

**Worksheet #4**  
**August 31, 2018**  
**4 Points**

**Circle one name.**

**Name:** \_\_\_\_\_ **Name:** \_\_\_\_\_ **Name:** \_\_\_\_\_

1. Below is a preference schedule giving the voter preferences in an election with four candidates, A, B, C, and D.

Number of Voters	12	2	7	6	9
1st choice	A	C	D	B	C
2nd choice	B	D	C	D	B
3rd choice	C	B	B	C	D
4th choice	D	A	A	A	A

- (a) Is there a Majority Candidate? If so, who? If not, why not?
- (b) Which Candidate wins if the Pairwise Comparison Method is used? Show all the pairs, and give the pairwise points.
- (c) Is there a candidate who against each of the other three in pairwise comparisons (such a candidate is called a Condorcet candidate)? If so, who? If not, why not? How many pairwise points are required to be a Condorcet candidate in this election?

2. Below is a preference schedule giving the voter preferences in an election with four candidates, A, B, C, and D.

Number of Voters	13	12	6	3
1st choice	B	D	A	D
2nd choice	C	A	C	C
3rd choice	A	C	B	B
4th choice	D	B	D	A

- (a) Which candidate wins if the Plurality Method is used? How do you know? Is there a Plurality Candidate? How do you know? Also, is there a Majority Candidate? How do you know?

- (b) Which candidate wins if the Borda Count Method is used? How many Borda points does each candidate receive?

(c) Which candidate wins if the Plurality With Elimination Method is used? Show your work clearly.

(d) Which candidate wins if the Pairwise Comparison Method is used? Show all the pairs, and give the pairwise points. Is there a Condorcet Candidate? How do you know?

3. An election takes place with 50 voters and 5 candidates.

(a) How many different preference ballots are possible? Explain your answer.

(b) What is the sum of all of the Borda points of all of the candidates? Explain your answer.

(c) How many pairwise comparisons are made for the Pairwise Comparison Method? Explain your answer.