Finding the **Standard Error of Estimate** and Constructing a **Prediction Interval**

The steps to do Example 2 and example 3. Or problem #11 and #12

Step 1. Enter the $x_i$ and $y_i$ data

Step 2. Do a linear Regression on your the $x_i$ and $y_i$. This will give you the $r^2$. Change $r^2$ to a percentage. This percentage will represent the variation in y that can be explained by the relationship between x and y.

Step 3. Take 100 minus that percentage. This percentage represents the percent of variation is unexplained and is due to other factors, such as sampling error, coincidence, or lurking variables.

Step 4. Put in the equation you are given for a regression line in your next column using the x values.

Step 5. Subtract the column with the y values you entered and the new predicted y values you just got by entering your predicted regression line and then square it. If you entered x in $L_1$ y in $L_2$ and your predicted y values are in $L_3$. Then this step should like this in column $L_4$ == $(L_2 - L_3)^2$

Step 6. Find the sum of this column by doing a 1 var stats on $L_4$, and use that value in the equation from example 2 on page 501.

Step 7. Find your t value using the InvT with .5(1 - the decimal of your confidence interval) and n-2 as your degrees of freedom.

Step 8. Do two var stats on the entered x and y values from the $L_1$ and $L_2$ columns

Step 9. Use the values you got from step 6, step 7 and step 8 in the equation on page 503 to calculate E

Step 10. Lastly, put the x value they give you into the regression equation they give you to come up with a predicted value. Take that value minus the E you found in Step 9 for your lower bound and take that value plus E for your upper bound. These two represent your confidence interval that and you will be your confidence interval percent that the actual value will be some end up somewhere between your low value and your high value!