Math 113: Classroom Activity 6 Name : _____
10 pts

Materials Needed:

Scale

Instructions:

Do all work in the metric system

1. Member's Mark claims that there are _____ grams of candy in each bag.

2. For your bag of candy, measure the following and record.

Mass of package (g)	Mass of wrapper (g)	Mass of candy (g)

The instructor will gather the masses from the students and enter them into the computer.

3. Summarize the sample.

Sample Size, n	Mean, $\overline{x}$	St. Dev, s	SE Mean

4. Write the original claim symbolically.

5. The original claim is the (null / alternative) hypothesis.

6. Write the null and alternative hypotheses.

H_0 :

H_1 :

7. This is a (left tail / right tail / two tail) test.

8. The Student's t distribution needs degrees of freedom, which are _____.

9. The significance level is $\alpha =$ _____.

10. Place the significance level into the table and use the probability calculator to find the critical t-value(s). Label the appropriate values as CV and α.

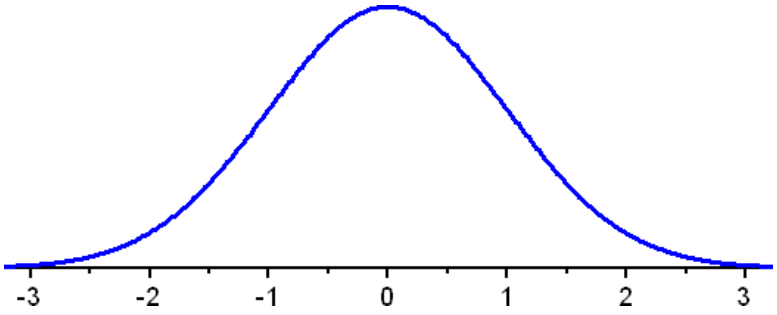
t-score	area to left*	area to right*	twice smaller area

*If you have a two tail test, then put the same area for the left and right when finding the critical value.

Confidence Interval Approach

11. The margin of error is $ME = CV \times SE$, its value is _____.

12. Draw vertical lines at the critical values to represent the confidence interval limits. The center of the confidence interval is the sample mean and margin of error is the distance to either side of the center. Label the graph to illustrate this.



13. The _____ % confidence interval is _____ $<$ μ $<$ _____.

14. The confidence interval (does / does not) contain the claimed value of _____, so we (reject / retain) the null hypothesis.

Classical and Probability Value Approaches

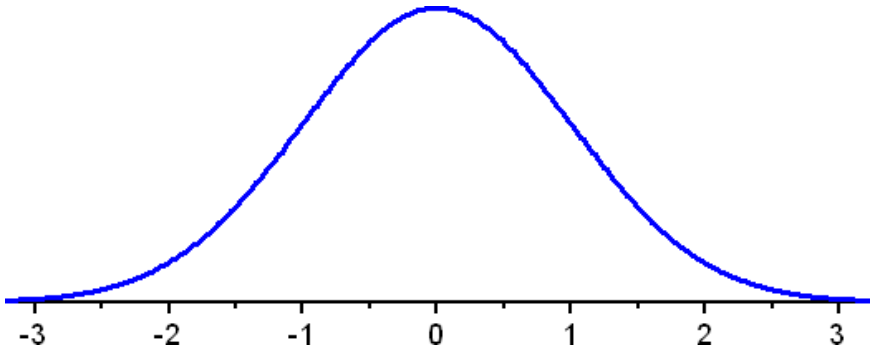
15. The test statistic is $t = \dfrac{\overline{x} - \mu}{SE(\overline{x})}$, its value is _____.

16. Write the test statistic in the table and then use the probability calculator to find the other values. Label the appropriate values as TS and p-value.

t-score	area to left	area to right	twice smaller area

17. The probability value is _____.

18. Illustrate the diagram as follows
    a. Draw and label vertical line(s) at the critical value(s)
    b. Shade and label the critical region
    c. Label the non-critical region
    d. Draw arrows and label the area in the critical region and non-critical region. Use α notation like $\alpha = 0.05$ or $1 - \alpha = 0.05$.
    e. Label the appropriate regions with "Reject H_0" and "Retain H_0".
    f. Draw and label a vertical line at the test statistic.
    g. Draw an arrow and label the area beyond the test statistic with the p-value.



19. The test statistic (does / does not) fall in the critical region, so we (reject / retain) the null hypothesis.

20. The p-value is (less / greater) than the significance level, so we (reject / retain) the null hypothesis.

21. The decision is to (reject / retain) the null hypothesis.

22. There (is / is not) enough evidence to (reject / support) the claim that the mean amount of candy in each bag is _____ grams.

Use the areas from question 16 to find the appropriate p-values for these questions.

23. Test the claim that there is more than _____ grams of candy in the bag.

    a. The original claim written symbolically is _____. This is the (null / alternative) hypothesis so we will (reject / support) the claim.

    b. The alternative hypothesis is _____ so this is a (left / right / two) tail test.

    c. The p-value is _____, which is (less / greater) than the significance level, so there (is / is not) enough evidence.

    d. Based on a p-value of _____, there (is / is not) enough evidence to (reject / support) the claim that there are more than _____ grams of candy in the bag.

24. Test the claim that there are at least _____ grams of candy in the bag.

    a. The original claim written symbolically is _____. This is the (null / alternative) hypothesis so we will (reject / support) the claim.

    b. The alternative hypothesis is _____ so this is a (left / right / two) tail test.

    c. The p-value is _____, which is (less / greater) than the significance level, so there (is / is not) enough evidence.

    d. Based on a p-value of _____, there (is / is not) enough evidence to (reject / support) the claim that there are at least_____ grams of candy in the bag.