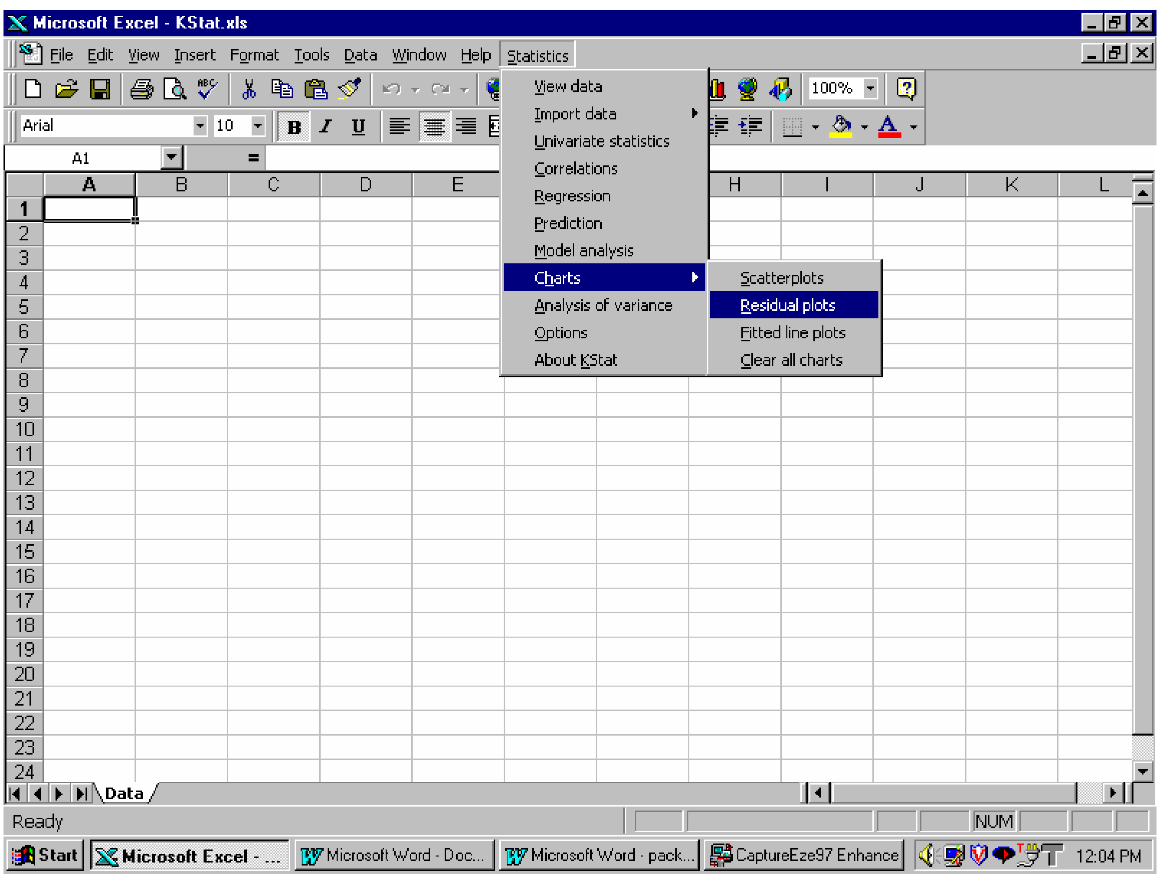
KSTAT MINI-MANUAL

Decision Sciences 434

Kellogg Graduate School of Management

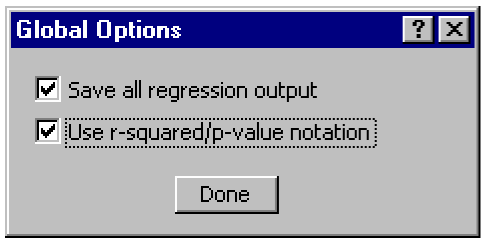
Kstat is a set of macros added to Excel and it will enable you to do the statistics required for this course very easily. To start Kstat, you need to open the Excel worksheet called **Kstat.xls**, as you would open any other worksheet. The **menu bar** is the line near the top displaying the commands **File, Edit, View,** etc… After opening the file, note that in the menu bar there is an additional menu item called **Statistics**, which is not ordinarily there when you start Excel. This item is added to the menu bar by Kstat. Throughout this manual, commands on the main menu and sub-menus will be separated by the > sign. For example, clicking **Statistics** > **Charts** > **Residual Plots** means doing this:



You can either click on **Statistics**, then **Charts**, then **Residual Plots** (once each), or click on **Statistics**, hold the mouse button down as the sub-menus pop up, and release the button when you've gotten to **Residual Plots**.

Getting Started

First thing you should do is to click **Statistics>Options** and to check both options in the **Global Options** dialog box that appears.

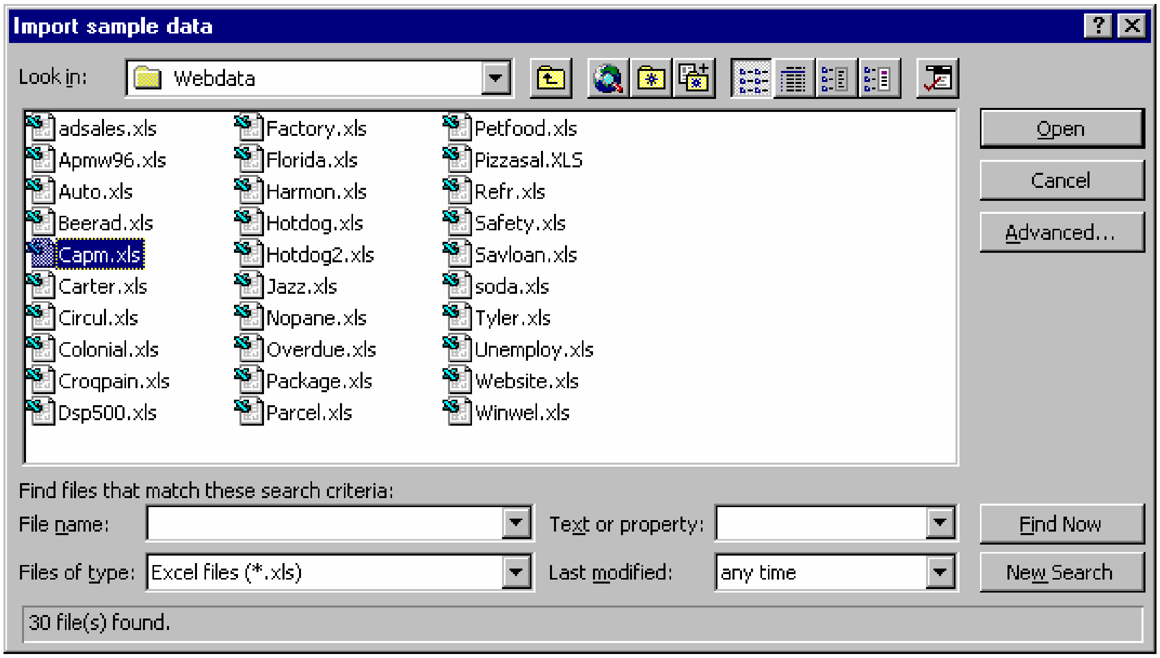


By checking the first box you will tell Excel not to overwrite the results of one regression when you run another during your Kstat session. Checking the second box will allow Kstat to use the notation that we will be using throughout this course. After you have checked both boxes click **Done**. Now, you can click **File>Save**, and Kstat will save these options, so that you don't have to do this every time you start Kstat.

