M203E Practice Quiz 5

Instructions: The quiz will be open book (any books) and open notes (any notes or written material).

[1] 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 quartile for this data.
(d) Find the third quartile for this data.
(e) Find the standard deviation of this data.

[2] Give a set of numbers such that the mean is bigger than the median. Also
compute the mean and median for the numbers you give.

[3] 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.

[4] An election is run. The candidates are Paul (P), Tom (T), Sally (S), and Ann (A). There are 17 voters. Here is a tabulation of their preference lists:

# Voters	5	5	4	1	2
First place	S	T	P	A	P
Second place	T	A	S	T	T
Third place	P	S	A	P	S
Fourth place	A	P	T	S	A

(a) Determine the vote totals using plurality voting. Who is the winner?

Totals: A:_____   P:_____   S:_____   T:_____   Winner:_____

(b) Assume Sally drops out of the race but that the preference list above remains otherwise the same.
State the vote totals in this situation for each candidate using plurality voting. Who is the winner now?

Totals: A:_____   P:_____   T:_____   Winner:_____

(c) Do (a) and (b) give an example of a violation of a fairness criterion? If so, which one? Explain:

(d) Determine the vote totals using the Borda count with the original preference list given above. Who is the winner?

Totals: A:_____   P:_____   S:_____   T:_____   Winner:_____

(e) Indicate the order of elimination using plurality with elimination voting, given the original preference list given above. Who wins?

First candidate eliminated:

Second candidate eliminated:

Third candidate eliminated:

Winner:_____

[5] Consider the weighted voting system [19 | 12, 7, 1]. Let A, B and C be the players, where A has 12 votes, B has 7, and C has 1.
(a) Which if any of the voters are dummies? Explain.

(b) Which if any of the voters have veto power? Explain.

(c) Which if any of the voters are dictators? Explain.

(d) What is the Banzhaf power index of each voter?