

REQUIREMENTS/CRITERIA: DA&I

REMEMBER: Proper MLA format for ALL figures and tables. You will need to renumber when your paper is complete.

8. Data Analysis and Interpretation

Use this section to calculate and report any statistical analysis you have performed with your data. Start with a paragraph describing your method of collections and what type of analysis was performed; why it is appropriate and how you know it is valid. This is where graphs, modeling, curve fittings, and/or statistical tests appear. Include the test statistic and p-value along with the results of the test in this section, if appropriate. See specific requirements/ explanations in Appendix B of this manual [page 8].

Appendix B: Data Analysis and Interpretation

There are three options: **(1) DOE OR (2) Descriptive OR (3) Descriptive and Another Statistical Treatment.**

(1) DOE: (Use DOE packet in I:\MMSTC\Assignments\DOE Information as a MODEL--do NOT cut & paste!)

Factors	(+) Values	Standards	(-) Values

Level	DOE 1	DOE 2	Average
+++			
++-			
Etc.			

How are numbers in a table formatted and anchored?

1. Clearly identify and label the high, low and standard values.
2. Include a table of all samples at each level (+++, ++-, etc.) for each DOE as agreed to on your contract, as well as the **average at each level**. The analysis is done on the **average at each level**.
3. Include a graph, table and **comment** for each of the single factors.
4. Include a graph, table and **comment** for each of the 2-factor interactions factors.
5. DO NOT include a summary page of all the effects.
6. Include a plot of standard points to look for trends and a **comment** about the plot.

7. Include a dot plot of all effects on a number line and **comment** on the effects found significant.
8. Include the parsimonious prediction equation.
9. Save conclusions for the Conclusion section of the paper [Section 9]. **[Remember the difference between a summary and a conclusion.]**

(2) Descriptive

1. Include plot(s) of the data (histogram, box plots, line graphs, etc.).
2. **Comment on any trends, patterns, etc. present.**
3. IF you have less than 30 trials, **discuss** the normality of your data. Use box plots, normal probability plots, and/or other information to determine.
4. State mean & standard deviation of each set, if appropriate.
5. Find a model, **if appropriate.** **[mathematical model – linear? Quadratic? Etc.]**
6. Remember to interpret the results but save the science behind the conclusions for the Conclusion section of the paper [section 9].

(3) Descriptive and Another Statistical Treatment:

1. Include plot(s) of the data (histogram, box plots, line graphs, etc.).
2. **Comment on any trends, patterns, etc. present.**
3. State mean & standard deviation of each set, if appropriate.
4. Find a model, if appropriate. **[mathematical model – linear? Quadratic? Etc.]**
5. Specific requirements for individual tests*:
 - One-sample t test
 6. If less than 30 data points, plot the data and show that there are no outliers or skewness. **In other words, discuss the normality of your data. Use box plots, normal probability plots, and/or other information to determine (If there are, the t-test does not apply. Do descriptive analysis only.)**
 7. Clearly state the standard and the sample. **[include units!]**
 8. State the null and alternative hypotheses. Use mathematical notation and identifying subscripts. Also **explain** in a sentence or two using the context of the experiment. **[H_0 and H_a should be a figure!]**
 9. Identify the t-value. Show the graph and **explain** the p-value in relation to your problem (**t test screen and graph**). **[Remember the 3-sentence summary.]**

Two-sample t test

6. If less than 30 data points, plot the data and show that there are no outliers or skewness. In other words, discuss the normality of your data. Use box plots, normal probability plots, and/or other information to determine (If there are, the t -test does not apply. Do descriptive analysis only.)
7. State the null and alternative hypotheses. Use mathematical notation and identifying subscripts. Also explain in a sentence or two using the context of the experiment. [H_0 and H_a should be a figure!]
8. Identify the t -value. Show the graph from the calculator and **explain** the p -value in relation to your problem (t test screen and graph). [Remember the 3-sentence summary.]

*Formulas for all statistical tests should be shown and detailed in an **appendix**. Also a sample calculation should be given. For example if you are performing a t -test you would show the equation for it and also define each variable in the anchor. Every calculation should begin with an introductory sentence. No paragraph should begin with a figure. [So, if you are using a t -test or other statistical test, you will also turn in this appendix to me.]

Remember this is part of a paper and needs to have proper grammar, structure and spelling/punctuation. Follow MLA format for all figures and tables.