Worksheets are for listing and analyzing data and displaying the results of your analysis. The names of the sheets appear on tabs at the bottom of the workbook window. To move from sheet to sheet, you click the sheet tabs. The name of the active sheet is always bold. You can rename the sheets, add and delete sheets, and move or copy sheets within a workbook or to another workbook.

Opening/Starting a Worksheet

When Kstat starts, it will open a new workbook with only one worksheet, which is an empty worksheet called **Data**. This is where all data you wish to analyze must be entered. Usually you will want to load a data file (which you have previously downloaded) into Kstat To do this click **Statistics>Import data>File…** You will see a window like the one below. Choose the folder that your data file is in, choose the data file and click **Open**. For example, in the following window, by clicking **Open**, you can import the **Capm.xls** data set into Kstat.



Once your data is in place the **Data** worksheet should look like this:

A1 = date

	A	B	C	D	E	F	G	H	I	J	K	L
1	date	sp500	smstk	crpbon	govtbon	tbill						
2	2601	0	0.069863	0.0072	0.013756	0.003384						
3	2602	-0.03474	-0.06019	0.008224	0.010037	0.006406						
4	2603	-0.05186	-0.10171	0.014007	0.009737	0.008602						
5	2604	0.015907	0.008508	0.000301	-0.00181	-0.00597						
6	2605	0.023505	-0.00103	0.009987	0.006998	0.005715						
7	2606	0.053215	0.045285	0.007891	0.011303	0.01095						
8	2607	0.057324	0.020622	0.015134	0.009869	0.011677						
9	2608	0.030559	0.031335	0.010114	0.00572	0.00825						
10	2609	0.019444	-0.0058	-4.7E-05	-0.00198	-0.00347						
11	2610	-0.03217	-0.02651	0.00589	0.006364	-0.00062						
12	2611	0.030874	0.016954	0.001905	0.012202	-0.0007						
13	2612	0.019593	0.033184	0.0056	0.007813	0.002778						
14	2701	-0.01171	0.037133	0.013161	0.015033	0.010024						
15	2702	0.061366	0.062345	0.014519	0.016397	0.010189						
16	2703	0.014429	-0.04901	0.014058	0.031086	0.008717						
17	2704	0.020101	0.057339	0.0055	-0.00049	0.002546						
18	2705	0.05297	0.065657	-0.00882	0.003142	-0.00471						
19	2706	-0.01629	-0.03987	-0.00528	-0.01647	-0.007						
20	2707	0.086003	0.070554	0.019275	0.023945	0.021966						
21	2708	0.057297	-0.01203	0.014103	0.013403	0.00856						
22	2709	0.039203	-0.00109	0.009063	-0.00404	-0.00374						
23	2710	-0.05598	-0.0717	-0.0003	0.004056	-0.00328						
24	2711	0.074012	0.082749	0.008723	0.011629	0.004009						

Data

There are other ways to input data into Kstat. If you have data in another Excel workbook, you can open that workbook in addition to Kstat, and then you can copy and paste the data to the **Data** worksheet of Kstat. Occasionally, you may want to type in data manually. To do this, begin entering the data starting from the cell A1. Note that you must make sure that variable names are in row 1, that each column is one variable, and that the data is in consecutive columns.

Basic Statistics and Critical Values

With Kstat and Excel you can do some of the things you learned in DECS 433. Import the data file **adsales.xls**, available at the course web-site. **Statistics > Univariate statistics** will generate a number of useful summary statistics for each variable on the **Data** sheet. The output looks like:

Univariate statistics

	exp	sales
mean	2.2900874	16.8873778
standard deviation	0.77765926	0.86660475
standard error of the mean	0.05929596	0.06607799
minimum	0.35679829	13.6289663
median	2.30022073	16.9419794
maximum	4.84897232	19.0247002
range	4.49217403	5.39573383
skewness	0.314	-0.826
kurtosis	0.568	1.996
number of observations	172	
t-statistic for computing 95%-confidence intervals	1.9739	

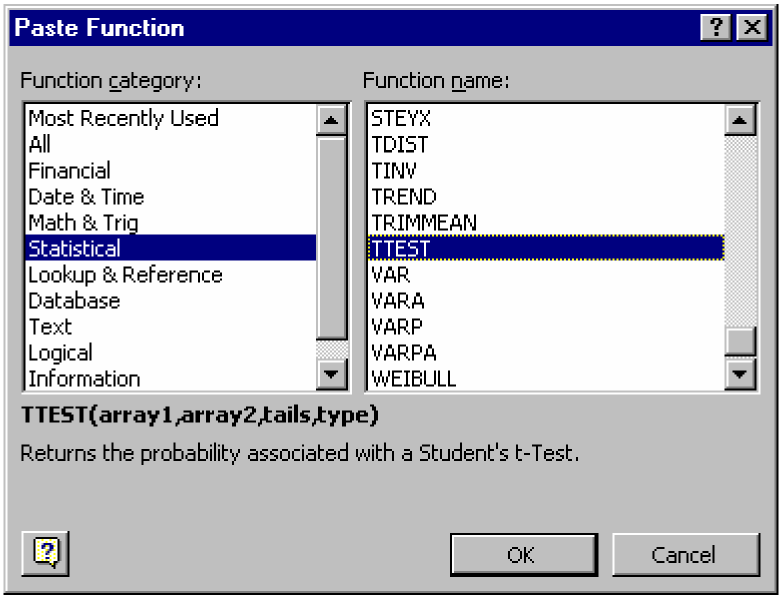
Statistics > Correlations finds the correlation coefficients between all possible pairs of variables in your data set. Again using the **adsales.xls** data, we produce the following output:

Correlations

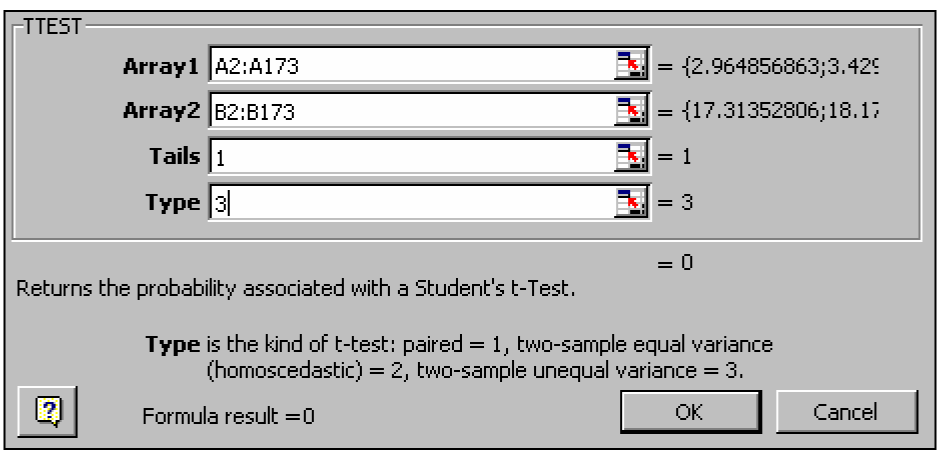
	exp	**Sales**
exp	1.00000	0.95549
sales	0.95549	1.00000

