

Data 88S

April 2, 2024

Welcome back from Spring Break!

Chapter 7, Exercise 9

1. In a country, State A has 40 million people and State B has 10 million people. The two states have the same proportion of college graduates.

In each of part below, pick one of the three options without calculation and explain your choice.

- (a) In each state, a simple random sample of 500 people is taken. The SD of the number of college graduates in the sample from State A is

- i. quite a bit less than
- ii. about the same as
- iii. quite a bit more than

the SD of the number of college graduates in the sample from State B.

- (b) In each state, a simple random sample of 0.01% of the population is taken. The SD of the number of college graduates in the sample from State A is

- i. quite a bit less than
- ii. about the same as
- iii. quite a bit more than

the SD of the number of college graduates in the sample from State B.

Chapter 7, Exercise 11

2. Each Data 8 student is asked to draw a random sample and estimate a parameter using a method that has chance 95% of resulting in a good estimate.

Suppose there are 1300 students in Data 8. Let X be the number of students who get a good estimate. Assume that all the students' samples are independent of each other.

- (a) Find the distribution of X .

- (b) Find $E(X)$ and $SD(X)$.

- (c) Find the chance that more than 1250 students get a good estimate.

Name: _____

TA Name: _____

Secret Word: _____

Chapter 7, Exercise 12

3. In a population of size 100 there are 50 women, 20 unemployed people, and 80 college graduates. A simple random sample of 30 people is taken. In the sample, let W be the number of women, U the number unemployed, and C the number of college graduates.
- (a) Without calculation (other than obvious conversions to percents or proportions), rank $E(W)$, $E(U)$, and $E(C)$ in increasing order. If you think two of the values are equal, put an = sign between them.
- (b) Without calculation (other than obvious conversions to percents or proportions), rank $SD(W)$, $SD(U)$, and $SD(C)$ in increasing order. If you think two of the values are equal, put an = sign between them.