

D3: ApportionmentGroup Activity

1. A college offers tutoring in Math, English, Chemistry, and Biology. The number of students enrolled in each subject is listed below. If the college can only afford to hire 15 tutors, determine how many tutors should be assigned to each subject. Examples adapted from David Lippman, <http://www.opentextbookstore.com/mathinsociety/index.html>

a. Hamilton's Method

<u>Subject</u>	<u>Students</u>	<u>Standard Quota</u>
Math	330	
English	265	
Chemistry	130	
Biology	70	
Total		
Divisor		

b. Jefferson's Method

<u>Subject</u>	<u>Students</u>	<u>Standard Quota</u>
Math	330	
English	265	
Chemistry	130	
Biology	70	
Total		
Divisor		

c. Webster's Method

<u>Subject</u>	<u>Students</u>	<u>Standard Quota</u>
Math	330	
English	265	
Chemistry	130	
Biology	70	
Total		

Divisor

d. Hill-Huntington Method

<u>Subject</u>	<u>Students</u>	<u>Standard Quota</u>
Math	330	
English	265	
Chemistry	130	
Biology	70	
Total		

Divisor

2. A small country consists of three states, whose populations are listed below.

A: 6,000 B: 6,000 C: 2,000

- If the legislature has 10 seats, use Hamilton's method to apportion the seats.
- If the legislature grows to 11 seats, use Hamilton's method to apportion the seats.
- Does the new apportionment seem fair? Why or why not?

<u>State</u>	<u>Population</u>	<u>Standard Quota</u>
A	6,000	
B	6,000	
C	2,000	
Total		
Divisor		

3. Repeat problem 2 using Jefferson's method. A small country consists of three states, whose populations are listed below.

A: 6,000 B: 6,000 C: 2,000

- If the legislature has 10 seats, use Jefferson's method to apportion the seats. What happens?
- If the legislature grows to 11 seats, use Jefferson's method to apportion the seats
- Does the new apportionment seem fair? Why or why not?

<u>State</u>	<u>Population</u>	<u>Standard Quota</u>
A	6,000	
B	6,000	
C	2,000	
Total		
Divisor		

Quota Rule

The Quota Rule says that the final number of representatives a state gets should be within one of that state's quota. Since we're dealing with whole numbers for our final answers, that means that each state should either go up to the next whole number above its quota, or down to the next whole number below its quota.

Do any of our examples violate the quota rule?

Class Activity**The Three-Fifths Compromise and 1790 Census Data**

4. In 1787, there was a Constitutional Convention in Philadelphia. The 55 delegates debated many issues and two of the most important were **slavery** and **representation**. Under the **Great Compromise**, the number of representatives per state would be determined by population size. But should **enslaved African people, who had no rights in the United States**, count as part of the population? Southern states said yes. Northern states said no. We will explore why.

The 1790 Census Data – The First US Census

State	1 Total Population	2 Free Persons	3 Slave Population	4 3/5 Slave Population	5 Compromise Pop Total	6 Number of Reps to House of Reps
Vermont	85,539	85,539	0	0	85,539	
New Hampshire	141,885	141,727	158	95	141,822	
Maine	96,540	96,540	0	0	9,6540	
Massachusetts	378,787	378,787	0			
Rhode Island	68,825	67,877	948	569	68,446	
Connecticut	237,946	235,182	2,764	1,658	236,840	
New York	340,120	318,796	21,324	12,794	331,590	
New Jersey	184,139	172,716	11,423	6,854	179,570	
Pennsylvania	434,373	430,636	3,737	2,242	432,878	
Delaware	59,094	50,207	8,887	5,332	55,539	
Maryland	319,728	216,692	103,036	61,822	278,514	
Virginia	747,610	454,983	292,627	175,576	630,559	
Kentucky	73,677	61,247	12,430	7,458	68,705	
North Carolina	393,751	293,179	100,572			
South Carolina	249,073	141,979	107,094	64,256	206,235	
Georgia	82,348	53,284	29,264	17,558	70,842	

Counting the Total Population

a. Look at the **total population** (Column 1) of Massachusetts and North Carolina in the 1790 Census Data. Use a divisor of 32,150 people (for Jefferson's Method) to determine the number of representatives that Massachusetts and North Carolina would have.

Massachusetts: _____ Representatives North Carolina: _____ Representatives

Counting only Free Persons

b. Look at the number of **free persons** (Column 2) for Massachusetts and North Carolina. Use a divisor of 32,150 people (for Jefferson's Method) to determine the number of representatives that Massachusetts and North Carolina would have.

Massachusetts: _____ Representatives North Carolina: _____ Representatives

c. Why might including enslaved people as part of a state's population – even though they had no freedom or rights – anger states that had few or no slaves?

To break the deadlock between the states, the delegates agreed to count only **3/5** of enslaved African people towards representation. This agreement was known as the *Three-Fifths Compromise*

The Results of the 3/5 Compromise

d. Calculate the missing values in Columns 4 and 5 for Massachusetts and North Carolina.

e. Use a divisor of 32,150 people (for Jefferson's Method) to determine the number of representatives that Massachusetts and North Carolina would have under the compromise. Then complete column 6 using the compromise column. There were a total of 105 representatives

Massachusetts: _____ Representatives North Carolina: _____ Representatives

Your Thoughts:

f. Why do you think the South wanted to count enslaved people as part of their state's population? Why do you think the North did not?

g. Why didn't the delegates end slavery and make the enslaved people full citizens?

h. Was the 3/5th compromise a fair resolution for slave states v. non-slave states? Why were the delegates so concerned about fairness when the enslavement of African people was not fair? Who else was not represented at the time?

i. For further exploration you can look up the slave trade compromise that was also made at the 1787 Convention.

More Practice

1. A small country consists of six states, whose populations are listed below. If the legislature has 200 seats, apportion the seats using each method.

A: 3,411 B: 2,421 C: 11,586 D: 4,494 E: 3,126 F: 4,962

a. Hamilton's Method

<u>State</u>	<u>Population</u>	<u>Standard Quota</u>
A	3,411	
B	2,421	
C	11,586	
D	4,494	
E	3,126	
F	4,962	
Total		

Divisor

b. Jefferson's Method

<u>State</u>	<u>Population</u>	<u>Standard Quota</u>
A	3,411	
B	2,421	
C	11,586	
D	4,494	
E	3,126	
F	4,962	
Total		

Divisor

c. Webster's Method

<u>State</u>	<u>Population</u>	<u>Standard Quota</u>
A	3,411	
B	2,421	
C	11,586	
D	4,494	
E	3,126	
F	4,962	
Total		

Divisor

d. Hill-Huntington Method

<u>State</u>	<u>Population</u>	<u>Standard Quota</u>
A	3,411	
B	2,421	
C	11,586	
D	4,494	
E	3,126	
F	4,962	
Total		

Divisor