Outside Assignment Quiz for 3/21/19: Answer each question and bring to class on Tuesday 3/26/19.

1. Pew research, in November 2011, polled a random sample of 799 US teens about internet use. 49% of those teens reported that they had misrepresented their age online to gain access to websites and online services.

a) Categorical or Quantitative Variable?

b) Is 49% a Sample statistic or Population parameter?

c) Should we use a z-distribution or t-distribution?

d) Calculate a 90% confidence interval using STAT TESTS #A. (0.46152, 0.5197)

e) Interpret your interval in the context of the problem. We are 90% confident that the true proportion of all teens that have misrepresented their age is in the interval.

2. Some IQ tests are standardized to a Normal model, with a mean of 100 and a standard deviation of 15.

a) Categorical or Quantitative Variable?

b) Are 100 and 15 Sample statistics or Population parameters?

c) Should we use a z-distribution or t-distribution?

d) Is it appropriate to calculate a confidence interval? Why or why not? No, because a confidence interval predicts the population and we already know the population.

3. The average normal body temperature is thought to be 98.6°F. The body temperature for 100 randomly sampled adults was found to have a mean of 98.2°F and a standard deviation of 0.7.

a) Categorical or Quantitative Variable?

b) Are 98.2°F and 0.7 Sample statistics or Population parameters?

c) Is 98.6°F a Sample statistic or Population parameter?

d) Should we use a z-distribution or t-distribution?

e) Calculate a 90% confidence interval using STAT TESTS #8. (98.084, 98.316)

f) Interpret your interval in the context of the problem. We are 90% confident that the true average body temperature of all adults is in the interval.

4. It is generally believed that nearsightedness affects about 12% of all children. A school district randomly selected 170 children in kindergarten and found that 10% were nearsighted.

a) Categorical or Quantitative Variable?

b) Is 12% a Sample statistic or Population parameter?

c) Is 10% a Sample statistic or Population parameter?

d) Should we use a z-distribution or t-distribution?

e) Calculate a hypothesis test to test if there is a decrease in nearsightedness from the reported 12% using STAT TESTS #5. P-value = 0.21

f) What do you conclude in the context of the problem. Do not reject. There is not enough evidence to suggest that nearsightedness among kindergarteners is less than 12%.

g) Which could occur based on your previous conclusion a Type I or Type II error?

5. Delta Air Lines reports that the average delay time of all arriving domestic flights in 2018 was 60 minutes. A flight is considered delayed if it arrives more than 15 minutes later than the scheduled arrival time. Average delayed minutes are calculated from delayed flights only. A random sample of 20 Delta flights in 2018 had an average delay of 65 minutes with a standard deviation of 5 minutes.

a) Categorical or Quantitative Variable?

b) Is 60 minutes a Sample statistic or Population parameter?

c) Is 65 minutes and 5 minutes a Sample statistics or Population parameters?

d) Should we use a z-distribution or t-distribution?

e) Calculate a hypothesis test to test if there is an increase in average delay from the 60 minutes reported using STAT TESTS #2. P-value = 0.00013

f) What do you conclude in the context of the problem. Reject. There is evidence to suggest that there is an increase in average delay from 60 minutes.

g) Which could occur based on your previous conclusion a Type I or Type II error?