STA2023 Test 3 Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Show all of your work for partial credit including calculator keystrokes when used. Assume all conditions have been met. **Do not round. Show all decimal digits.** All confidence intervals and hypothesis tests should be calculated by hand for #1.

1. A random sample of 101 Nevada teachers were surveyed and found the average salary was $40,918 with a standard deviation of $15,122.

Sketch a graph and create a 90% confidence interval for the average salary of Nevada teachers Valencia College using t=1.684.

$n=$

$\overbar{x}=$

$$S\_{x}=$$

$SD=$

CI =

A hiring ad claims the average salary in Nevada is $45,000. Using your confidence interval, make a conclusion about the claim? Explain.

Make a new sketch and perform a hypothesis test to determine if the mean salary is different from $45,000?

$H\_{0}:$

$H\_{A}:$

$t=$

p-value =

Circle one: Reject $H\_{0}$ or Do Not Reject $H\_{0}$

Based on your hypothesis test, is this enough evidence to conclude that the mean salary is different from $45,000?

For the remaining questions of the exam, use your calculator STAT menu. Assume all conditions have been met. **Do not round. Show all decimal digits.**

2. Some people fear that differences in insurance coverage can affect healthcare decisions. A survey found that 16.6% of 223 recent births in Vermont involved cesarean deliveries, compared to 18.8% of 186 births in New Hampshire.

Find a 95% confidence interval to estimate the difference in cesarean rates.

$x\_{1}=$ $x\_{2}=$

$n\_{1}=$ $n\_{2}=$

Confidence Interval =

Based on your interval, can you tell whether New Hampshire or Vermont have a greater percentage of cesareans? If so, which?

Now perform a hypothesis test to test if there is a difference in cesarean delivery rates in Vermont and New Hampshire.

$H\_{0}:$

$H\_{A}:$

p-value =

Circle one: Reject $H\_{0}$ or Do Not Reject $H\_{0}$

Based on your hypothesis test, is this enough evidence to conclude that there is a difference in cesarean delivery rates in Vermont and New Hampshire?

3. A chain that specializes in healthy and organic food would like to compare the sales performance of two of its primary stores in the state of Florida. Nine weekly sales were randomly sampled and are compared below.

|  |  |  |  |
| --- | --- | --- | --- |
| Weekly Sales | Mean | SD | n |
| Store #1 | 242,170 | 23,937 | 9 |
| Store #2 | 235,338 | 29,690 | 9 |

Create a 95% confidence interval for the difference in the mean store weekly sales.

 $n\_{1}=$ $n\_{2}=$

 $\overbar{x\_{1}}=$ $\overbar{x\_{2}}=$

 $S\_{1}=$ $S\_{2}=$

 CI =

Based on your interval, is there evidence that Store #1 has higher mean weekly sales than Store #2?

Now perform a hypothesis test to test if Store #1 has higher mean weekly sales than Store #2?

 $H\_{0}:$ $H\_{A}:$

 p-value =

 Circle one: Reject $H\_{0}$ or Do Not Reject $H\_{0}$

 Based on your hypothesis test, is there evidence that Store #1 has higher mean weekly sales than Store #2?