Stella Dee
Week 7 Reading Questions
I did not work with any other students.

Q1: The population mean does not affect the width of CIs for a normally-distributed population because the confidence interval only captures the frequency with which the sample mean is expected to match the population mean; the exact value of this mean is irrelevant.

Q2: Population standard may affect the width of the CIs, with large standard deviation increasing the width of CIs. While the standard error and standard deviation are only based on the size of the *sample*, a population with higher standard deviation should be more likely to produce samples with larger standard deviation, and therefore wider CIs. While we assume the population is unknowable and do not base our statistical parameters on its values, its standard deviation may nevertheless influence the resulting CIs. Small standard deviation in the sample will help produce small confidence intervals, and small standard deviation in the population makes this more likely.

Q3: Population size usually does not affect the width of CIs because the standard deviation and standard error are sample statistics based on a large unknowable population. We assume the population is unknowable and do not base our statistical parameters on its values. If population size is extremely small (not the usual assumption) than this may influence the width of CIs.

Q4: Larger sample sizes will decrease the width of the CIs, because increasing sample size causes the standard deviation of the sample to stabilize around the standard deviation of the population, decreasing the standard error and narrowing the CIs.

Q5: If you ate hundreds of bowls of spaghetti noodles over the course of your life, from many different brands, and each time you measured the length of all the noodles in your bowl and calculated the mean for them, you would expect the true mean or center noodle length across brands and time to fall within the calculated 95% confidence interval for that particular bowl of pasta 95% of the time. Frequentist statistics assumes the true population is unknowable, and in this case it is, because even if the different brands use standardized molds for their noodles, noodles may break in the package or be otherwise manipulated in some unknowable way.