Name: _____ **Date:** _____

Elementary Statistics **HW 8.4 part 2**

1. **Data Set 16 in Appendix B lists earthquake depths from a simple random sample. The summary statistics are: n = 50, $\bar{x}$ = 9.81 km, and s = 5.01 km. Use a 0.05 significance level to test the claim of a seismologist that these earthquakes are from a population with a mean depth equal to 10 km. (Please note that σ is unknown)**

   Step 1: What is the claim in symbolic form? Also, state the "opposite of the claim"

   Step 2: What are the null and alternative hypotheses?

   Step 3: Is the test two-tailed, left-tailed, or right-tailed?

   Step 4: What is the value of α?

   Step 5: What is the critical value(s)?

   Step 6: What is the value of the test statistic?

   Step 7: Does the test statistic fall inside the critical region? So, should we reject the null hypothesis or fail to reject the null hypothesis?

   Step 8: What is the written conclusion based on the original claim and your answer to part e?

2. **Using the same information as the previous question (#1), but assume that the population standard deviation σ known to be 5.01 km. Use a 0.05 significance level to test the claim of a seismologist that these earthquakes are from a population with a mean depth equal to 10 km. (Please be sure to follow the same steps as question #1 but note that σ is now given so steps 5-8 may be different)**

Did the final conclusion change from question #1 since the population standard deviation was known?