Here, 0.95549 is the correlation between exp and sales. You can use the information provided in the univariate statistics output together with Excel's **TDIST** function to perform a **1-Sample t-test** (which was covered in DECS-433). To compare the means of two populations using a **2-Sample t-test** first click on an empty cell. When you are done, Excel will put the result of the t-test in this cell. We will use the Excel function called **TTEST** that returns the p-value associated with a Student's t-Test. The syntax for this function is:
TTEST(array1,array2,tails,type). Here **Array1** is the first variable, **Array2** is the second variable, **Tails** specifies the number of tails to use for the test (If **tails = 1**, **TTEST** uses the one-tailed distribution, if **tails = 2**, **TTEST** uses the two-tailed distribution), **Type** is the kind of t-Test to perform. We will usually assume that the variances of the variables in a 2-sample t-test are different so you will choose **3** as the type of your test.

There are two ways to use this function in Excel. One way is clicking **Insert>Function…**. In the dialog box that appears choose **Statistical** as your function category and choose **TTEST** as your function name. The dialog box should look like this:



When you click **OK**, you will obtain another dialog box. In the **Array 1** row enter the range of the first sample, in **Array 2** row enter the range of the second sample, in the **Tails** row enter 1 if you want a one tail test and enter 2 if you want a two tail test. Finally in the **Type** row enter the type of the test that you want. Choose 3 (for unequal variances) as the type of your test. When you are done the dialog box should look like this:



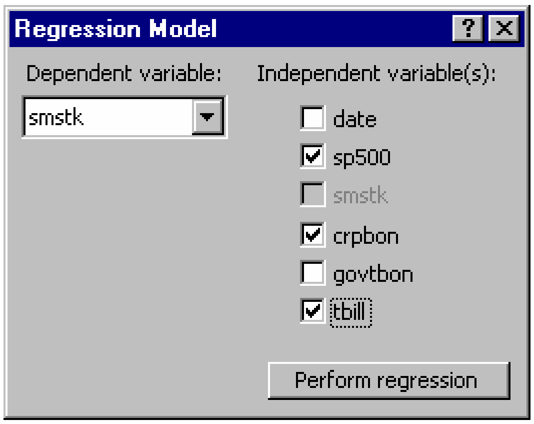
You can see the p-value associated with this test at the bottom where it says formula result. When you click **OK**, Excel will put the same result into the cell on which you clicked before starting the test.

Another way to do the same thing is typing **=TTEST(A2:A31,B2:B31,1,3)** directly into the cell.

Regression

In this section we will use the data in **capm.xls**, also available on the web.

The command you will probably use most frequently is **Statistics > Regression**. By using this command you will obtain the following dialog box:



Choose the dependent variable from the list of variables, and check the boxes for the appropriate independent variables. We will choose **smstk** as our dependent variable and **sp500**, **crpbon** and **tbill** as our independent variables.

When you click **Perform regression**, Kstat will create 3 worksheets: **Regression**, **ANOVA** and **Residuals**. The active worksheet will be **Regression**, and you will get the following output:

Regression: smstk

	constant	**sp500**	**crpbon**	**tbill**
coefficient	-0.0012814	1.36461728	1.5466021	-2.5374467
std error of coef	0.00452835	0.05101924	0.40357477	0.67671508
t-ratio	-0.2830	26.7471	3.8323	-3.7497
p-value	77.7450%	0.0000%	0.0163%	0.0223%
beta-weight		0.8455	0.1399	-0.1349

standard error of regression	0.06575673
R-squared	77.31%
adjusted R-squared	77.02%
number of observations	240
residual degrees of freedom	236
t-statistic for computing	
95%-confidence intervals	1.9701

You may have noticed that some of the cells on the Regression worksheet and other worksheets have red dots on the upper right corner. These are called cell comments. These comments will provide you a brief explanation of the content of the cell. To see a cell comment just put the cursor on the red dot in that cell and the comment will display automatically.

From the output above, we can see that our regression equation is, **smstk = - 0.0012814 + 1.36461728*sp500 + 1.5466021*crpbon - 2.5374467*tbill .** We also get the standard errors, t-ratios, and p-values and beta-weights for each coefficient, as well as the standard error of the regression, R^2 and adjusted R^2 . Kstat also provides the number of observations, the degrees of freedom of the error term, and the t-statistic for computing 95 % confidence intervals.

Now, you can switch to the **ANOVA** worksheet. The output in this worksheet looks like this:

Analysis of variance

	sum of squares	**df**
regression	3.476071636	3
residual	1.020451604	236
total	4.496523241	239
F-ratio	267.9705	
degrees of freedom	(3, 236)	
p-value	0.00000%	

We obtained explained (regression) sum of squares, residual sum of squares, total sum of squares, F-ratio, degrees of freedom and p-value. The p-value above is for the hypothesis test with the null hypothesis that all the coefficients are equal to zero. The p-value of 0 says that we can reject the null hypothesis with very high confidence.

Finally switch to the **Residuals** worksheet. This worksheet provides the predicted (or fitted) values and residuals for each observation in the data set.

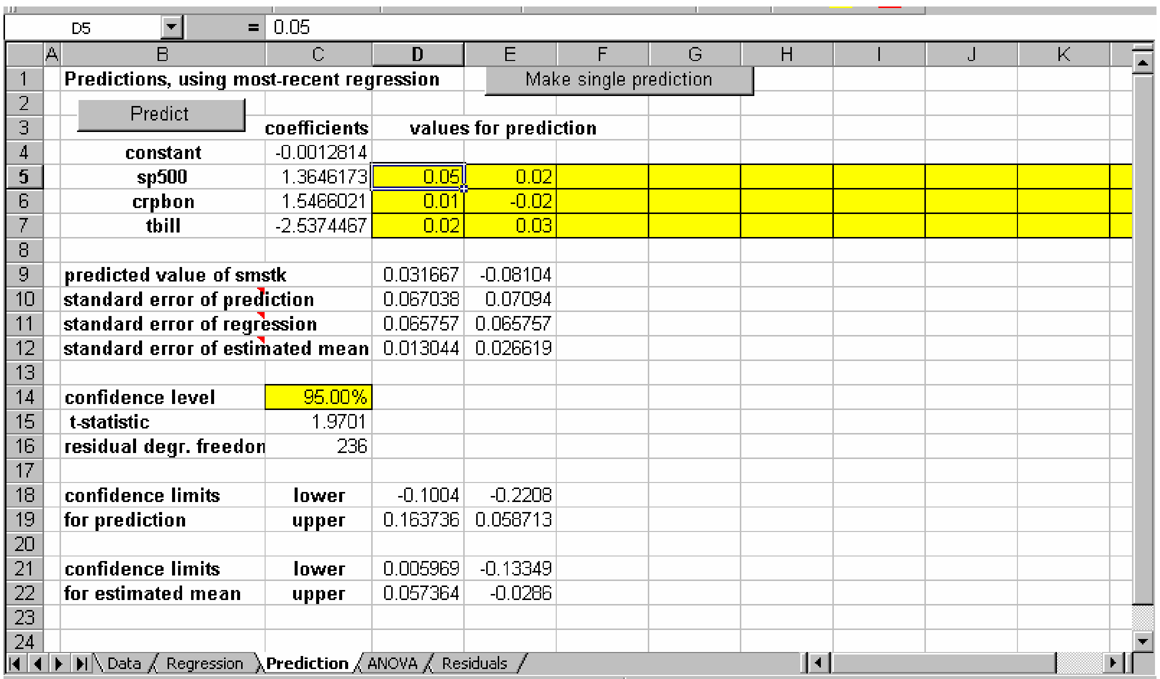
To make predictions using your most recently performed regression, click **Statistics>Prediction**. In the worksheet that you obtain you can make predictions and calculate confidence and prediction intervals. Suppose we want the predicted value for **smstk** where **sp500=0.05**, **crpbon=0.01** and **tbill=0.02.** Enter these numbers into the yellow cells corresponding to each variable and click **Predict**. You will obtain the following output:

