Name _____ Date _____

Elementary Statistics Period _____

Chapter 8 Final Exam Review

Hypothesis Testing

_____ 1. Which test statistic should you use to test the following claim using the given the sample data?

Claim: $\mu = 977$

Sample data: $n = 35$, $x = 984$, $s = 25$

a. Student t distribution
b. Standard normal distribution
c. Chi-square distribution
d. None of the above

_____ 2. A researcher claims that 13% of registered cars are red. Identify the correct null hypothesis and alternative hypothesis.

a. H_0: $p < 0.13$ H_1: $p \geq 0.13$
b. H_0: $p \neq 0.13$ H_1: $p = 0.13$
c. H_0: $p = 0.13$ H_1: $p > 0.13$
d. H_0: $p = 0.13$ H_1: $p \neq 0.13$

_____ 3. Assume that the data has a normal distribution and the sample size is 45. Using a significance level of 0.05 for a right-tailed test, find the critical z value(s) used to test the null hypothesis:

a. 1.645
b. +/- 1.96
c. +/- 1.645
d. 1.96

_____ 4. A high school claims that more than 28% of its students plan to go to a four year college after graduation. It is found that among a random sample of 130 students, 32% of them plan to go to a four year college. Find the P-value for a test of the school's claim.

a. 0.1635
b. 0.8461
c. 0.3078
d. 0.1539

_____ 5. Find the critical value of χ^2 based on the following information:

H_1: $\sigma < 85.7$, $n = 13$, and $\alpha = 0.10$

a. 18.549
b. 6.304
c. 7.042
d. 19.812

_____ 6. A sociologist claimed that the state with the longest mean life span is Hawaii with a mean of 77 years. Assuming that a hypothesis test of the claim has been conducted and that the conclusion is to reject the null hypothesis, state the conclusion in non-technical terms.

a. There is sufficient evidence to support the claim that the mean life span in Hawaii is 77 years.
b. There is sufficient evidence to warrant rejection of the claim that the mean life span in Hawaii is 77 years.
c. There is not sufficient evidence to support the claim that the mean life span in Hawaii is 77 years.
d. There is not sufficient evidence to warrant rejection of the claim that the mean life span in Hawaii is 77 years.

For questions 7-9: Show your work & if necessary, round your *final answers* to the *thousandths place*.

7. An elementary teacher claims that less than 30% of people identify blue as their favorite color. Her class conducted a study and collected data from 56 people where 12 people said their favorite color was blue. Test the teacher's claim at the 1% level of significance.

8. A friend tells you that the average length of trout caught in Pyramid Lake is greater than 19 inches. The Creel Survey reported that a random sample of 51 fish caught, the mean length was 18.5 inches and standard deviation was 3.2 inches. At a 5% level of significance, test your friend's claim.

9. A new thermostat has been engineered for frozen food cases in large supermarkets. The company claims that the standard deviation is 3.5°F. A random sample of 21 temperature readings gave a sample standard deviation of 2.26°F. Test the company's claim at the 5% significance level.