

**IA CRITERION E:**  
Descriptive Statistics

Group Members \_\_\_\_\_

Level \_\_\_\_\_

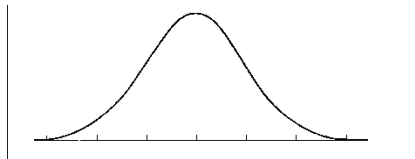
**ON SEPARATE PAPER, DO THE FOLLOWING AND ATTACH TO THIS SHEET:**

1. State your operationalized null and research hypotheses (HL) or the expected results (SL)
2. Clearly and accurately state the results which reflect the hypotheses/expected results of the research; present results in both words and tabular form.
3. Determine and apply appropriate descriptive statistics (at least one measure of central tendency and one measure of dispersion) to the data; explain their use.
4. Clearly and accurately create a graph (or graphs) to describe your data which is directly relevant to the hypotheses/expected results of the study.

----- **HL ONLY** -----

Determine if your data is normally distributed and justify your decision:

**CHECKING IF YOUR DATA IS NORMALLY DISTRIBUTED:**



**MEANS**

- a) Open Excel → Type Data into List(s)
- b) Determine the Skewness Value and Kurtosis Value:

Formulas → Insert Function (SKEW or KURT)

- c) Calculate the Standard Error (SE) of skewness and kurtosis:

$$\text{SE of skewness} = \sqrt{\frac{6}{n}} \text{ where } n = \text{your sample size}$$

$$\text{SE of kurtosis} = \sqrt{\frac{24}{n}} \text{ where } n = \text{your sample size}$$

- d) Calculate a normal interval for each:

$$\text{Interval} = (-2\text{SE}, 2\text{SE})$$

***If both your skewness/kurtosis values fall within this interval, then it is reasonable to assume that your data for means is normally distributed***

## **PROPORTIONS**

- a) Determine if  $np_0 > 10$  and  $n(1 - p_0) > 10$
- b) Verify that  $N > 10n$

***If both conditions are met, then it is reasonable to assume that your data for proportions is normally distributed***

## **REFERENCES**

Jones, Michael N. Assistant Professor at Indiana University, Bloomington.

*NIST/SEMATECH e-Handbook of Statistical Methods*, <http://www.itl.nist.gov/div898/handbook>

Pysdek, Thomas (2000). *The Six Sigma Handbook*. McGraw Hill Companies.

Yates, Daniel S., Moore, David S. and Starnes, Daren S. (2003). *The Practice of Statistics*. New York: W. H. Freeman and Company.