One Way ANOVA

- Comparing three or more groups.
- One Factor.

1. Open Excel.

2. Enter Data.

3. Click on Data. Look at the right side of the screen - Is there a Data Analysis icon?
4. If not, Click on the Start Button and then Excel Options
5. Click Add Ons

6. Click on Analysis ToolPak

7. Click on Go

8. Make sure the Analysis ToolPak is selected and click ok.
9. Now click on Data and on the right side of the screen the Data Analysis icon will be there.

10. Click Data Analysis and then select ANOVA: single factor and click OK. If you have two factors you will need to complete a ANOVA: Two-Factor with Replication.
11. Now highlight all columns including the labels. Click Labels in First Row and then Ok.

12. An ANOVA chart will appear.
13. Now look at the p-value

   If you get a p value of less than .05% or 5%, then there is **significant difference**. This means that you can safely say at least 95% of the time you see a difference.

   If you get a p value of more than .05% or 5%, then there is **no significant difference**. This means the data is similar more than 5% of the time.

14. Now look at F and compare it to F Crit. If F is larger than F Crit you have a significant difference.

15. Remember this test just tells you there is a difference, not where the difference is.

16. You can also add standard deviation. This is a great way to measure how spread out your numbers are. To find standard deviation take the square root of the variance.

17. Graph the average value for each group and add standard deviation bars.

18. To graph

19. If you have any questions please ask.