Prediction, using most-recent regression			Make multiple predictions	
	constant	sp500	crpbon	tbill
coefficients	-0.00128	1.364617	1.546602	-2.53745
values for prediction		0.05	0.01	0.02
predicted value of smstk		0.031667	Predict	
standard error of prediction		0.067038		
standard error of regression		0.065757		
standard error of estimated mean		0.013044		
confidence level	95.00%			
t-statistic	1.9701			
residual degr. freedom	236			
confidence limits	lower	-0.1004		
for prediction	upper	0.163736		
confidence limits	lower	0.005969		
for estimated mean	upper	0.057364		

Data / Regression / Prediction / ANOVA / Residuals

In this page you can also obtain confidence and prediction intervals for the fitted values. To change the confidence level just type the confidence level that you want in the cell C12. The confidence and prediction intervals are going to automatically adjust for this confidence level.

If you want to do multiple predictions click on **Make multiple predictions** button. Suppose we want to make predictions for **sp500=0.05**, **crpbon=0.01** and **tbill=0.02**, as well as **sp500=0.02**, **crpbon=-0.02** and **tbill=0.03**. Now you need to enter each set of values for the independent variables in a separate yellow column. Also, this time, let's find the confidence and prediction intervals for 90% confidence level. After you click **Predict**, the worksheet should look like this:



D5 = 0.05

	B	C	D	E
1	Predictions, using most-recent regression		Make single prediction	
2	Predict			
3		coefficients	values for prediction	
4	constant	-0.0012814		
5	sp500	1.3646173	0.05	0.02
6	crpbon	1.5466021	0.01	-0.02
7	tbill	-2.5374467	0.02	0.03
8				
9	predicted value of smstk		0.031667	-0.08104
10	standard error of prediction		0.067038	0.07094
11	standard error of regression		0.065757	0.065757
12	standard error of estimated mean		0.013044	0.026619
13				
14	confidence level	95.00%		
15	t-statistic	1.9701		
16	residual degr. freedon	236		
17				
18	confidence limits	lower	-0.1004	-0.2208
19	for prediction	upper	0.163736	0.058713
20				
21	confidence limits	lower	0.005969	-0.13349
22	for estimated mean	upper	0.057364	-0.0286
23				
24				

Data / Regression / Prediction / ANOVA / Residuals

After performing a regression you can use some other advanced options by clicking **Statistics>Model analysis**. This option will expand the **Residuals** worksheet and it will provide some useful statistics (See below for an example of what the output will look like.) In particular, in addition to everything that was already in the **Residuals** worksheet, you can obtain the test statistic for the Breusch-Pagan heteroskedasticity test, variance inflation factors for the coefficients, and identify outliers and high leverage points, all of which will be used in the course.

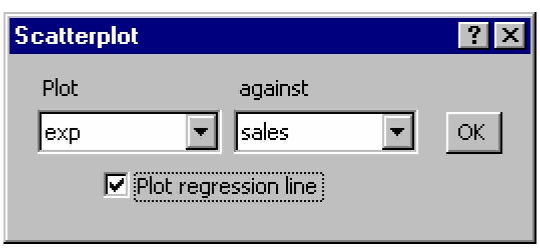
	A	B	C	D	E	F	G	H	I	J	K	L
1		Predicted values and residuals										
2												
3			36.9156	0.000%	Breusch-Pagan heteroskedasticity test							
4			162.8310	0.000%	Jarque-Bera non-normality test							
5			1.9410		Durbin-Watson statistic			variance				
6								inflation				
7					1.9701	0.0167	0.7909	1.039247	1.3867586	1.3463453		
8		smstk	predicted	residual	std'ized	leverage	Cook's D	sp500	crpbon	tbill		
9		0.069863	0.0012674	0.0685956	1.0457	0.0048	0.0013	0	0.0072	0.003384		
10		-0.060187	-0.05222	-0.007967	-0.1216	0.0078	0.0000	-0.034737	0.008224	0.006406		
11		-0.101712	-0.07222	-0.029492	-0.4512	0.0119	0.0006	-0.051864	0.014007	0.008602		
12		0.008508	0.0360422	-0.027534	-0.4204	0.0079	0.0004	0.015907	0.000301	-0.005971		
13		-0.001029	0.0317384	-0.032767	-0.4999	0.0062	0.0004	0.023505	0.009987	0.005715		
14		0.045285	0.0557559	-0.010471	-0.1604	0.0149	0.0001	0.053215	0.007891	0.01095		
15		0.020622	0.0707205	-0.050098	-0.7676	0.0148	0.0022	0.057324	0.015134	0.011677		
16		0.031335	0.0351284	-0.003793	-0.0579	0.0089	0.0000	0.030559	0.010114	0.00825		
17		-0.005799	0.0339946	-0.039794	-0.6069	0.0057	0.0005	0.019444	-4.7E-05	-0.003474		
18		-0.026507	-0.034508	0.0080014	0.1220	0.0058	0.0000	-0.032168	0.00589	-0.000615		
19		0.016954	0.0455799	-0.028626	-0.4364	0.0047	0.0002	0.030874	0.001905	-0.000703		
20		0.033184	0.0270675	0.0061165	0.0932	0.0046	0.0000	0.019593	0.0056	0.002778		
21		0.037133	-0.022344	0.0594773	0.9096	0.0112	0.0023	-0.011712	0.013161	0.010024		
22		0.062345	0.0790608	-0.016716	-0.2558	0.0127	0.0002	0.061366	0.014519	0.010189		
23		-0.049013	0.0180319	-0.067045	-1.0244	0.0094	0.0025	0.014429	0.014058	0.008717		
24		0.057339	0.0281948	0.0291442	0.4442	0.0045	0.0002	0.020101	0.0055	0.002546		

