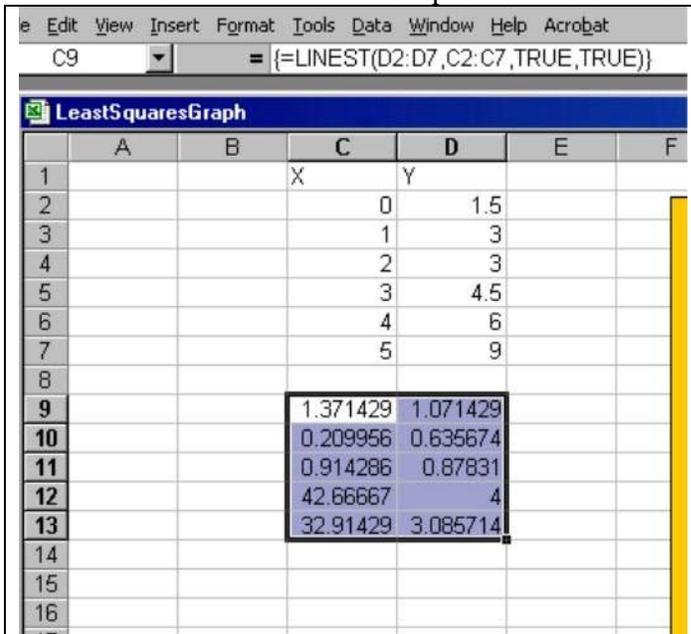**The LINEST** function in Excel provide more statistical information than **TRENDLINE.**

To use LINEST for the X-Y data shown in cells C2-C7 and D2-D7:

1. select a 5 row and 2 column block of cells (C9 to D13 here) by highlighting them with the mouse.
2. type in =LINEST(D2:D7,C2:C7,TRUE,TRUE) and then hold both the Shift and Crtl keys down and press enter. This puts the results of this function in the 10-cell block.

D2:D7 (known y values)
C2:C7 (known x values)
3rd argument TRUE allow non-zero intercept
4th Argument gives additional statistics

Cell	description
C9	Slope estimate , **a** in $\hat{y}=ax+b$ **the hat indicates the least squares predicted y values**
D9	Intercept estimate, **b** in $\hat{y}=ax+b$
C10	Standard error in **a.** **(SEa)**
D10	Standard error in **b.** **(SEb)**
C11	**R^2** (square of correlation coefficient)
D11	$$S_y = \sqrt{\frac{ResSS}{DF}}$$
C12	**F** statistic same as **t^2** (**t = a/SEa**)
D12	Degrees of freedom (**DF=4**)
C13	Regression sum of Squares $\displaystyle \mathrm{Re}\,gSS = \sum_{i=1}^{n}(\hat{y}_i - \bar{y})^2$
D13	Residual Sum of Squares $\displaystyle \mathrm{Re}\,sSS = \sum_{i=1}^{n}(\hat{y}_i - y_i)^2$

See page 2 for a few useful points

Some Useful points:

The 95% confidence limits on the slope (a) can be found using a t table to find $t_{0.05}$ for 4 degrees of freedom. In this case $t_{0.05}$=2.78 for DF=4.
The calculator at the link below can be used instead of a look up table.
http://www.psychstat.smsu.edu/introbook/tdist.htm

 From the values above we get

 a= 1.37 +/- ($t_{0.05}$)(**SEa**) =1.37+/- (2.78)(0.210)

 a =1.37 +/- 0.58

The standard error for the intercept b can be used similarly to set confidence limits on the intercept estimate.

The total sum of squares is

$$TotSS = \sum_{i=1}^{n}(y_i - \bar{y})^2 = \mathrm{Re}\,gSS + \mathrm{Re}\,sSS$$

$$R^2 = \frac{\mathrm{Re}\,gSS}{TotSS}$$

**The link
http://www.colby.edu/chemistry/PChem/notes/linest.pdf**

provides additional detail on LINEST as does help in MS Excel.