Apportionment Graded Assignment

You may use your notes, book, and me for assistance, but you may not consult with other people or sources on this assignment.

Part I: Apportionment of the New Wing

For Part I, you should prepare a brief report in which you include your assumptions, your assignment of faculty, a discussion of why your assignment is fair, and any explorations you did to reach your conclusion. You should explore and tell me about more than one apportionment scenario.

The Problem

A new wing has been added to the magnet school for math, science and technology so that the student population can be increased by 142 students, from 480 to 622. To accommodate the increase, the size of the faculty is to be increased by seven. There is a great deal of discussion about which departments should get the extra teachers. At the time of the increase there were:

6	Math faculty
3	Chemistry faculty
3	Physics faculty
4	Biology faculty
4	Social Studies faculty
5	English faculty
3	Foreign Language faculty (1 Spanish, 1 German, 1 French)
1	Music teacher
1	Art teacher

The current number of students taking classes from each department is shown below. How would you assign the 7 new teachers to departments? Explain why your decision is fair.

Department	Total students
Art	69
Biology	319
Chemistry	294
English	489
French	122
German	51
Spanish	110
Math	647
Music	95
Physics	291
Social Studies	373

Part II: Apportionment of the Original 13

The following table displays the populations of the 13 original states in the U.S. according to the 1790 census.

State	Population	State	Population
Connecticut	236,841	New York	331,589
Delaware	55,540	North Carolina	353,523
Georgia	70,835	Pennsylvania	432,879
Kentucky	68,705	Rhode Island	68,446
Maryland	278,514	South Carolina	206,236
Massachusetts	475,327	Vermont	85,533
New Hampshire	141,822	Virginia	630,560
New Jersey	179,570	**Total**	**3,615,920**

1. Calculate the apportionments for the House of Representatives using Hamilton's method with 120 seats. Show your work.

2. Calculate the apportionments for the House of Representatives using Jefferson's method with 105 seats. Show your work.

3. George Washington supported Jefferson's method of apportionment over Hamilton's, and Washington and Jefferson were from the same state. Given the apportionments you calculated in #1 and 2, would you be suspicious of Washington's motives? Explain.

Adapted from Excursions in Modern Mathematics, Tannenbaum, Pearson Education, 2004