**Jefferson and Adams Methods** **Math 111 - Workshop**

1. A local bus service has six routes A through F. The average number of riders on each route is shown below. The district wants to figure out how to apportion its 130 buses to the six routes.

| | **Bus Routes** | | | | | |
|---|---|---|---|---|---|---|
| Route | A | B | C | D | E | F |
| Average # of riders | 55,300 | 25,070 | 20,490 | 12,160 | 10,260 | 6,720 |

   (a) Enter the data above into a spreadsheet and find the total number of riders for all of the bus routes.

   (b) What is the standard divisor?

   (c) Find a divisor that gives out the right number of buses using Jefferson's method. What divisor worked?

   (d) Were there any quota violations with Jefferson's method?

   (e) Find a divisor that gives out the right number of buses using Adam's method. What divisor worked?

   (f) Were there any quota violations with Adams's method?

2. For this second question, you will need to download the spreadsheet with the 2020 Census results from my website. Once you have loaded that spreadsheet, answer the following questions.

   (a) Find the apportionment using each of the three methods, Jefferson's, Adam's and Webster's. Which divisor worked for each method?

   - Divisor for Jefferson's method: _____
   - Divisor for Adam's method: _____
   - Divisor for Webster's method: _____

   (b) The actual apportionment uses a different method called the Huntington-Hill method. Which state benefits from using Huntington-Hill instead of Webster's method, and which state does not benefit?

   (c) Find the standard quota for every state. What is the standard quota for California?

   (d) Are there any quota violations using Jefferson's method? Describe them.

   (e) Are there any quota violations in the official apportionment of Congress? Explain.