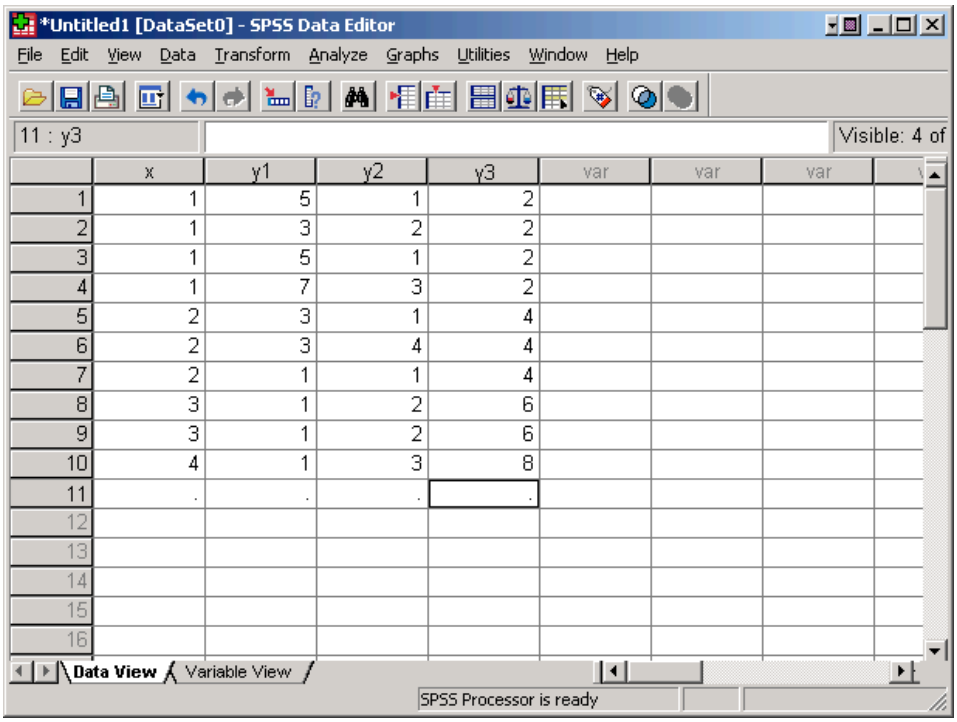
# SPSS Assignment 3: Regression Lines

*This and subsequent tutorials assume you have completed previous tutorials.*

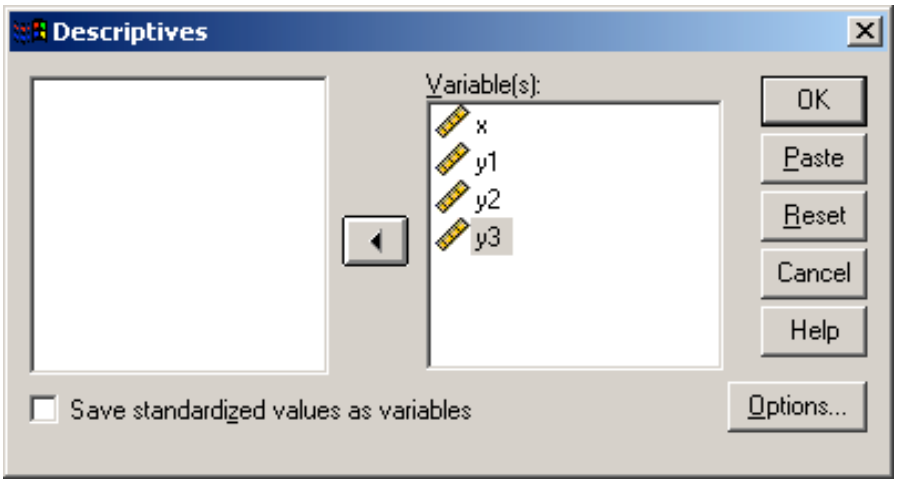
In this tutorial you will learn how to determine the coefficient and constant (slope and intercept) for a regression line and how to add a regression line to a scatter plot. You will also learn more about formatting scatter plots.

We will use the same data as in the last tutorial. If you have saved this data, you can double click on it to start SPSS and load the data. Otherwise, start SPSS as before and go to the data entry screen, SPSS Data Editor. In the first four columns, enter the data from problem 9 on page 137 of your text. You'll want to enter the *x* and *y* values from part a but just the *y* values from parts b and c—the *x* data is the same for all three parts. Click on the Variable View tab at the bottom. Change the variable names to x, y1, y2, and y3 and the number of decimal places to 0 for each. When you return to the Data View tab, your screen should look something like this: (I'm using an older version of Widows so there may be some minor differences.)



