

Math 118 G1
Practice Exam 3

1. Use the following preference lists to determine the outcome of an election using plurality and Borda count. Please show all results, not just the winner.

(a) (8 points)

13 voters						
	3	2	2	1	2	3
1	A	B	B	C	C	D
2	B	C	D	A	D	C
3	C	A	C	D	B	A
4	D	D	A	B	A	B

(b) (8 points)

11 voters				
	4	3	2	2
1	A	B	B	C
2	B	A	C	A
3	C	C	A	B

2. (4 points) State the Condorcet Winning Criterion (CWC).

3. (10 points) Use Sequential Pairwise Voting and the Hare System to determine the outcome of an election using the following preference list. Use the agenda C,A,D,B. Please show all results, not just the winner.

13 voters						
	3	2	2	1	3	2
1	A	B	B	C	C	D
2	B	C	D	A	D	C
3	C	A	C	D	B	A
4	D	D	A	B	A	B

4. (6 points) Determine the results of the following election using approval voting.

9 voters					
	2	1	2	1	3
A		x		x	x
B	x	x			x
C	x		x	x	
D		x	x	x	

5. (4 points) Which fairness criterion states that “if C is preferred over B on *every* ballot, then B should not be able to win”?

6. (10 points) A committee is formed with members A , B , C , and D . The votes are distributed as follows: A has 28 votes, B has 22, C has 12, and D has 10. It is decided that 48 votes are needed to pass a measure.

(a) Write out the notation used in class for this weighted voting system.

(b) List two winning coalitions.

(c) List a blocking coalition that is not a winning coalition.

(d) Is there a dictator?

(e) Who (if anyone) has veto power?

7. (10 points) Compute the Banzhaf Power Index for the following weighted voting system. Show your work.

[45 : 20, 18, 17, 10]

8. (10 points) Compute the Shapley-Shubik Index for the weighted voting system

[10 : 7, 6, 3]