

## Homework #2

### Math 101

This is due on Monday, February 23, at the beginning of class. It is worth 25 points. Late papers lose 4 points per day (or partial day) late.

You may work by yourself or in a group of two. Groups should turn in one paper with both names on it. **Do not** discuss this with other groups.

The final result of this assignment is to be a paper that briefly discusses the impact of Congressional apportionment on presidential elections. This report should be well written, readable and self-contained. (In other words, I should be able to read and understand your report without looking back at the assignment.) You should turn in the report (word-processed and either printed or emailed) **and** save your Excel spreadsheet under your name(s) on the Y: drive.

In lab, open Excel (either from the desktop or Start/Programs/Microsoft Office). Open the spreadsheet by doing File/Open then Look In Y: \Mathmatica and open the file named Math101Apport. After doing steps 1-8 below, save the file with Save As in the same directory using your name(s). I will grade this file. The file should be saved by the end of class. Files saved after the end of class will lose points.

1. Using the information in columns D and E, fill in the Hamilton apportionment. Notice that cell F58 adds up the number of seats you have assigned, so make sure you end up with the right number.
2. Identify all differences between the Hamilton apportionment and the actual apportionment in column B. Include this in your report.
3. Modify the divisor in cell H6 until the Webster apportionment in column I gives the correct total (shown in cell I58).
4. Identify all differences between the Webster apportionment and the actual apportionment in column B. Include this in your report.
5. Modify the divisor in cell K6 until the Huntington-Hill apportionment in column L gives the correct total (shown in cell L58).
6. The actual electoral votes for the 2000 election are shown in columns M and N. The 2 votes in row 7 are for the District of Columbia. Be sure you understand why the number of votes for each state is 2 higher than the apportionment in column L. Column P shows the Huntington-Hill apportionment using a divisor of 33,000 as was used in the first Congress. How many members are in this House of Representatives? Why might this not be a good thing? Include this in your report.
7. Assign electoral votes for this re-apportioned Congress. Who wins and by what margin? Include this in your report.
8. Use the history handout to discuss another time when the apportionment changed the outcome of a presidential election.

## History of Apportionment in the United States

The way the U.S. House of Representatives is to be constituted is specified in Article 1, Section 2 of the U.S. Constitution.

“The House of Representatives shall be composed of members chosen every second year by the people of the several states... Representatives and direct taxes shall be apportioned among the several states which may be included within this Union, according to their respective numbers... The actual enumeration shall be made within three years after the first meeting of the Congress of the United States, and within every subsequent term of ten years in such manner as they shall by law direct. The number of representatives shall not exceed one for every thirty thousand, but each state shall have at least one representative...”

### Apportionment Timeline

- **1787** Constitution drafted by the Constitutional Convention
- **1790** First Census
- **1791** After much debate, Congress approved a bill for a 120 member House and Hamilton’s method to apportion seats among the states. (Hamilton’s method was supported by the Federalists while Jefferson’s method was supported by Republicans.) President Washington vetoes the above bill (first veto in US history!). The House, unable to override the veto, passed a new bill for a 105 member House and Jefferson’s method to apportion seats among the states. This method was used until 1840.
- **1832** Issues of states rights bring apportionment debate over Jefferson’s method, which favors large states. John Quincy Adams (former President, at this time a representative from Massachusetts) proposes the Adam’s method for apportionment. It fails.
- **1832** Senator Daniel Webster (Mass) proposes Webster’s method. It fails.
- **1832** Congress retains Jefferson’s method but changes the size of the House to 240.
- **1842** Webster’s method is adopted and the size of the House is reduced to 223.
- **1852** Hamilton’s method is adopted with a House size of 234, a size for which Hamilton’s and Webster’s methods give the same apportionment.
- **1872** First, the House size was chosen to be 283 so that Hamilton’s and Webster’s methods would again agree. After much political infighting, 9 more seats were added and the final apportionment did not agree with either method.
- **1876** Rutherford B. Hayes became President based on the botched apportionment of 1872. The electoral college vote was 185 for Hayes and 184 for Tilden. Tilden would have won if the correct apportionment as required by law had been used!
- **1880** The Alabama Paradox surfaced as a major flaw of Hamilton’s method.
- **1882** Concerns continued over the flaws in Hamilton’s method. Congress passed a bill that kept Hamilton’s method but changed the House size to 325 so that Hamilton’s method gave the same apportionment as Webster’s.
- **1901** The Census Bureau gave Congress tables showing apportionments based on Hamilton’s method for all House sizes between 350 and 400.
- **1901** For all House sizes except 357 Colorado gets 3 seats. For 357, Colorado gets 2. Rep. Albert Hopkins (IL) submitted a bill using a House size of 357, causing an uproar.

