

# **MATH 124 – Find Regression Coefficients using the built-in Simple Linear Regression functions**

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This document will guide you through the steps needed to calculate the slope and intercept for the regression line by using Excel built-in simple linear regression functions. This document uses the same data as used in the other regression documents and again we will focus only on the first dataset. It is assumed that at this point you have read the “Transformation” and the “Finding Regression Coefficients” documents. This document assumes that you are starting off with a worksheet where you have already worked through those documents. The method discussed here is another way of computing the regression coefficients, but the values should agree with those you previously computed.

## **Using the built-in functions**

1. First find an empty cell location (B141) and type “b1 (slope)”. In the adjacent cell (C141) type “=SLOPE(B2:B56,C2:C56)”. This will compute the slope estimate. Notice that the first range of cells, B2:B56, (the data range before the comma) refers to the y data (ie the response variable) and the second range of cells, C2:C56 refers to the x data (ie the explanatory variable).
2. Next go to the cell location B142 and type “b0 (intercept)”. In cell location C142 type “=INTERCEPT(B2:B56,C2:C56)”. This will compute the intercept estimate. Again the first data range is the response variable and the second data range is the explanatory variable.
3. Finally go to the cell location B143 and type “R-sq”. In cell location C143 type “=RSQ(B2:B56,C2:C56)”. This will compute the R-squared ( $R^2$ ) value. Notice that it is close to 1.
4. At this point you have found estimates of the parameters for the linear regression. The spreadsheet online further finds the equation of the regression line if you do not log transform the x1 values. You will see that the  $R^2$  value in this case is smaller meaning that the linear regression model fitted to the log transformed data fit the data better than the fitting directly to untransformed data.