Data / Regr1 / Pred1 / ANOV1 / Resid1 / Regression / ANOVA / **Residuals**

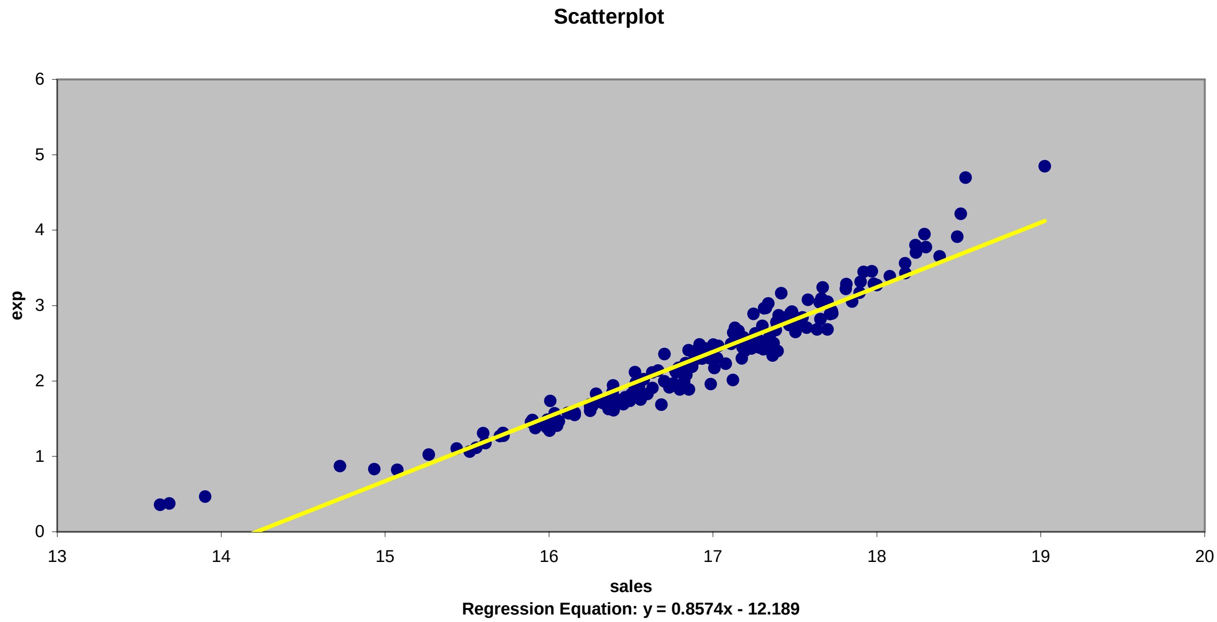
Graphs

In this section we will use the data in **adsales.xls**, also available on the web. Import this data into Kstat.

To plot one variable in your data against another, such as Y vs. X, click **Statistics>Charts>Scatterplots** and then choose the variables from the dialog box that appears.



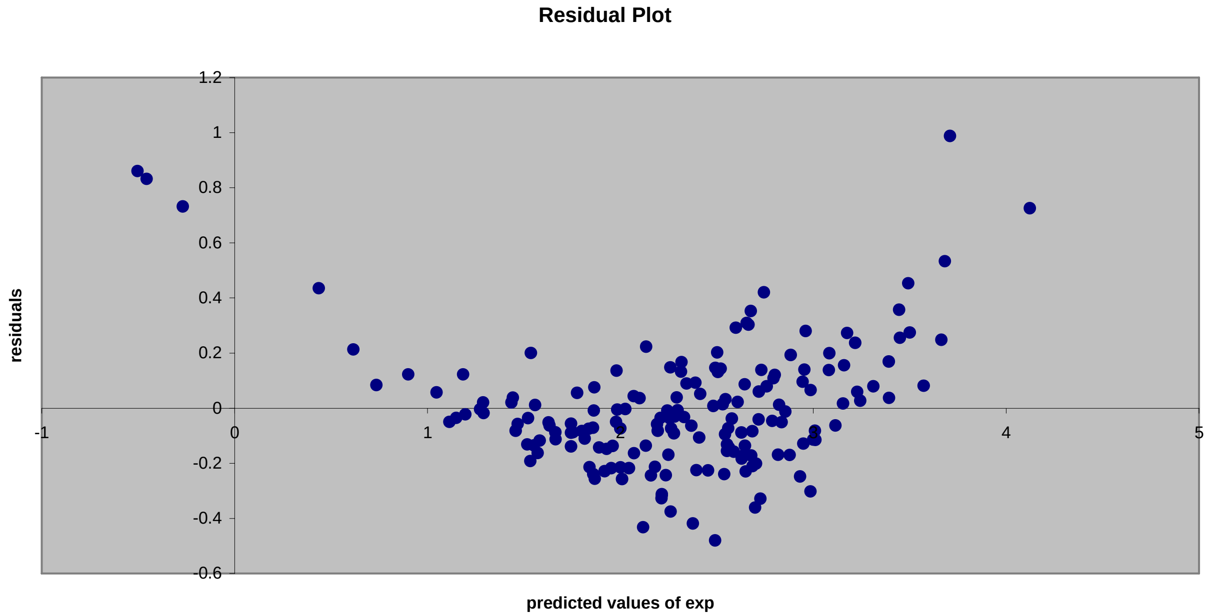
If you want the regression line to appear on your graph, you need to check the plot regression line box. By clicking **OK** above, you can plot **exp** against **sales** and also see the regression line:



If you want to save this chart as a worksheet click on the **Save** button. You can graph any two variables from your data worksheet in this way.

In evaluating a regression, the graph of **residuals versus predicted values** will come up often. First run a regression where **exp** is the dependent variable and **sales** is the independent variable. Then click **Statistics>Charts>Residual Plots**. You will obtain the following dialog box:

Choose predicted values as shown above and click OK. Kstat automatically uses the residuals from the most recent regression you have performed in your current session. You will obtain the following graph for residuals against the predicted values:



To include the graph in a Word file, first save the graph. Your graph will be saved in a worksheet named **Kept1**. (If you save more than one graph during a session your later graphs will be saved in worksheets **Kept2**, **Kept3**, etc. in the order that you saved them.) Switch to **Kept1** and click on the graph (in the white area not the gray area). Then click **Edit > Copy**. The graph will be copied into the clipboard and can now be pasted into Word.

Getting P-values

In this section we will use the data in **circul.xls**, also available on the web. We ran a regression for **Sunday** against **Daily** and we got this output:

Regression: Sunday

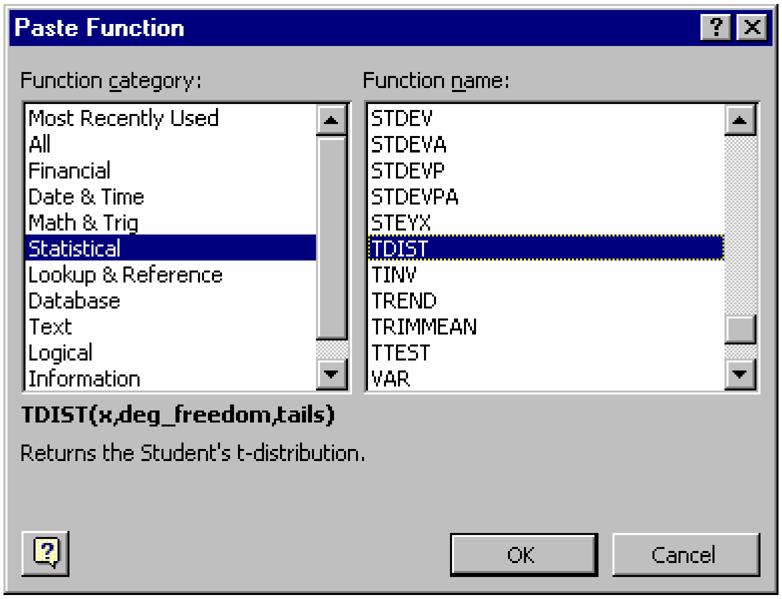
	constant	**Daily**
coefficient	24.7631585	1.35117342
std error of coef	46.9866631	0.09297695
t-ratio	0.5270	14.5323
p-value	60.1701%	0.0000%
beta-weight		0.9300

standard error of regression	143.864401
R-squared	86.49%
adjusted R-squared	86.08%
number of observations	35
residual degrees of freedom	33
t-statistic for computing	
95%-confidence intervals	2.0345

