A few basic concepts (Linear Regression) that you need to know

DATA = MODEL + ERROR

$$Y_i = \hat{Y}_i + (Y_i - \hat{Y}_i)$$

Where $\hat{Y}$ refers to the linear regression equation. In the case of simple linear regression;e:

$$\hat{Y} = A + B X$$

A (intercept) and B (slope) are the result of minimizing the SUM of $(Y_i - \hat{Y}_i)^2$ (least-squares criterion)

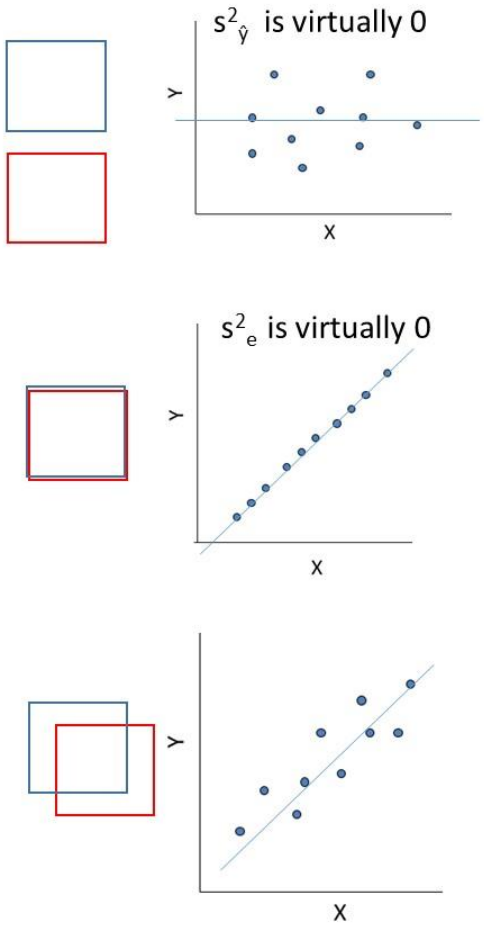
$$Y_i = \hat{Y}_i + (Y_i - \hat{Y}_i)$$

$$s^2_y = s^2_{\hat{y}} + s^2_e$$

s^2_y is the TOTAL variance of Y
$s^2_{\hat{y}}$ is the variance of Y that can be explained by the regression equation
s^2_e is the variance of Y that CANNOT be explained by the regression equation

How good is the model (i.e., regression equation)?

r^2 is the proportion of variance of Y that the regression equation can explain. This is the so-called "coefficient of determination"



--R^2 indicates how much variance of the dependent variable can be explained by (or is associated with) the regression equation composed by one or more predictors

--In simple linear regression, r^2 is the square of the Pearson coefficient; also note that the slope of the regression line (in z-scores) always coincides with the Pearson coefficient in simple linear regression.

--The regression equation provides the coefficients in unstandardized scores (b) and in standardized scores (beta). If you want to find out which are the best/worst predictors, you need to check the standardized coefficients (these regression coefficients are between -1 and +1, and they give you an idea of the relationship of each predictor with the dependent variable; note that standardized scores don't have any units, so that you can compare different predictors).

--If there are several predictors (independent variables, in SPSS), then the ideal situation is that these predictors are not related among them. If there is a high relation between predictors, we may suffer from collinearity problems—you may want to check for collinearity in SPSS (e.g., by looking at the Variance Inflation Factor [VIF]; is it above 10 or not?)

--By default, we enter all predictors (independent variables, in SPSS) in the regression equation. But there are other options. For instance, in the "stepwise" procedure, only reliable predictors enter the regression equation (i.e., what is the point of including predictors that basically don't help predict the dependent variable?)