

# Math 1015

## HW #4

#2, 4b, 7, 8

#2

4	3	3	2
A	B	C	D
B	A	A	E
C	C	B	C
D	D	D	A
E	E	E	B

Using plurality, A wins.

But if I change

D	C
E	E
C	D
A	A
B	B

this changes no rankings relative to the winner,  
but now C will win the election. So  
it does not satisfy IIA.

#4b

	2	4	3
A	B	D	
C	A	A	
B	D	C	
D	C	B	

b) Explain why the ACBD voters cannot manipulate this election.

"Manipulate" means change their vote in order to get a better outcome. B was the winner, so A or C would be a better outcome in their opinion. But they can't make A or C win by voting differently, so they cannot manipulate.

#7 Random dict. is good for repeated low-stakes decisions, like choosing which socks to wear each day. (My socks are all more or less the same.)

It would be bad for electing the president of the USA.

#8 [12: 8, 7, 1]

The only way to reach 12 is by using  
the 8 & the 7. So there's no  
difference between their power.