Compiled by: Mr. Loren L. Spencer

Recipe for Success: 1 Sample T-Distribution
Confidence Interval for Means σ is unknown

1. **Define the parameter *μ in context***

2. **Write the Conditions**
   1. **Random Sample**
   2. **n < 10% of the population**
   3. **Normal Population or *n ≥ 30***

   If data is given, draw a boxplot or histogram-to show normality

3. **Write the Equation**

$$\bar{x} \pm t^* \left(\frac{s}{\sqrt{n}}\right)$$

t = the number of standard deviations a value is from the mean
$\bar{x}$ = the mean of the sample.
s = the standard deviation of the sample
n = the size of the sample

4. **Graph and Shade**

5. **Enter the Data if Given**
   - Stat Edit
   - Enter Data in column L1
   - 2nd Quit
   - Stat Calc
   - 1-Var Stats: $\bar{x}$, s_x, **n**

6. **Identify and label all inputs**
   - s comes from the problem or the data
   - $\bar{x}$ comes from the problem or the data
   - **n** comes from the problem or the data
   - **df** = n-1

7. **Calculate *t****
   - 2^{nd} Vars
   - Inverse t
   - Area = $\frac{(1-Confidence\ level)}{2}$
   - **df** = n-1

8. **Plug in the values**

9. **Calculate the Interval**
   - Stat Tests
   - **8:T Interval**
   - Highlight **Stats** *(Highlight Data if data is given)*
   - $\bar{x}$ comes from the problem or the data
   - s_x come from the problem or the data
   - **n** comes from the problem or the data
   - Inter the confidence level

10. **Write the Interval**

11. **Write the Conclusion**

We are _____% confident that the true population mean for _____ lies within the interval _____.
Restate the definition of the mean

12. **Explain the meaning of the confidence level-*if asked***

In repeated sampling, we expect that this method will capture the true population mean _____percent of the time.
Restate the Confidence Level

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Recipe for Success: 1 Sample T-Distribution
Hypothesis Test for Means σ is unknown

1. **Write your Hypothesis**
   - Null H_0: $\mu =$
   - Alternative H_A: $\mu \neq$ or $<$ or $>$
2. **Define the parameter μ *in context***
3. **Write the Conditions**
   1. **Random Sample**
   2. **n < 10% of the population**
   3. **Normal Population or *n > 30***

   If data is given, draw a boxplot or histogram-to show normality
4. **Write the Equation**

$$t = \frac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}}$$

t = the number of standard deviations a value is from the mean
μ = the mean of the population or what is assumed to be true
$\bar{x}$ = the mean of the sample.
s = the standard deviation of the sample
n = the size of the sample

5. **Draw the graph and Shade**
6. **Enter Data** (if given)
   - Stat Edit
   - Enter Data in column L1
   - 2nd Quit
   - Stat Calc
   - 1-Var Stats: $\bar{x}$, s_x, **n**
7. **List & Label all of input values**
8. **Plug values into the equation**
9. **Calculate the t and the p-value**

   df= n-1

   (df is the degrees of freedom)
   - Stat Tests
   - **2:T-Test Enter**
   - Highlight **Stats** *(Highlight Data if data is given)*
   - **μ** comes from the problem
   - $\bar{x}$ comes from the problem or the data
   - **s_x** come from the problem or the data
   - **n** comes from the problem or the data
   - Choose $\neq$ or $<$ or $>$ (use Shaded graph of H_A)
10. **State the Decision**
    - The p-value is____
    - If the p-value is less than alpha, Reject the Null
    - If the p-value is greater than alpha, Fail to reject the Null
11. **Write the Conclusion**

Reject the Null: Our p-value is ____. We reject the Null. There is sufficient evidence at alpha = ___ to suggest that the true population mean for _____is _____

Restate the definition of the mean *Restate H_A $\neq$ or $<$ or $>$ mean*

Fail to Reject the Null: Our p-value is ____. We Fail to reject the Null. There is not sufficient evidence at alpha = ___ to suggest that the true population mean for

_____is _____

Restate the definition of the mean *Restate H_A $\neq$ or $<$ or $>$ mean*