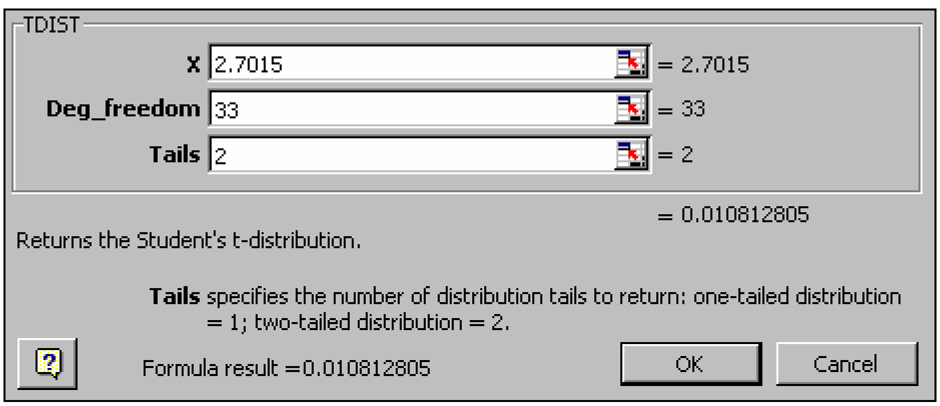
Remember that the p-value of 0.000 above is for one particular hypothesis test, where the null hypothesis is that β_1, the coefficient of **daily**, is equal to zero. This p-value says that we can reject the null with very high confidence; we can be (virtually) 100% sure that β_1 is not zero. If we wanted to test some other null hypothesis—for example, β_1=1.1—we would have to do the test manually. The t-statistic in this case is

$$\frac{1.35117342 - 1.1}{0.09297695} = 2.7015$$

Now we can use Excel to look up the p-value corresponding to this value of t. First click on an empty cell on the worksheet that you are in. Click on **Insert> Function…** to get the **Paste Function** dialog box:



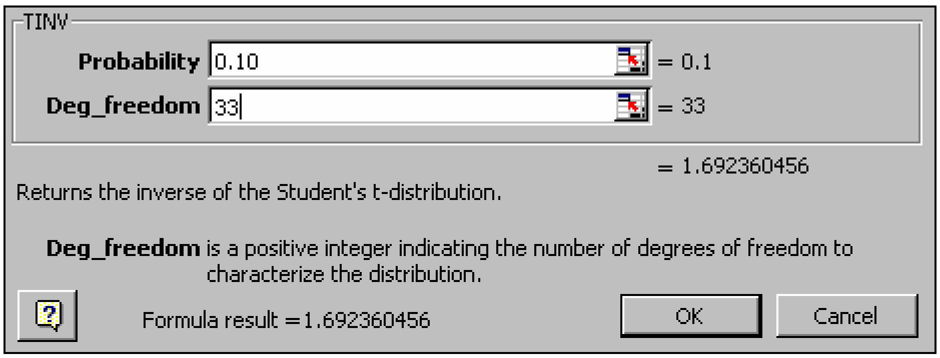
Choose **Statistical** from the **Function Category** window and choose **TDIST** from the **Function Name** window. Then click **OK**. You will move to the next step.



As shown above, enter the t-statistic in the first row, degrees of freedom in the second row and, since we are talking about the probability associated with a two-tailed test, enter 2 in the third row. Now, at the bottom of the dialog box you can read the p-value associated with this test as the formula result. If you click **OK**, you will see **=TDIST(2.7015,33,2)** typed in the cell. You could also type this directly into the cell. In any case you should get the value 0.010812805.

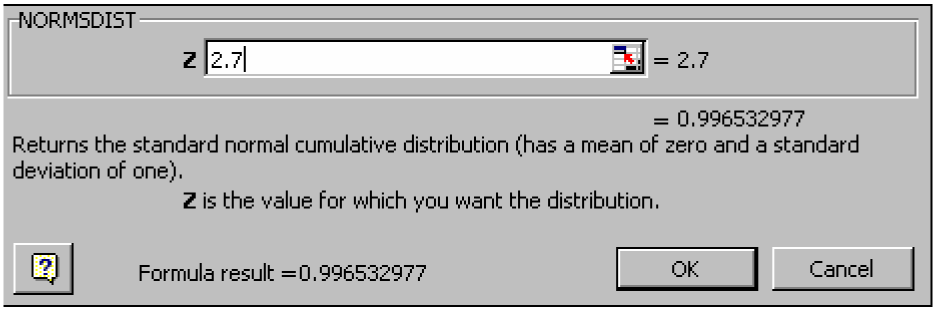
So our p-value is 0.010812805; that is, if the coefficient on **exper** were really 1.1, there would only be a 1.081% chance of obtaining a coefficient as far away as 1.35117342 simply because of randomness in the data. So we would reject the null hypothesis at any confidence level up to about 99%.

We can also use Excel instead of a table to find critical values of t. If we wanted to find the t-statistic corresponding to α = .10 for our two-tailed test, click on **Insert> Function…** to get the **Paste Function** dialog box. Choose **Statistical** from the **Function Category** window and choose **TINV** from the **Function Name** window. Then click **OK**. You will obtain the next window:



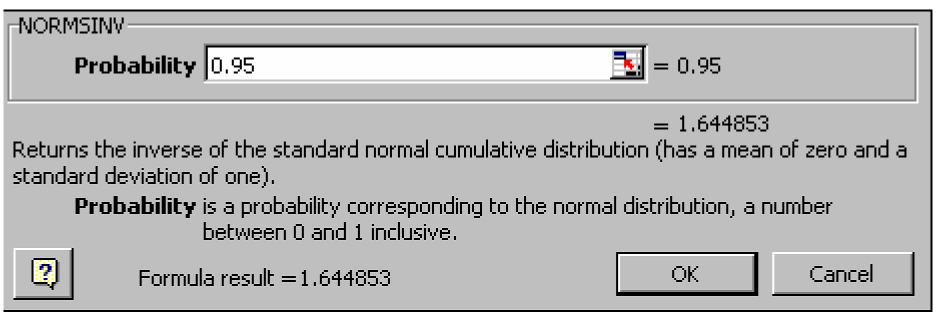
Type the sum of the probabilities you want in both tails, which is 0.10, to the first row, and enter the degrees of freedom into the second row. The formula result tells us the t-statistic is 1.692. So we would reject the null with α = .10 if we obtained a t-statistic greater than 1.692 or less than -1.692 (which we did). This also tells us that for a one-sided test with a ‘‘greater than’’ alternative, we would reject the null for α = .05 if we obtained a t-statistic greater than 1.692.

