Confidence Intervals/Hypothesis Tests Definitions and Concepts

1. When setting up a null hypothesis, which of the following symbols will we never use: =, <, >, ≠?
   We never use ≠ for a null hypothesis.

2. In words, what is the difference between a population measurement and a sample measurement?
   A population measurement is a measurement about a population and a sample measurement is a measurement from a sample, which is drawn from a population.

3. Describe in words what a confidence interval tells us about an unknown population mean.

   A confidence interval gives us a range of values for an unknown population mean, to some level of confidence.

4. True or False: A wider confidence interval means a larger confidence level. Why?
   False. A larger confidence level is not the only way to yield a wider interval. Decreasing the sample size will also yield a wider interval.

5. How does increasing the following affect the width of the confidence interval: critical value, sample size, standard deviation?

   Increasing critical value will increase width.

   Increasing sample size will decrease width.

   Increasing standard deviation will increase width.

6. If we don't know the population standard deviation when constructing a confidence interval, will we need to find a z critical value or a t critical value?

   T critical value.

7. Describe in words what a P-value represents.

   P-value represents the probability of obtaining a particular sample mean/proportion if the null hypothesis is true.

8. Explain the difference between a proportion, *p*, and a P-value.

   A proportion is a number regarding a sample or population, whereas a P-value is a probability regarding a sample mean/proportion.

9. When we conclude a hypothesis test, we either reject a null hypothesis or fail to reject a null hypothesis. Why do we use the language "fail to reject" instead of "accept"?

   We never actually know if the null hypothesis is really true, we just have evidence it might be true.

10. If a hypothesis test wanted to determine if we found significant evidence that Hunter students' test scores are greater than 85, write out the alternative hypothesis to our test.
    Ha = m > 85