

Practice Quiz 5: on Chapter 5

[1] (20 points) Suppose Gotham City has a 5 seat city council for its 3 districts and the 5 seats are apportioned by population to the 3 districts.

(a) Suppose that the standard quotas are as given in the following table. Fill in the table. Explain how you obtained the apportionment in each case.

| District | Standard Quotas | Hamiltonian Apportionment | Lowndes' Apportionment |
|---------------|-----------------|---------------------------|------------------------|
| Shadyside | 1.3 | | |
| Squirrel Hill | 1.2 | | |
| Oakland | 2.5 | | |

(b) Suppose that the modified quotas are as given in the following table. Answer the question and then fill in the table, as appropriate.

(i) If you were using Jefferson's apportionment method and the modified quotas were as shown, can you now fill in the table? If so do so. If not, answer the following two questions:

- (*) recompute the modified divisors using a bigger modified divisor True False
- (*) recompute the modified divisors using a smaller modified divisor True False

| District | Modified Quotas | Jeffersonian Apportionment |
|---------------|-----------------|----------------------------|
| Shadyside | 1.57 | |
| Squirrel Hill | 1.45 | |
| Oakland | 3.05 | |

(ii) If you were using Webster's apportionment method and the modified quotas were as shown, can you now fill in the table? If so do so. If not, answer the following two questions:

- (*) recompute the modified divisors using a bigger modified divisor True False
- (*) recompute the modified divisors using a smaller modified divisor True False

| District | Modified Quotas | Webster's Apportionment |
|---------------|-----------------|-------------------------|
| Shadyside | 1.57 | |
| Squirrel Hill | 1.45 | |
| Oakland | 3.05 | |

[2] (10 points) A local charity is giving away a 12 pack of root beer for a donation of \$20. Bobby, Mikey and Janey pool their money to make a \$20 donation. Bobby contributes \$8, Janey \$7, and Mikey \$5.

(a) How should the cans be apportioned between them if each child's apportionment is proportional to that child's contribution, assuming that Hamilton's method is used to deal with fractional parts of cans? Fill in the table below to show your answer.

| Child | Standard Quota | Hamiltonian Apportionment |
|-------|----------------|---------------------------|
| Bobby | | |
| Janey | | |
| Mikey | | |

(b) How should the cans be apportioned between them if each child's apportionment is proportional to that child's contribution, assuming that Jefferson's method is used to deal with fractional parts of cans? Fill in the table below to show your answer, and indicate the standard divisor D and the modified divisor d which you are using.

Standard divisor D = _____ modified divisor d = _____

| Child | Standard Quota | Modified Quota | Jeffersonian Apportionment |
|-------|----------------|----------------|----------------------------|
| Bobby | | | |
| Janey | | | |
| Mikey | | | |

[3] (10 points) A school district assigned 35 instructional assistants to five schools based on enrollment figures. The budget allowed for the hiring of 2 additional assistants. Consider the following apportionment numbers before and after the increase in instructional assistants. Is this an example of a paradox? If so, which paradox has occurred? Explain.

| School | Original Apportionment | New Apportionment |
|----------------|------------------------|-------------------|
| Cascades | 9 | 9 |
| Seven Oaks | 11 | 10 |
| Riverview | 6 | 7 |
| Pioneer | 4 | 5 |
| Hamilton Creek | 5 | 6 |