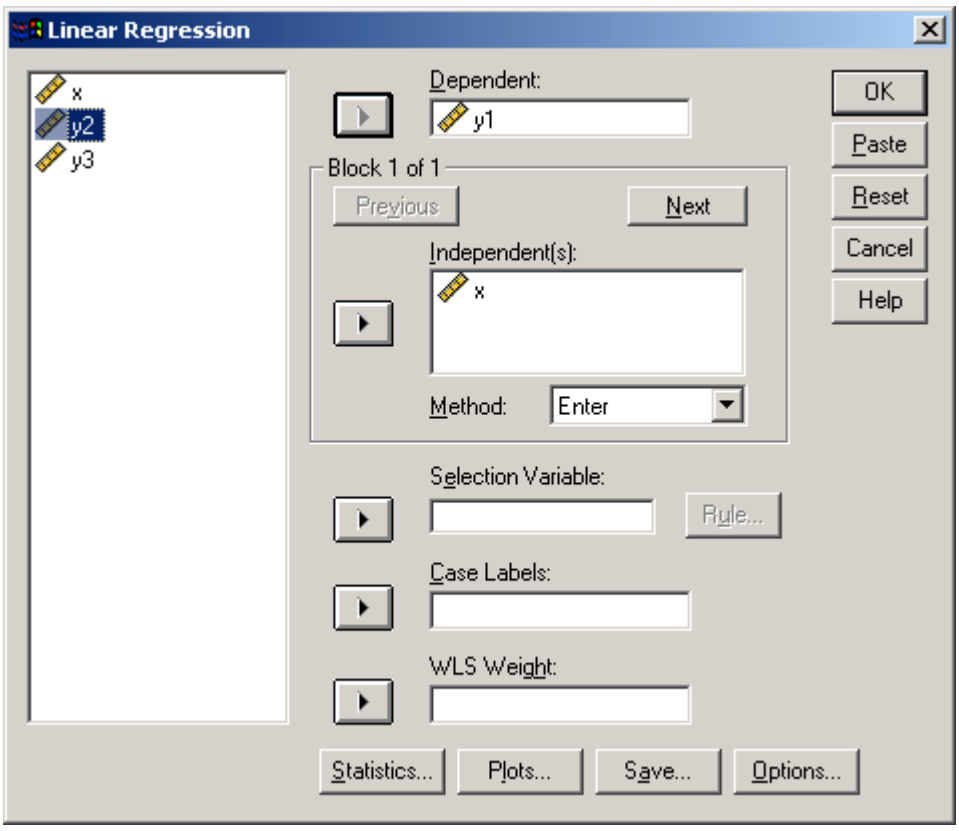

From the Analyze menu, select Descriptive Statistics→Descriptives…. In turn, click on each variable and then the arrow button between panes to add each variable to the Variables(s) column.

Your screen should look like:




Then click on OK. This will add the mean and standard deviation to your output window for each variable.

Go back to the SPSS Data Editor. From the Analyze menu, select Regression→Linear…. In the new window, select y1 as the dependent variable and x as the independent variable and click on OK.



This will add a fair amount of information to your output window. The last part will look like this:

