AMS 7L **LAB #5** Spring, 2009

Mid-Quarter Review

Name: _____

Lab Section: _____

Instructions:

- The TAs/lab assistants are available to help you if you have any questions about this lab exercise. If you have any questions please raise your hand and they will get to you as quickly as possible.
- At the end of class, you will need to turn in this cover sheet to your lab instructor. *If you do not turn it in, you will not get credit for this lab.* Be sure to write your name and section above.
- The following symbol ↬ at the beginning of a question means that after you answer that question you should raise your hand and have a TA or lab assistant review your answers up to that point. Once they have reviewed your work they will initial in the appropriate space in the table below. The purpose of this check is to be sure you have answered the questions correctly.

Check-Problem ↬	Lab Instructor's Initials
4	
13	
17	

Mid-Quarter Review

Objectives:

1. To review concepts from the first half of the course

Getting Started: Log onto your machine and download the `cereal.txt` datafile from the class webpage: `http://www.soe.ucsc.edu/classes/ams007/Spring09/` where you can click on the `cereal` link, which will bring up the datafile in your browser (since this is just a text file), then go up to the "File" menu in the upper left and choose `Save Page As` and save the file to your Desktop (or anywhere else you'd prefer) by clicking on "Save". After you have downloaded the file, start JMP.

To read in the file, go to the JMP Starter window and click on `File`. Click on the button for "Open Data Table". One of the last items on the bottom left says "Files of type:". On the right end of that box (which should currently say `Data Files` with a bunch of possible file extensions) there is a black triangle. Click on the black triangle and select `Text Import Files`. Now you should see the `cereal.txt` file in the large box. Click on that file, then click on the "Open" button.

Question #1 Is sodium content (in milligrams per serving) a quantitative or a qualitative variable? If quantitative, is it continuous or discrete? If qualitative, is it nominal or ordinal?

Question #2 Make a histogram of sodium. Describe the shape of the distribution.

Question #3 What are the mean and median for sodium?

↬ **Question #4** What are the range and standard deviation?

Question #5 Are there any outliers?

Question #6 If we took a simple random sample of all cereals and counted how many were hot cereals, would that have a binomial distribution? (Why or why not?)

Question #7 If we took a bowl of each of the cereals in this dataset and had one person taste each and say whether they liked that cereal or not, would the number of cereals they like have a binomial distribution?

Next make a table of manufacturer by type of cereal (cold vs. hot). Back in the JMP Starter window, from `Basic`, look near the bottom of the options and click on "Contingency". Click on `type` and then click on "Y, Response Category". Next click on `mfr` and then click on "X, Grouping Category", then hit "OK". You can make the funky mosiac plot plot go away by clicking on the grey and blue diamond to the left of "Mosaic Plot". Now you should see the Contingency Table. The table has a lot more information than we need right now, so let's hide some of that information. Click on the hot spot to the left of "Contingency Table" and notice that four items are checked: Count, Total %, Col %, and Row %. Right now, we really only need the counts, not any of the percentages, so uncheck all three of the percentages so that only the counts remain. Now you should have a table that just gives the counts by manufacturer and type.

Question #8 If a cereal is randomly chosen from this set, what is the probability that it is a hot cereal?

Question #9 What is the probability that a randomly chosen cereal is made by Quaker?

Question #10 What is the probability that a randomly chosen cereal is made by Quaker and is a hot cereal?

Question #11 What is the probability that a randomly chosen cereal is made by Quaker or is a hot cereal?

Question #12 What is the probability that a randomly chosen cereal is a hot cereal given that it is made by Quaker?

↬ **Question #13** What is the probability that a randomly chosen cereal is a hot cereal given that it is made by General Mills?

Question #14 One of the things that most bothers me about the Windows operating system is when it crashes when I'm trying to shut it down. It seems to be more likely to crash when I have put the computer on standby (sleep) earlier in the day. Suppose the probability that it crashes when it has been on standby earlier is 0.1, and the probability it crashes when it has not been on standby is 0.01, and that the probability that I put it on standby during a day's usage is 0.4. If you just walked into the room in time to see me trying to shutdown and have the computer crash, what is the probability that I had put it on standby earlier that day?

Question #15 Suppose you have a litter of mice which consists of five males and three females. If you randomly grab two of them, what is the probability that they are both male?

Question #16 If you randomly grab two, what is the probability that one is male and one is female?

↬ **Question #17** Suppose mouse weights are normally distributed with a mean of 22 grams and a standard deviation of 3 grams. A breeder is shipping out boxes of ten mice and wants no more than 8% of their boxes to have mice below a specified average weight. What weight should they use so that no more than 8% of their boxes will have an average mouse weight below that weight?

Quit JMP and please remember to **Log Off**. If you have any other questions about material in this course, you can use the extra time in this lab to ask for help from the TAs.