

## Making Scatter Diagrams Using Minitab

1. In the Minitab worksheet, enter the horizontal (X) variable values under C1 and the vertical (Y) variable values under C2.
2. Add variable names in the gray boxes just above the data values.
3. Click on “Graph”, then choose “Scatterplot ...”.
4. Click on the box under “With Regression” and then choose “OK”.
5. Click in the box under “Y variables” in the row labeled “1”. Then select C2 from the box on the left.
6. Click in the box under “X variables” in the row labeled “1”. Then select C1 from the box on the left.
7. Click on the “Scale” button and click on the “Gridlines” tab. Then click in the boxes next to “Y major ticks” and “X major ticks” and click on “OK”. This step adds vertical and horizontal grid lines to the scatter diagram.
8. Click on the “Labels ...” button.
9. Enter a description of the data, usually vertical values versus horizontal values, under “Title:”.
10. Write “created by your name” under “Subtitle 1”.
11. Click on the “OK” button in that window and the one below it.
12. Put the cursor arrow over the resulting regression line and write down the regression equation and the value of R-Sq for future reference.
13. Edit the titles for the horizontal and vertical axes if necessary.
14. If you have a Microsoft Word document open, you can right click on the graph and choose “Send Graph to Microsoft Word” and the graph will appear in your Word document. If you are working in another program, click in the gray area outside the graph. Choose the “Edit” tab at the very top of the window and then choose “Copy Graph”. You now will be able to copy the scatter diagram to the document you are creating.

**Example** (Navidi & Monk, *Elementary Statistics*, 2<sup>nd</sup> edition, #31 p.161): This data gives the average price for a dozen eggs and a gallon of milk for each month, January through December, in 2012.

Eggs	1.94	1.80	1.77	1.83	1.69	1.67	1.65	1.88	1.89	1.96	1.96	2.01
Milk	3.58	3.52	3.50	3.47	3.43	3.40	3.43	3.47	3.47	3.52	3.54	3.58

Enter the egg prices under C1 and the milk prices under C2. The figure below left shows a portion of the data after being entered into Minitab.

Click on “Graph” and choose “Scatterplot ...”.

Click on the box below “With Regression” and then click on “OK”. Click in the box below “Y variable” in the row labeled “1” and select C2 from the box on the left. Click in the box below “X variable” in the row labeled “1” and select C1 from the box on the left.

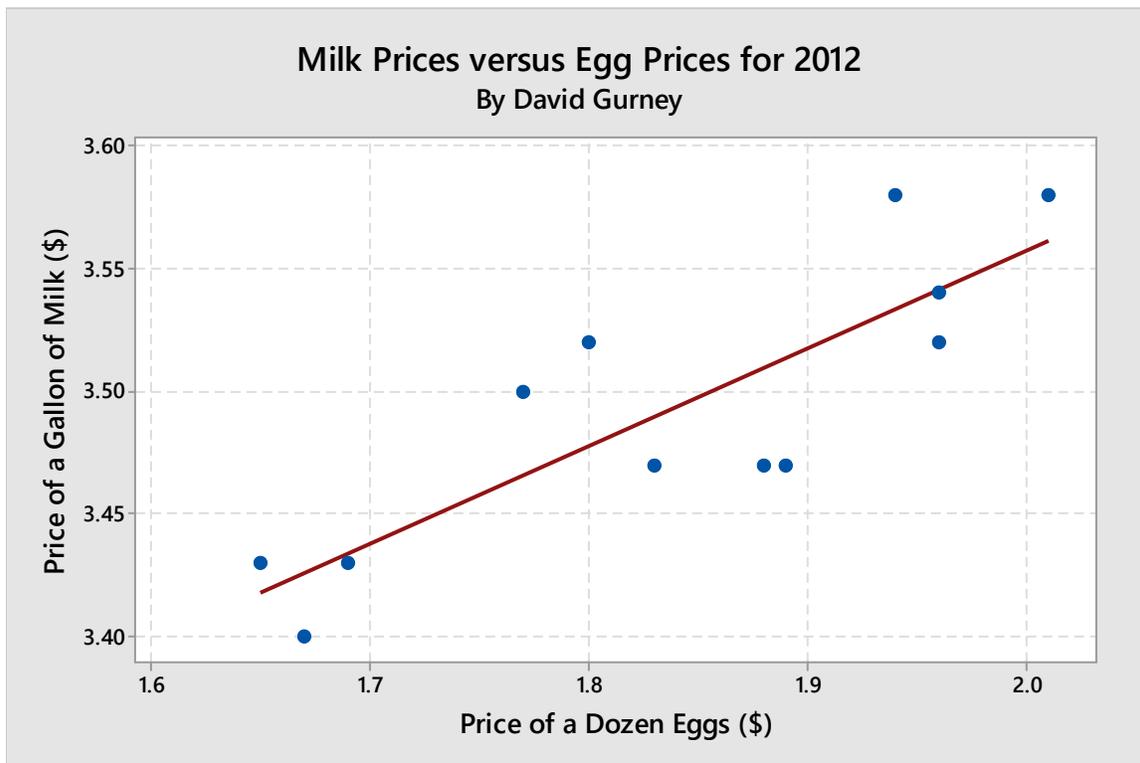
Click on the “Scale” button and click on the “Gridlines” tab. Then click in the boxes next to “Y major ticks” and “X major ticks” and click on “OK”.

↓	C1	C2	C3
	Eggs	Milk	
1	1.94	3.58	
2	1.80	3.52	
3	1.77	3.50	
4	1.83	3.47	
5	1.69	3.43	
6	1.67	3.40	
7	1.65	3.43	
8	1.88	3.47	
9	1.89	3.47	
10	1.96	3.52	

Click on the “Labels ...” button. Enter a description of your data like “Milk Prices versus Egg Prices for 2012” in the box under “Title:”. Write “created by *your name*” in the box under “Subtitle 1”. Click on “OK” in that window and “OK” in the window below that.

At this point click on the axis titles to change them. If you click on the horizontal axis title, a window appears with the axis title in a box near the bottom, under the word “Text:”. I changed the title from “Eggs” to “Price of a Dozen Eggs (\$)”. Clicking on “OK” will make the change in the scatterplot. Similarly, if you click on the vertical axis title, a window appears with the axis title in a box under the word “Text:”. I changed the title from “Milk” to “Price of a Gallon of Milk (\$)”. Then clicking on “OK” will make the change in the graph.

If you are working in Word, you can right click on the time series and choose “Send Graph to Microsoft Word”, and the time series will appear in your Word document. If you are working in another program, you can click on the gray area and choose “Copy Graph”, and then you can past the scatter diagram into the document you are creating.



If you put the arrow cursor on the regression line in Minitab, it will say “Regression fit, Milk = 2.759 + 0.3991 Eggs, R-Sq = 71.3%”. Thus, the equation of the regression line is  $y = 2.759 + 0.3991x$ , and the coefficient of determination is 71.3%, which means that about 71.3% of the variation in the milk prices is determined by the regression line. You will need to report both the equation of the regression line and the coefficient of determination when you make any scatter diagram in this course.