We can also use Excel instead of a z-table. Suppose we want to look up the p-value corresponding to z=2.7. First click on an empty cell on the worksheet that you are in. Click on **Insert> Function…** to get the **Paste Function** dialog box. Choose **Statistical** from the **Function Category** window and choose **NORMSDIST** from the **Function Name** window. Then click **OK**. You will obtain the next window:



As shown above, enter the z value in the first row. Now, as the formula result you can read P(Z<=2.7) = 0.996533. If you click **OK** this will appear in the cell. The p-value for a two-tailed test would then be 2*(1 - P(Z<=2.7)) = 0.006934. For an upper-tailed test it would be 1 - P(Z<=2.7)=0.003467. You need to do these auxiliary calculations

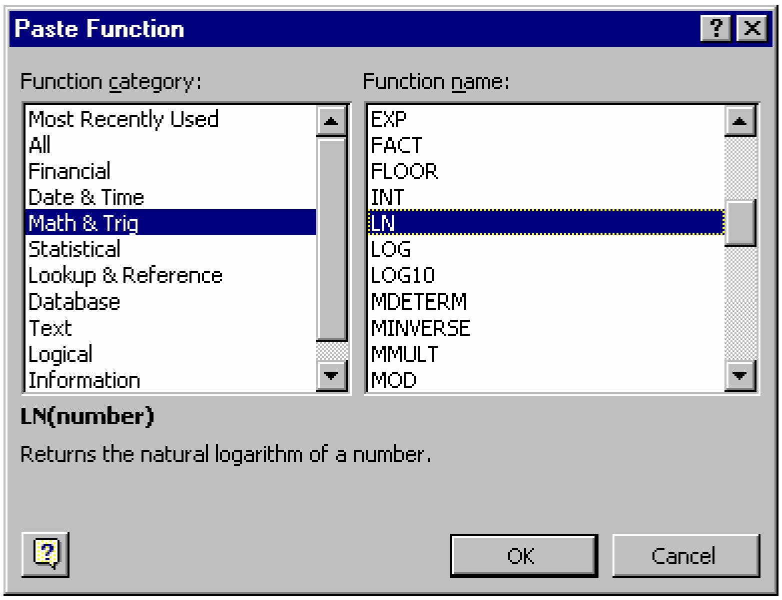
Suppose we wanted to find the z-statistic corresponding to α = .10 for a two-tailed test. Click on **Insert> Function…** to get the **Paste Function** dialog box. Choose **Statistical** from the **Function Category** window and choose **NORMSINV** from the **Function Name** window. Then click **OK**. You will obtain the next window:



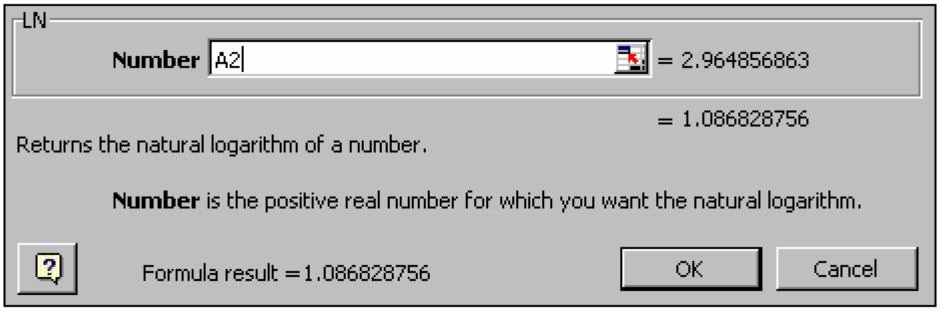
This time we input the area and Excel gives us the z-statistic. In the following dialog box when you enter the probability *p* , Excel will give you the number *x* such that there is a probability *p* of being less than *x*. We want the number *x* such that there is a 5% (i.e., α/2%) chance of being greater than *x*, or a 95% chance of being less than *x*. So type 0.95 into the dialog box. The formula result tells us the appropriate z-statistic is 1.6448.

Creating New Variables

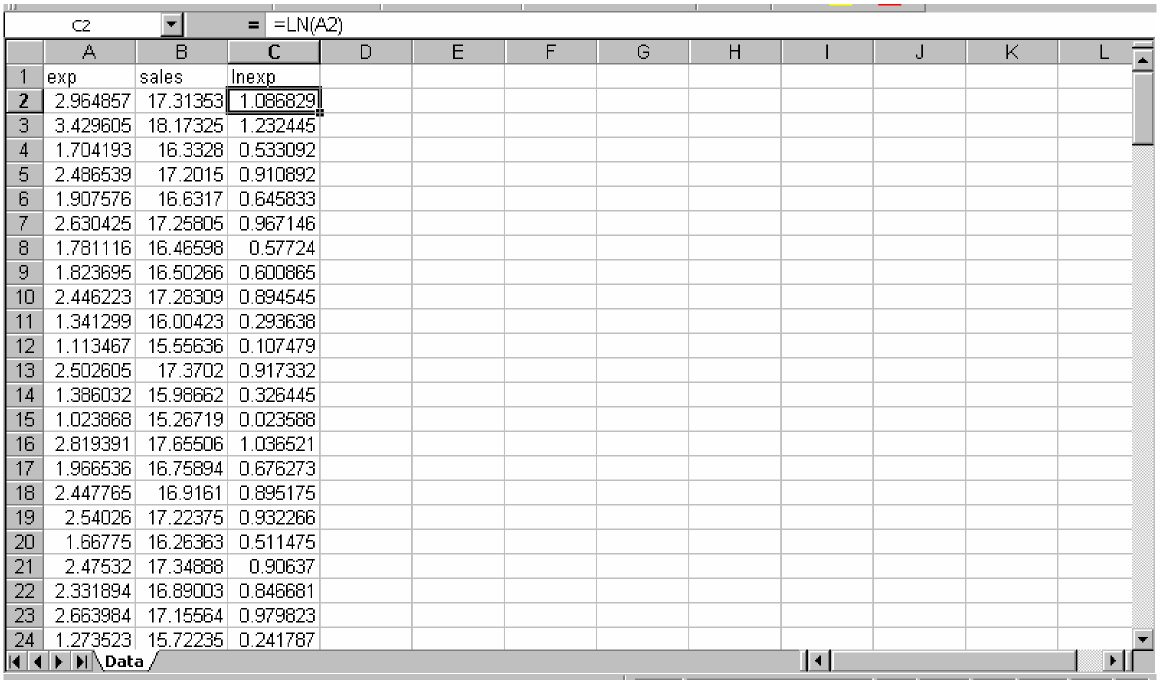
Sometimes you will need to make a new variable out of the ones given in a file. For example, you may want to use the logarithm of a variable as a predictor or response. As an example, let's create a new column, which includes the logarithm of the variable **exp**. To do this first import the **adsales.xls** data and go to cell C1 on the data worksheet. Type in the cell C1 the name you want to give to the new variable, say **lnexp**. Then click on the cell C2, and click **Insert>Functions…** You will obtain the following **Paste Function** dialog box:



From the **Function Category** window choose **Math & Trig**, and then choose **LN** from the **Function Name** window (There are different kinds of logarithms, LN stands for natural logarithm, and we will be using natural logarithms in this course). Now click **OK**. You will see the following dialog box:



