14.1: Scatter Plots

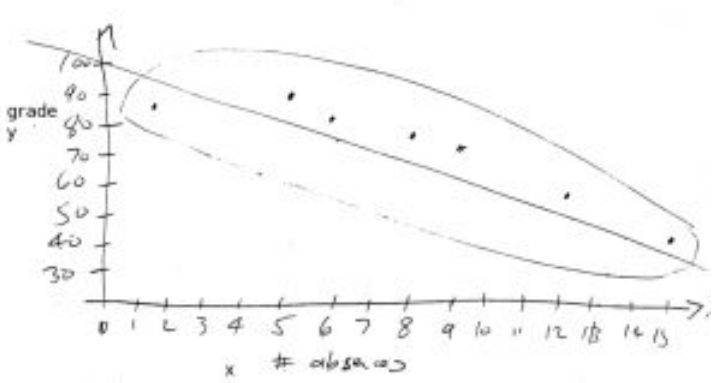
You can make a scatter plot of your data when you have values for two or more variables for each subject. Here we will only be interested in the case where we have a pair of variables (2D plot).

Of the two variables, for application to regression, one will be an independent variable (IV) and the other a dependent variable (DV). The IV is usually a variable that is known with a high degree of precision (like age). The idea with regression (when we get to it) is to come up with a formula that allows you to predict what the DV will be if you know the IV. We will use the symbol x for the IV and y for the DV.

The best way to see what a scatter plot is is to plot one. With the data:

Student	No. of absences, x	grade, y
A	6	82
B	2	86
C	15	43
D	9	74
E	12	58
F	5	90
G	8	78

the scatterplot is:



A couple of things to notice in the plot are: 1. An eyeball best line fit has been drawn through the scatterplot points. With regression we will calculate exactly what that best fit line is. 2. If x and y are ***linearly related*** then the points will fall inside an ellipse. If the ellipse is long and skinny, x and y are said to to be highly correlated. If the ellipse is more like a circle the x and y are not correlated. By looking at a scatter plot you can judge if x and y are linearly related. If your scatterplot looks like:

then you could conclude that x and y are not linearly related and it will not make much sense to try and fit a line through the data or to compute a correlation coefficient.
