giving rules for means and variances for linear combinations of random variables.)

Also, consider Figure 4.17. It is the result of some theoretical calculations beyond the level of this course. However, we can illustrate through simulation that the basic story told there is correct. Do the following:

(a) In a new JMP data table, use the "Rows" menu to make the table 1000 rows deep. Then using the "Formula" option for Column 1, under the "Random" menu, apply the "Exp" distribution to put 1000 realizations of exponential random variables into Column 1. Use the JMP "Analyze/Distribution" option to get a histogram, sample mean, and sample standard deviation for these simulated values. Note that the histogram looks roughly like panel (a) of Figure 4.17 and has mean approximately 1.0 and standard deviation approximately 1.0.

(b) Create Columns 2 through 10 just as you created Column 1. Then make up Column 11 as the average of columns 1-10. (To do this, use a formula to define Column 11. From among the "Statistical" functions, choose "Mean." Enter the columns one at a time into the mean function, separating them by commas. Hitting the comma key will automatically add a new position to put in the next column.) Use the JMP "Analyze/Distribution" option to get a histogram, sample mean and sample standard deviation for these simulated values. Note that the histogram looks roughly like panel (c) of Figure 4.17 and has mean approximately 1 and standard deviation approximately  $1/\sqrt{10}$ .