socrative

Name _____
Date _____

Social Choice 4/13/21 - apportionment and paradoxes

Score _____

1. Hamilton's method starts by rounding down and then gives out seats in order of the fractional part. For the following states with the quotas listed, suppose the size of the legislature is m=30. Select all seats that would end up having with an apportionment **higher** than their quota. *Choose all that apply.*

- (A) State A: quota 10.32
- (B) State B: quota 3.81
- (C) State C: quota 11.17
- (D) State D: quota 4.55

round down
10 → 10
3 → +1 → 4
11 → 11
4 → +1 → 5
28 30

distribute two remaining seats

2. Several apportionment methods work by adjusting the "divisor" (ideal district size) which is initially M/m. If you use a divisor method where rounding gives out 16 seats, but the size of the legislature is 15 seats, what do you do?

- (A) slightly increase M/m
- (B) slightly decrease M/m
- (C) look at the fractional part
- (D) increase the size of the legislature

$$Q_i = \frac{M_i}{\left(\frac{M}{m}\right)}$$

increase divisor ⇓ Q_i decreases ⇓ fewer seats

3. Can the Huntington-Hill method assign zero seats to a state?

- (A) Yes, because a state may have a very small quota (less than .01)
- (B) No, because the square root of zero is zero, and nothing is below that
- (C) No, because it's forbidden in the Constitution
- (D) Yes, but only if there is an Alabama Paradox

Suppose $0 < Q_i < 1$

n $\quad$ $n+1$

$\sqrt{n(n+1)} = \sqrt{0(1)} = 0$ and $Q_i > 0$

So will give out 1 seat, and never 0.