Math F113X: Quiz 1

Name: _____ score:_____ / 10

There are 10 points possible on this quiz. No aids (book, notes, etc.) are permitted. You may use a non-programmable calculator. **Show all work and supporting calculations for full credit. Explain how you get your answers.**

1. (6 points) The student government is holding elections for president. There are four candidates (A,B,C and D for convenience). The preference schedule is below.

number of voters	50	40	30	70	10
1st choice	B	C	B	A	D
2nd choice	A	D	D	C	B
3rd choice	C	A	C	B	C
4th choice	D	B	A	D	A

For each of the following, provide supporting calculations.

(a) How many voters voted in this election? _____

(b) How many voters are needed for a majority? _____

(c) What is the smallest number of voters that could give a candidate a plurality? _____

(d) Find a winner under the plurality method. Show some work. _____

(e) Did the winner under the plurality method also win a majority? _____

(f) List at least one strength and at least one weakness of plurality as a voting system.
Strength:

Weakness:

2. (4 points) Below is the same preference schedule.

number of voters	50	40	30	70	10
1st choice	B	C	B	A	D
2nd choice	A	D	D	C	B
3rd choice	C	A	C	B	C
4th choice	D	B	A	D	A

(a) In a one-to-one comparison, who is preferred, candidate A or candidate B? (You must show your calculation.)

Candidate _____ is preferred.

(b) Determine if there is a Condorcet winner. If so, who is it? Otherwise, explain why not. The results of each one-on-one comparison (except A vs B) are provided below.

matchup	A vs C	A vs D	B vs C	B vs D	C vs D
tally	A: 120 C: 80	A: 120 D: 80	B: 90 C: 110	B: 150 D: 50	C: 160 D: 40
winner	A	A	C	B	C