

Quiz 5A, Math of Democracy

Fall 2019, Dr. Adam Graham-Squire

Name: _____

1. (5 points) Bob is attempting to use Webster's method¹ to apportion a country that has 6 states in it, and 34 seats in its House of Representatives. When he does his initial apportionment with a divisor of 835, he gets 33 seats. Explain to Bob:
 - (a) Whether he should *increase* or *decrease* his divisor (and by how much, approximately).
 - (b) *Why* he should do the increase or decrease.

¹Webster's method can be described as "Find each state's modified quota, rounded. Find a modified divisor so that the total number of seats adds up to the correct number needed for the House of Representatives."

2. (5 points) (a) Below is a table for calculating an apportionment using Jefferson's method for a country with five states. Assuming that the country will apportion 12 seats, use the table below to do the apportionment (you may need to fill in additional columns, which you should do as needed).

State	P_i	$P_i/2$				
A	3000	1500				
B	5000	2500				
C	7000	3500				
D	2800	1400				
E	6100	3050				

- (b) Use the table technique to explain why Jefferson's method will never have the Alabama paradox. (If you can't do that, then just explain it using *any* technique).