- **1901** Congress adopted Webster's method with a House size of 386.
- **1907** Oklahoma joined the union and the New States Paradox was discovered as a result.
- **1911** Webster's method was readopted with a House size of 433. A provision was made to give Arizona and New Mexico each 1 seat if they were admitted to the union.
- **1911** Joseph Hill (chief statistician of the Census Bureau) proposed the Huntington-Hill method.
- **1921** No reapportionment was done after the 1920 census. This is in direct violation of the Constitution!
- **1931** Webster's method was adopted with a House size of 435.
- **1941** The Huntington-Hill method was adopted with a House size of 435
- **1990** The U.S. Census Bureau counted overseas employees for apportionment purposes. This resulted in Massachusetts losing a seat to Washington. Massachusetts filed suit.
- **1992** Overruling a U. S. district court decision, the U. S. Supreme Court ruled against Massachusetts on technical grounds involving "the separation of powers and the unique constitutional position of the President." (The President is charged with calculating and transmitting the apportionment to Congress.)
- **1992** Montana challenged the constitutionality of the Huntington-Hill method (*Montana v. US Dept. of Commerce*). The Supreme Court upheld the method. Montana was upset because it lost a seat to Washington based on the results of the 1990 census.

The first apportionment debate raised, in 1792, all the questions about representation of fractions and was marked by the same struggle between the north and the south, as its successors. In this and in 4 succeeding apportionments the recognition of fractions was treated as unconstitutional. Since 1830 a contrary practice has obtained and is now firmly established. The census of 1790 placed the representative population of the country at 3,636,921. Dividing this by 30,000 as a ratio, the house (2nd congress, 1st session) apportioned 113 members on a plan favoring the southern states. The senate raised the ratio to 33,000, transferring the unrepresented fractions from the east to the south. The house refused to yield and the senate insisting upon its amendment, by the casting vote of Vice-president Adams, the bill lapsed, and the house passed another, with the same apportionment. The senate added 7 members for each large fraction, which in Delaware was 29,000, and sent the bill back to the house. There, after a hot debate, in which both sections predicted a dissolution of the union if an apportionment favoring it was not adopted, the bill passed 31 to 29; the Delaware member was the only representative from the south voting for it. A week later the bill encountered the first veto message in the history of the government. Hamilton and Knox, the two northern members of the cabinet, advised its signature; Jefferson and Randolph, the two southern members, its veto. President Washington, with some misgiving, lest he should seem to "be taking sides with a southern party;" sent to congress a brief veto, in which, without accepting or rejecting the principle first advanced by James Madison, that the representation of fractions was unconstitutional, he based his objections upon the fact that the apportionment was on a different ratio in different states and in some fell below 30,000, the constitutional limit. Congress yielded, and in the house 34 to 30, in the senate by a heavy majority, passed a bill placing the ratio at 33,000, and apportioning 105 members among the states, without regard to fractions.

## History of Apportionment Study Questions

1. Is it in the Constitution that the House of Representatives should be based on the populations of the states?
2. Why do we have a Census every ten years?
3. What does the Constitution say about the divisor used in apportioning the House?
4. On what grounds did Washington veto the first apportionment bill?
5. Which apportionment method was first used by the U.S.?
6. What do issues of states rights have to do with apportionment methods?
7. On how many occasions has the actual apportionment violated the Constitution? Briefly describe each circumstance.
8. On how many occasions has the apportionment method changed the outcome of a presidential election? Briefly describe each circumstance.
9. Which apportionment method is used now?
10. Who is actually in charge of apportioning the House? (But don't tell him!)
11. What is meant by "the recognition of fractions" in apportionment methods? Is it unconstitutional?
12. How important have apportionment debates in Congress been?