

Math 1015

Homework #2

1a, 2a, 3b, 4d

#1a

Me	Friend 1	Friend 2	Friend 3	Friend 4
Snip Doggy Dog	Ruff Cut	Waggies	Ruff Cut	Woof
Woof	Woof	Snip Doggy Dog	Snip Doggy Dog	Snip Doggy Dog
Waggies	Waggies	Woof	Waggies	Ruff Cut
Ruff Cut	Snip Doggy Dog	Ruff Cut	Woof	Waggies

Condorcet's method:

Ⓢ vs Wo: S: 3, Wo: 2

Ⓢ vs Wa: S: 2, Wa: 3

Ⓢ vs R: S: 3, R: 2

Ⓦo vs Wa: Wo: 3, Wa: 2

Ⓦo vs R: wo: 3, R: 2

Wa vs Ⓡ: Wa: 2, R: 3

Snip Doggy Dog
wins with
Condorcet.

#2a

22%	23%	15%	29%	7%	4%
D	D	H	H	J	J
H	J	D	J	H	D
J	H	J	D	D	H

D vs Ⓜ: D: 22+23+4 = 49
H: 15+29+7 = 51

Ⓜ vs J: D: 22+23+15 = 60
J: 29+7+4 = 40

Ⓜ vs J: H: 22+15+29 = 66
J: 23+7+4 = 34

H wins with
Condorcet method

#3a

	76	59	27	15	11
	M	S	N	N	N
	N	N	S	M	
	S	M	M	S	

M: $76 \cdot 2 + 59 \cdot 0 + 27 \cdot 0 + 15 \cdot 1 = 167$

N: $76 \cdot 1 + 59 \cdot 1 + 27 \cdot 2 + 15 \cdot 2 + 11 \cdot 2 = 241$

S: $76 \cdot 0 + 59 \cdot 2 + 27 \cdot 1 + 15 \cdot 1 = 160$

N wins.

#3b

	76	59	27	15	11
	M	S	N	N	N
	N	N	S	M	
	S	M	M	S	

M: same as before = 167

N: $59 \cdot 1 + 27 \cdot 2 + 15 \cdot 2 + 11 \cdot 2 = 165$

S: same = 160

M wins! It does make a difference.

#4a: Cotton's numbers are correct: looking at the chart there are 188 total voters (add up all the column heads). Of these, 76 voted M in the top position, and 76 out of 188 is 40%. The rest put a republican in the top position, which is 60%.

#4b: In my opinion this is not really a valid concern. Voters are voting for PEOPLE, not parties. So it is not appropriate to analyze the votes based solely on parties. Cotton is a partisan republican, so it is natural for him to think about everything as a battle between parties. But many voters don't think of it that way- for example the 15k people who ranked the democrat in between the two republicans.

#4c: If the plurality system had been used instead, according to the chart in #3, the winner would still have been M. So whatever Cotton is worried about concerning the 60%, it is not specific to the RCV system.

To give Cotton some credit, if the plurality system had been used instead, then certainly one of the republicans would have dropped out of the race, so the entire election would have been very different. Maybe Cotton thinks that things would have been better in that case, but it is not clear that either of N or S could've beaten M in a plurality election.

#4d: In my opinion this is not disenfranchisement. It's true that the N voters had their ballots thrown out in the second round, and so their votes didn't count in the second round. But these people chose to vote in this way. They knew what would happen and they apparently wanted their votes to be thrown out in the case that N was eliminated.

I might call this disenfranchisement if those voters were misled or somehow did not understand what would happen with their votes. If they voted just for N but didn't realize that their ballot would be thrown out in the second round, then that could constitute disenfranchisement. But there's no reason to think that this is what happened.