Ryerson University
F16 QMS 202
Practice Questions for Lecture 4
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1. A sample of size $n = 160$ is selected from the left-skewed population with $\overline{X} = 100$ and $S = 21$. Which of the following statements is true?

   (a) We can use the t-test to test the null hypothesis $H_0 : \mu = 105$

   b) We can use the Z-test to test the null hypothesis $H_0 : \mu = 105$

   c) We cannot use the t-test to test the null hypothesis $H_0 : \mu = 105$ because the population is not normally distributed

   d) We cannot use the t-test to test the alternative hypothesis $H_0 : \mu = 105$ because the sample is too small.

   Use the following scenario for problems 2-5

   A company that manufactures chocolate bars is particularly concerned about the mean weight of chocolate bars. A sample of 18 chocolate bars is selected, and their weights in ounces are summarized in the following table

6.029	6.089	6.056	6.051	6.110	6.068
6.098	6.096	6.011	6.009	6.033	6.000
5.995	5.990	6.110	5.990	5.955	5.922

   Assume normal distribution of weights of chocolate bars.

2. The parameter of interest for this study is?

   a) σ

   b) π

   c) $\overline{X}$

   (d) μ

3. The null and alternative hypotheses to determine if the mean weight of the chocolate bars is greater that 6.02 ounces are?

   (a) $H_0 : \mu \leq 6.02$ and $H_1 : \mu > 6.02$

   b) $H_0 : \mu \geq 6.02$ and $H_1 : \mu < 6.02$

   c) $H_0 : \overline{X} \geq 6.02$ and $H_1 : \overline{X} < 6.02$

   d) $H_0 : \overline{X} = 6.02$ and $H_1 : \overline{X} \neq 6.02$

4. The correct rejection region for H_0 at $\alpha = 0.05$ is

   a) Reject H_0 if $t_{STAT} < -1.74$

   (b) Reject H_0 if $t_{STAT} > 1.74$

   c) Reject H_0 if $t_{STAT} > 1.98$ or $Z_{STAT} < -1.98$

   d) None of the above

5. Which of the following conclusions is correct?

   a) At $\alpha = 0.15$, there is sufficient evidence to conclude that the population mean weight of the chocolate bars is 6.02 ounces.

   (b) At $\alpha = 0.15$, there is sufficient evidence to conclude that the population mean weight of the chocolate bars is greater than 6.02 ounces.

   c) At $\alpha = 0.10$, there is sufficient evidence to conclude that the population mean weight of the chocolate bars is greater than 6.02 ounces.

   d) At $\alpha = 0.05$, there is sufficient evidence to conclude that the population mean weight of the chocolate bars is greater than 6.02 ounces.

Use the following scenario for problems 6-9

A company that manufactures coffee vending machines has developed a new process ensuring that coffee cups are filled correctly. The previous process filled the cups correctly 85% of the time. Based on a sample of 100 orders, using the new process, 94 were filled correctly. The company would like to know whether the new process has increased the proportion of orders filled correctly.

6. What null hypothesis would you choose for this study?

   a) $H_0 : \pi \geq 85$

   b) $H_0 : \pi \leq 85$

   c) $H_0 : \pi \geq 0.85$

   (d) $H_0 : \pi \leq 0.85$

7. At the 0.01 level of significance, what critical value should the company officials use to determine the rejection region?

   a) 1.96

   b) 1.66

   (c) 2.33

   d) 2.07

8. Which of the following statements is false?

   a) the null hypothesis would not be rejected if a 0.1% probability of committing a Type I error is allowed.

   b) the null hypothesis would be rejected if a 2.5% probability of committing a Type I error is allowed.

   c) the null hypothesis would be rejected if a 5% probability of committing a Type I error is allowed.

   (d) the null hypothesis would not be rejected if a 10% probability of committing a Type I error is allowed.

9. What will be the p-value if these data were used to perform a two-tail test?

   (a) 0.0117

   b) 0.0225

   c) 0.0725

   d) 0.1725

-The end-