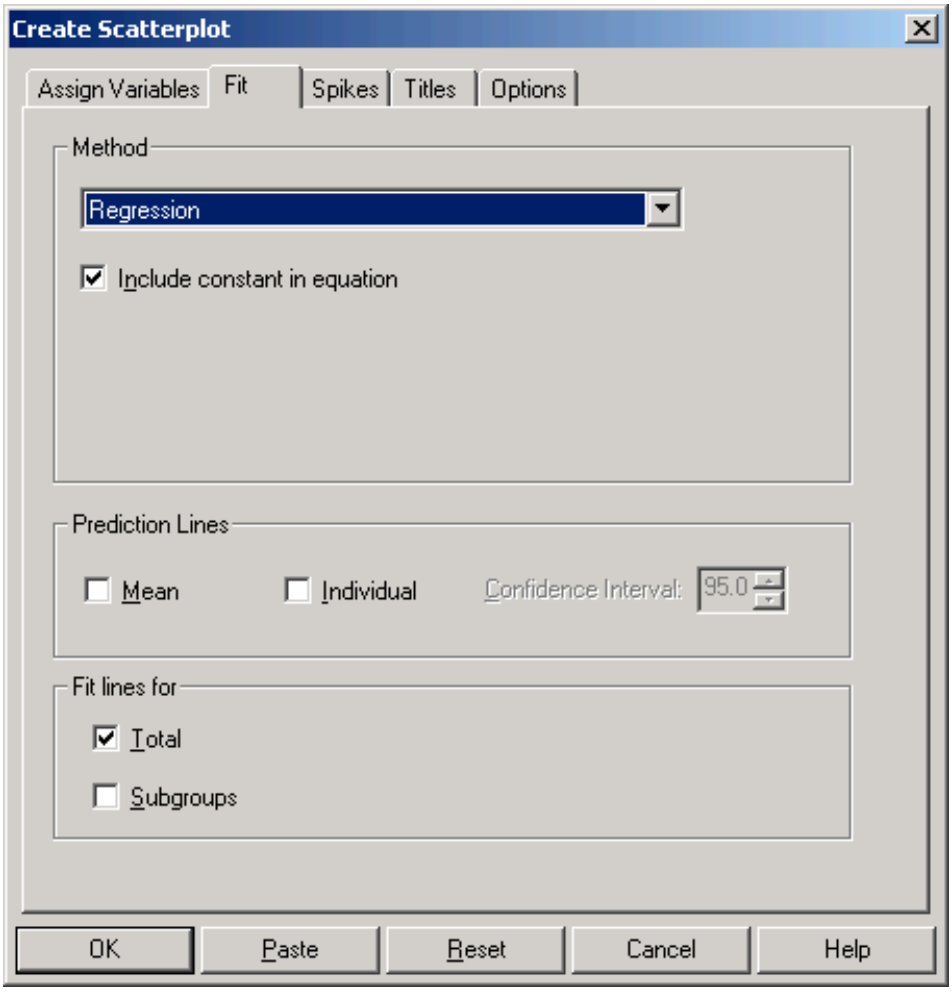
**Coefficients(a)**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | B | Std. Error |
| 1 | (Constant) | 6.200 | .949 | | 6.535 | .000 |
| | x | -1.600 | .424 | -.800 | -3.771 | .005 |

a Dependent Variable: y1

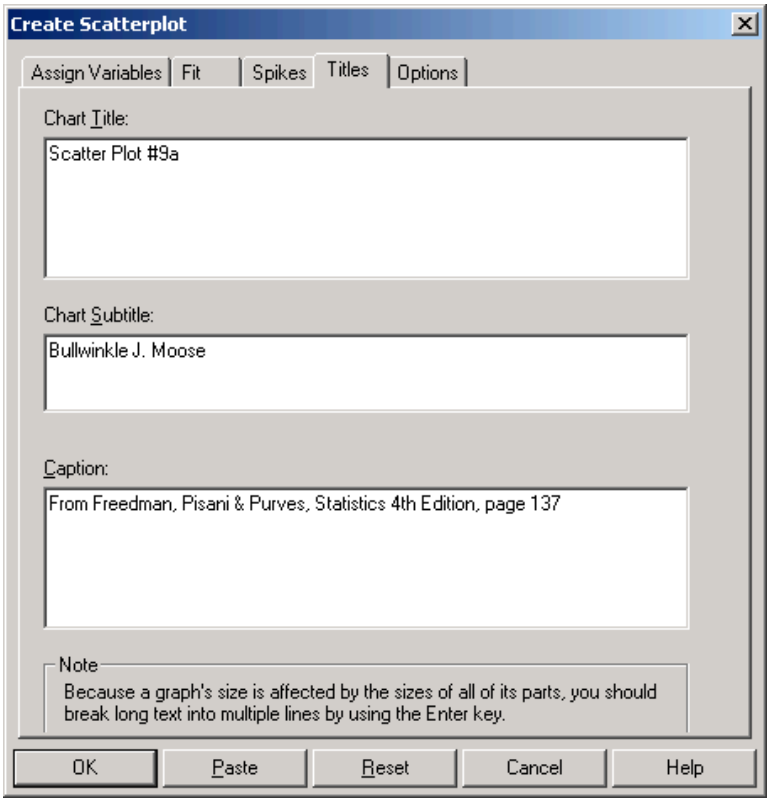
In the column B, under Unstandardized Coefficients you will find the constant term or intercept (6.3) and the *x* coefficient or slope (–1.6).

Now to graph the line. Go back the the SPSS Data Editor. From the Graphs menu, select Interactive→Scatter Plot…. Drag x to the horizontal axis and y1 to the vertical axis. Next click on the Fit tab. In the pull down menu under Method, select Regression.



