**Homework Due Wed Sep 8 -Math 308**

**E-mail the solutions to reinhold@albany.edu**

**Problem 4.51**: use R to do a boxplot, a histogram and a stem-and-leaf plot of the data.

*The National Center for Education Statistics reported 2005 average mathematics achievement scores for eighth graders in all 50 states: http://www.albany.edu/~reinhold/m308/IntroStats/ Ch04\_math\_scores\_2005.xls (a) use R to do a boxplot, a histogram and a stem-and-leaf plot of the data, (b) write a brief summary of the performance of eighth graders nationwide.*

**Problem 5.40:**  (a) Do the comparative boxplot for the data using R. (b) Write a brief report comparing the two groups cholesterol levels.

*A study examining the health risks of smoking measured the cholesterol levels of people who smoked for at least 25 years and people of similar ages who had smoked for no more than 5 years and then stopped.* http://www.albany.edu/~reinhold/m308/IntroStats/Ch05\_Cholesterol.xls (copy each column separately – no header!!)

Link is not working. Try this:   
Go down one step in the link, that is, go to: [http://www.albany.edu/~reinhold/m308/IntroStats/](http://www.albany.edu/%7Ereinhold/m308/IntroStats/Ch05%20Cholesterol.xls)

You will see tons of files in there. One of them is **Ch05 Cholesterol.xls**  
Click in that file. I just tried it and it did work for me.

* **Download R** from: <http://cran.r-project.org>
* **Sing in for the online learning environment** [**www.**coursecompass.com](http://www.coursecompass.com)
  + Course ID: reinhold76269  
    Course Name: Mat 308 Fall 2010  
    Course Materials: Intro Stats 3/e  
    Description: Topics in Statistical Inference

***R code:***

to enter data: copy a column of data into the clipboard (highlight and do Control-c)

variablename <- scan()

(paste the data (Control-v) )

If the data consists of just a few numbers, like 3, 4,1,6, you can enter them as a vector. Say I want to call it X, then the command is: X <- c(3,4,1,6)

Plots we can do:

boxplot(variablename)

hist(variablename, probability=T)

you can tell R to do specific breaks in your histogram by giving it a vector with the breaks. So if I want the breaks a1, a2, … ,an then assign the breaks

breaks=c(a1,a2,…,an)

hist(variablename, probability=T, breaks=c(a1,a2,…,an))

stem(variablename)

To do more than one boxplot: lets say you have data in vectors A, B and C.

Then do

boxplot(A,B,C)

Summary of data: summary(variablename)

**To save your work:** highlight the commands, copy and paste them in a word file.

**To save the graphs:** right click and click on “copy as metafile”, then paste it in the word document.

***Excel Commands:***

When you start a cell with =, excel expects a formula.

To compute functions of data stored in column A from 1 to 30:

|  |  |
| --- | --- |
|  | **Excel fomula** |
| min | =min(A1:A30) |
| Q1 | =percentile(A1:A30,1/4) |
| median | =median(A1:A30) |
| Q3 | =percentile(A1:A30,3/4) |
| max | =max(A1:A30) |
| mean | =average(A1:A30) |
| stdev | =stdev(A1:A30) |
| IQR | =(position of where you stored Q3)-(position of Q1) |

**Determining outliers:** “ 1.5 IQR away from the box”

Data points that are above **Q3+ 1.5\*IQR** or below **Q1-1.5\*IQR** are considered outliers.

Critical values for normal (top α100 percent) =norminv(1- α, mean, stdev)

For example, in class we did top 5%cut off for standard normal =norminv(.95,0,1)

top 5% cut off for IQ problem =norminv(.95,100,16)