

Math 1015 HW #4

1, 3, 4, 6

#1

[18:6,4,4,3,2,1]

a No dictator - nobody is 18 or higher by himself.

b 6,4,4,3 all have veto power. Even the 3 is required to get to 18, since without 3 it's

$$6+4+4+2+1=17$$

c No voter is a dummy. Even the 1 can be relevant, like in $6+4+4+3+1=18$

#3

a The quota is 270

b No - there is no state which elects the president all on its own

c No - there is no state which is needed in order to become president

d No - even the smallest states can make a difference in theory.

#4 [20: x, 8, 8, 4, 2]

a $x=20$ makes it a dictator (though technically this is not allowed since then the quota would be too small)

b x cannot have veto powers since $8+8+4 = 20$ will reach the quota without x .

c $x=1$ would be a dummy, but $x=2$ would not since $8+8+2+2 = 20$

#6 [15: 10, 7, 3]

<u>pairs</u>	<u>weights</u>	<u>pivotal</u>
A B C	10 <u>7</u> 3	B
A C B	10 3 <u>7</u>	B
B A C	7 <u>10</u> 3	A
B C A	7 3 <u>10</u>	A
C A B	3 10 <u>7</u>	B
C B A	3 7 <u>10</u>	A

A: $3/6 = 50\%$
 B: $3/6 = 50\%$
 C: $0/6 = 0\%$