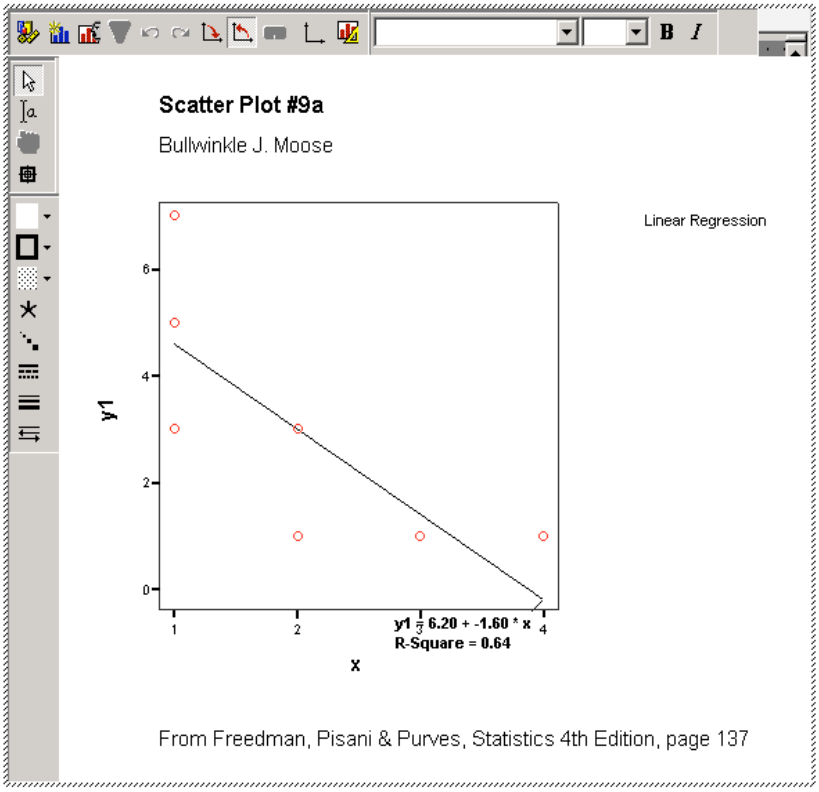
Now Go to the Titles tab and enter the as information that you entered in the last tutorial. (If you are working with saved data, SPSS may already have this information.)

Chart Title: `Scatter Plot #9a`
Chart Title: *Your name*
Caption: `From Freedman, Pisani & Purves Statistics 4th Edition, P137.`




Then click on OK. You should now have a plot on the output window shown in SPSS Viewer. Notice that the regression line as been added along with its equation.

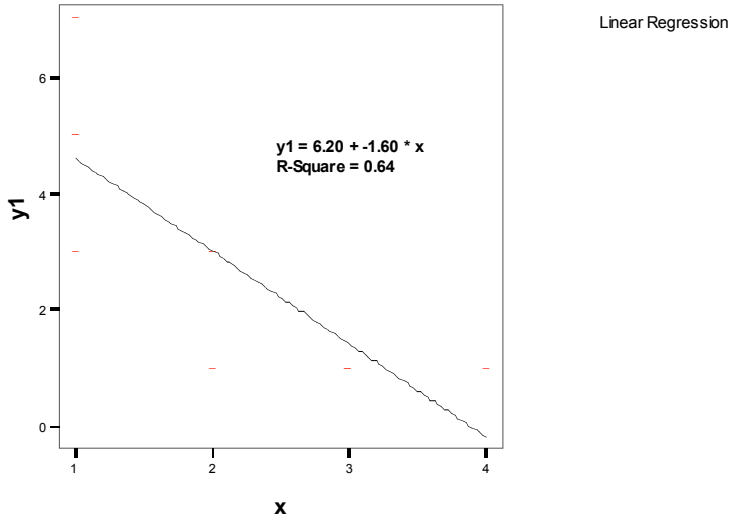
Now, double click on the graph in the SPSS Viewer. This will allow you to edit the graph.




In the bottom caption, change the name of your text so that it uses italic. Just below the graph is the equation for the line. Move the equation so that it is in a more open area of the graph and doesn't obscure the *x*-axis labels. Remove connector between the equation and the line. Make any other corrections your graph might need. You graph should now look something like this:

**Scatter Plot #9a**

Bullwinkle J. Moose




From Freedman, Pisani & Purves, *Statistics 4th Edition*, page 137

Feel free to make additional changes.

## What to turn in:

Print the output from your SPSS Viewer as you have done in previous assignment. Attach to this the answers to the following questions:

1. Recall SPSS uses *n–1* to calculate standard deviation. Give the corrected SD for each of the data sets.

2. Use the descriptive statistics and your corrected SD to verify that the slope and intercept SPSS reports are correct for the regression line for x and y1. Show your work.

3. Use SPSS to find the equation of the regression line for the remaining data sets (y2 and y3) treating x as the independent variable in each case.