APPORTIONMENT

TEXT: 11.3, 11.4, 11.5

LAST NAME	FIRST NAME	DATE

1 (10 points)**.** A city apportions **34** building inspectors among three regions according to their populations. The following table shows the present population for each region.

Region	**Midtown**	**East**	**South**	**Total**
Population	15008	3424	30109	
Quotient				
Standard Quota				
# Of Inspectors				

(a) Find the standard divisor:

(b) Find the quotient and standard quota for each region.

(c) Use the Hamilton method to apportion the inspectors.

(d) Find a **modified standard divisor** for the Jefferson method and use the Jefferson method to apportion the inspectors. Finding a correct modified divisor can take many tries, so it is advisable to do it on the side. Do not fill out the table below until you have found a divisor that works.

Modified standard divisor:

Region	**Midtown**	**East**	**South**	**Total**
Population	15008	3424	30109	
Quotient				
# Of Inspectors				

The **Alabama paradox** was the first of the apportionment paradoxes to be discovered. The US House of Representatives is constitutionally required to allocate seats based on population counts, which are required every 10 years. The size of the House is set by statute.

After the 1880 census, C. W. Seaton, chief clerk of the United States Census Bureau, computed apportionments for all House sizes between 275 and 350, and discovered that Alabama would get eight seats with a House size of 299 but only seven with a House size of 300.

In the following examples, we re-create the paradox by apportioning 10 and then 11 seats in a fictional setting.

2. Apportioning **10** seats:

State	**A**	**B**	**C**
Population	6000	6000	2000
Quotient			
Standard Quota			
# Of Seats			

(a) Find the standard divisor:

(b) Find the quotient and standard quota for each region.

(c) Use the Hamilton method to apportion the inspectors.

3. Apportioning **11** seats:

State	**A**	**B**	**C**
Population	6000	6000	2000
Quotient			
Standard Quota			
# Of Seats			

(a) Find the standard divisor:

(b) Find the quotient and standard quota for each region.

(c) Use the Hamilton method to apportion the inspectors.

One of the fairness criteria, the **Quota Rule**, stipulates that the number of representatives apportioned to a state should be the standard quota or one more than the standard quota.

In the following examples, we show how the Quota Rule is violated by the Jefferson method in a fictional setting.

4. Apportioning **100** seats:

State	**A**	**B**	**C**
Population	98	689	212
Quotient			
Standard Quota			

(a) Find the standard divisor:

(b) Find the quotient and standard quota for each region.

(c) Find a **modified standard divisor** for the Jefferson method and use the Jefferson method to apportion the inspectors.

Modified standard divisor:

State	**A**	**B**	**C**
Population	98	689	212
Quotient			
# Of Seats			

5. A hospital district consists of five hospitals. The district administrators have decided that **48** new nurses should be apportioned based on the number of beds in each hospital:

Hospital	**Sharp**	**Palomar**	**Tri-City**	**Del Raye**	**Rancho Verde**
# Of Beds	242	356	308	190	275
Quotient					
Standard Quota					
# Of Nurses					

(a) Find the standard divisor:

(b) Find the quotient and standard quota for each region.

(c) Use the Hamilton method to apportion the inspectors.

(d) Find a **modified standard divisor** for the Jefferson method and use the Jefferson method to apportion the inspectors.

Modified standard divisor:

Hospital	**Sharp**	**Palomar**	**Tri-City**	**Del Raye**	**Rancho Verde**
# Of Beds	242	356	308	190	275
Quotient					
# Of Nurses					