**Name:** _____ **MAT 221**
**Fall 2014** **Problem Set 1**

**Problem 1:** Are the following variables categorical (C), quantitative (Q), or both (B)?

(a) _____ Shoe size

(b) _____ Shoe color

(c) _____ College majors

(d) _____ Gender

(e) _____ Gender [Entered into a spreadsheet as Male= 0 and Female= 1.]

(f) _____ SAT score

(g) _____ Area code

(h) _____ Grade

**Problem 2:** How do a bar graph and a histogram differ?

**Problem 3:** Foziazeb gives an exam to her students who receive the following scores:

$$65,\ 99,\ 65,\ 67,\ 98,\ 65,\ 65,\ 63,\ 98,\ 65.$$

(a) What is the mean exam score? What is the median exam score?

(b) If you were to take the exam, would the mean or median give you the best “guess" as to what score you would get? Briefly explain your answer.

**Problem 4:**

(a) Can the mean be smaller than the median? If not explain why, and if so give an example.

(b) Can the mean be larger than the median? If not explain why, and if so give an example.

(c) Can the mean ever be equal to the median? If not explain why, and if so give an example.

**Problem 5:** A sample of employees in a large pharmaceutical company has been obtained. The length of time (in months) they have worked for the company has been obtained. The length of months of employment has been recorded and is given below:

$$33, 59, 67, 68, 74, 74, 78, 78, 79, 80, 81, 81, 82, 83, 83, 85, 91, 99$$

(a) Construct a stem plot of the data.

(b) Give the 5-number summary.

(c) Are there any outliers? If yes, list them. Justify your answer using the $1.5 \times$ IQR rule.