STAT Excel Assignment

Using the Excel file **STAT Assignment Data** in the Stat Assignment folder in Blackboard, you will see a list of 200 values in column A. You will want to sort the values in column A by choosing the Data tab at the top and then sort the data in increasing order. These values were randomly generated from a Normal distribution with a mean of 100 and a standard deviation of 20.

1) Use the **AVERAGE** command to find the mean for the data in Column A.

A. 100.831 B. 97.653 C. 101.288 D. 99.474

2) Use the **STDEV.S** command to find the sample standard deviation for the data in Column A.

A. 18.625 B. 19.317 C. 18.887 D. 18.401

3) Using the mean and standard deviation from the first two problems, calculate the interval in which about 68% of the data should lie according to the Empirical Rule.

- A. 84.021 to 114.927
- B. 80.157 to 118.791
- C. 76.294 to 122.654
- D. 72.431 to 126.517

4) From the sorted column A, find the percentage of data that actually lie in your interval calculated in 3) by counting the number of values that fit in your interval and dividing by 200.

- A. 66%
- B. 64.5%
- C. 69%
- D. 62.5%

5) Using the mean and standard deviation from the first two problems, calculate the interval in which about 95% of the data should lie according to the Empirical Rule.

- A. 60.840 to 138.108
- B. 76.294 to 122.654
- C. 64.704 to 134.244
- D. 58.909 to 140.039

6) From the sorted column A, find the percentage of data that actually lie (without rounding) in your interval calculated in 5) by counting the number of values that fit in your interval and dividing by 200.

- A. 93%
- B. 97.5%
- C. 94.5%
- D. 96%

7) Using the mean and standard deviation from the first two problems, calculate the interval in which about 99.7% of the data should lie according to the Empirical Rule.

- A. 43.456 to 155.492
- B. 41.523 to 157.425
- C. 39.593 to 159.355
- D. 45.388 to 153.561

8) From the sorted column A, find the percentage of data that actually lie (without rounding) in your interval calculated in 7) by counting the number of values that fit in your interval and dividing by 200.

- A. 99.5%
- B. 100%
- C. 98%
- D. 97.5%

9) Use the **AVERAGE** command to find the mean for the data in Column D.

- A. 24
- B. 25
- C. 26
- D. 27

10) Use the **STDEV.S** command to find the sample standard deviation for the data in Column D.

- A. 2.338
- B. 82
- C. 3.14159
- D. 9.055

When studying confidence intervals for a t-distribution, we learned that it would require technology to determine the critical value for values that were not already on a table of values. We will use the Excel command TINV to calculate a critical value. The arguments for this command are =TINV(1 – CL, df). For example, to calculate the t-value for a 96% confidence interval with n = 20, you would find an empty cell and enter =TINV(1 - .96, 19)

11) Using n = 15 for the data in D1:D15, calculate the t-value for a 75% confidence interval.

- A. 0.692
- B. 1.150
- C. 1.200
- D. 1.345

12) Using the information from 9), 10), and 11) to calculate a 75% confidence interval for the population mean.

- A. (21.194, 26.806)
- B. (21.066, 26.934)
- C. (20.928, 27.072)
- D. (21.315, 26.685)

13) Using n = 15 for the data in D1:D15, calculate the t-value for an 85% confidence interval.

- A. 1.469
- B. 1.483
- C. 1.440
- D. 1.523

14) Using the information from 9), 10), and 13) to calculate an 85% confidence interval for the population mean.

- A. (20.439, 27.561)
- B. (20.239, 27.761)
- C. (20.618, 27.382)
- D. (20.780, 27.220)

Suppose we wish to test the claim that the population mean for the sample data in column D is greater than 22 with a level of significance of .025. Assume the data is normally distributed. Use the information in 9) and 10) to find:

15) Identify the correct hypothesis statements for this test.

A. Ho: $\mu \leq 22$
Ha: $\mu > 22$

B. Ho: $\mu \geq 22$
Ha: $\mu < 22$

C. Ho: $\mu < 22$
Ha: $\mu \geq 22$

D. Ho: $\mu > 22$
Ha: $\mu \leq 22$

16) Identify the decision rule, using rejection regions, for this test.

- A. Reject the null hypothesis if $t > 2.131$
- B. Reject the null hypothesis if $t < -2.145$
- C. Reject the null hypothesis if $t > 2.145$
- D. Reject the null hypothesis if $t < -2.131$

17) Calculate the test statistic for this test.

- A. $t = 0.855$
- B. $t = -0.855$
- C. $t = 1.272$
- D. $t = -1.272$

18) Identify the correct conclusion.

- A. Fail to reject the null hypothesis and there is enough evidence to support the claim that the mean is greater than 22.
- B. Fail to reject the null hypothesis and there is not enough evidence to support the claim that the mean is greater than 22.
- C. Reject the null hypothesis and there is not enough evidence to support the claim that the mean is greater than 22.
- D. Reject the null hypothesis and there is enough evidence to support the claim that the mean is greater than 22.

Questions 19 and 20 are based on the Linear Regression data in columns G and H where we are trying to predict the Grade on an exam based on the Hours Studied.

19) Use the commands **SLOPE** and **INTERCEPT** to find the Regression Line equation.

- A. $y = 5.166 + 0.968x$
- B. $y = 0.968 + 5.166x$
- C. $y = 56.243 + 5.277x$
- D. $y = 5.277 + 56.243x$

20) Using the regression equation from 19), predict the grade for someone who studies 5.5 hours.

- A. 84.35
- B. 86.00
- C. 302.29
- D. 85.27