Click on the cell A2 (which is the cell whose logarithm you want in the cell C2). Finally click **OK**. At this point in the cell C2, you should have **=LN(A2)**. You can also type this directly into the cell. Now, you can copy and paste this formula into the rest of the column C, where there are corresponding observations in column A. When you are done the worksheet will look like this:



C2 = =LN(A2)

	A	B	C
1	exp	sales	lnexp
2	2.964857	17.31353	1.086829
3	3.429605	18.17325	1.232445
4	1.704193	16.3328	0.533092
5	2.486539	17.2015	0.910892
6	1.907576	16.6317	0.645833
7	2.630425	17.25805	0.967146
8	1.781116	16.46598	0.57724
9	1.823695	16.50266	0.600865
10	2.446223	17.28309	0.894545
11	1.341299	16.00423	0.293638
12	1.113467	15.55636	0.107479
13	2.502605	17.3702	0.917332
14	1.386032	15.98662	0.326445
15	1.023868	15.26719	0.023588
16	2.819391	17.65506	1.036521
17	1.966536	16.75894	0.676273
18	2.447765	16.9161	0.895175
19	2.54026	17.22375	0.932266
20	1.66775	16.26363	0.511475
21	2.47532	17.34888	0.90637
22	2.331894	16.89003	0.846681
23	2.663984	17.15564	0.979823
24	1.273523	15.72235	0.241787

Data

Now we are done. We created a new variable called **lnexp**. Each observation in **lnexp** is the logarithm of the corresponding observation in **exp**.

There are many other mathematical functions built in Excel that you can use to manipulate data, and we suggest you to have a look at them and experiment with some of them.

Another type of variable that we may want to create using Excel is a seasonal dummy variable. In the "Soda Sales" data set, we had the dummy variables **winter**, **spring**, and **summer**. **Winter**, for example, was a column with the following sequence of numbers:

1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0

We had a one for each row of data that corresponded to a winter quarter, and a zero for any other quarter. One way to do this is first typing **winter** in the first cell of the column you want to create the variable in, typing a 1 into the second cell of the column, and typing three 0's into the third, fourth and fifth cells. Then, copy these cells into the clipboard and finally paste it by choosing the appropriate cells. In the soda example you need to paste this pattern three more times.

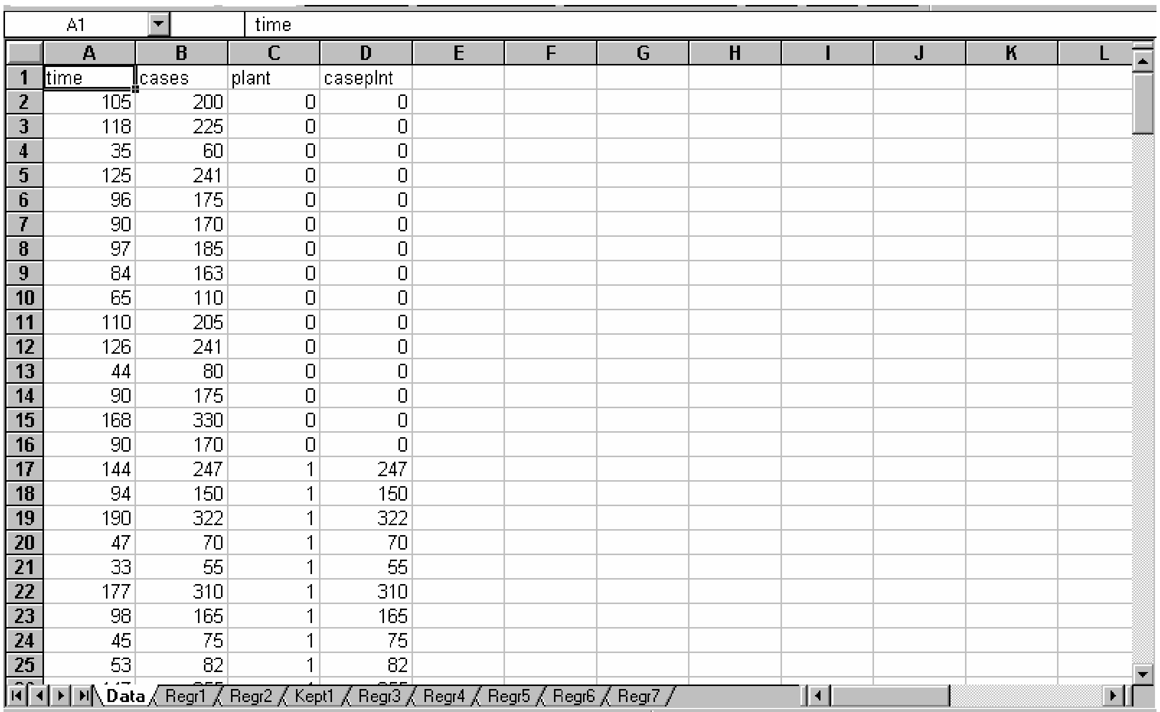
In the **Florida Bottler** data set, we had the variables **time**, **cases**, **plant**, and **caseplant**. **Plant** was a dummy variable equal to zero for the Pensacola plant and one for the Tallahassee plant. **Caseplant** was the product of **cases** and **plant** (if you don't remember how this was used, see Chapter 5 of the case packet). Let's say we weren't given **caseplant** and had to create it. Again type **caseplant** in the first cell of the column you want to create the variable in. The worksheet should look like something like this:

D1 = caseplnt

	A	B	C	D	E	F	G	H	I	J	K	L
1	time	cases	plant	caseplnt								
2	105	200	0									
3	118	225	0									
4	35	60	0									
5	125	241	0									
6	96	175	0									
7	90	170	0									
8	97	185	0									
9	84	163	0									
10	65	110	0									
11	110	205	0									
12	126	241	0									
13	44	80	0									
14	90	175	0									
15	168	330	0									
16	90	170	0									
17	144	247	1									
18	94	150	1									
19	190	322	1									
20	47	70	1									
21	33	55	1									
22	177	310	1									
23	98	165	1									
24	45	75	1									

Data

Now type **=B2*C2** into cell D2, and click on the check button or press enter. Finally again copy the contents of this cell into the clipboard and paste into the appropriate cells. When you are done the worksheet should look like this:



A1 time

	A	B	C	D	E	F	G	H	I	J	K	L
1	time	cases	plant	caseplnt								
2	105	200	0	0								
3	118	225	0	0								
4	35	60	0	0								
5	125	241	0	0								
6	96	175	0	0								
7	90	170	0	0								
8	97	185	0	0								
9	84	163	0	0								
10	65	110	0	0								
11	110	205	0	0								
12	126	241	0	0								
13	44	80	0	0								
14	90	175	0	0								
15	168	330	0	0								
16	90	170	0	0								
17	144	247	1	247								
18	94	150	1	150								
19	190	322	1	322								
20	47	70	1	70								
21	33	55	1	55								
22	177	310	1	310								
23	98	165	1	165								
24	45	75	1	75								
25	53	82	1	82								

Data / Regr1 / Regr2 / Kept1 / Regr3 / Regr4 / Regr5 / Regr6 / Regr7