M203J Practice Quiz 2 Covering Chapters 13 and 14

Instructions: Answer each question, and when required explain your answer. Your explanation must be clear and complete. You may refer to your book, your notes and your homework papers.

[1] For each of the following kinds of data, choose an appropriate method for graphing the data and an inappropriate method. Indicate which is which, and explain what is inappropriate about the one which is not appropriate. Answers can vary.

(a) Annual profits of a company over a period of years.
(b) The percentages of families below the poverty level in five different Nebraska cities.
(c) The percentages of Nebraska families whose annual incomes are in the following ranges: up to $50,000, above $50,000 but below $100,000, and above $100,000.

[2] The following line graph shows the fluctuations in Cabela's stock price in 2008.

(a) Discuss what is misleading about this graph. Answers can vary.
(b) Explain how you would redraw this graph so that it is not misleading.

[3] Explain how to select a simple random sample of 4 elements from the whole numbers running from 1 to 100, using the random number table handout from class (a copy is included with the quiz). What sample do you get? Explain in enough detail that I can verify that your sample is the one you should have gotten.

[4] A farmer who wants to assess the level of pest infestation in her orchard is considering several different sampling methods. For each of (a) through (d), indicate what sampling technique it corresponds to (choose your answers from among convenience sampling, simple random sampling, systematic sampling or stratified sampling).
(a) Randomly select a tree and then move row by row through the orchard, selecting every 15th tree for inspection.
(b) Pick the first 10 trees near the entrance to the orchard.
(c) Pick a random sample of trees from each of three age ranges: 0 to 3 years old, 3 to 6 years old and 6 or more years old.
(d) Each tree is numbered and a random sample of those numbers is chosen to select the trees to be inspected.

[5] Consider the data 7, 8, 8, 1, 5, 6, 6, 9, 11, 20.
(a) Find the mean of this data.
(b) Find the median of this data.
(c) Find the first and third quartiles for this data.
(d) Find the range of this data.
(e) Create and label a box and whisker plot of this data.
(f) Find the standard deviation of this data.

[6] Problem #38, p. 518 of book.