

# How do you interpret the output of the LINEST function in Excel?

Authored by  
**stats writer**

June 23, 2024

## RECOMMENDED CITATION

stats writer (2024). *How do you interpret the output of the LINEST function in Excel?*. PSYCHOLOGICAL SCALES. Retrieved from <https://scales.arabpsychology.com/?p=147894>

The LINEST function in Excel is a statistical tool that calculates the trendline of a set of data points. It is commonly used to analyze the relationship between two variables and determine the strength of their correlation. The output of the LINEST function includes several statistical values, such as the slope, intercept, and correlation coefficient, which can be used to interpret the relationship between the variables. These values can also be used to make predictions and assess the accuracy of the trendline. In summary, the output of the LINEST function provides valuable information for understanding the relationship between variables and making informed decisions based on the data.

## Excel: Interpret Output of LINEST Function

**You can use the LINEST function to fit a regression model in Excel.**

**This function uses the following basic syntax:**

**LINEST(known\_y's, known\_x's, const, stats)**

**where:**

**known\_y's:** A column of values for the response variable  
**known\_x's:** One or more columns of values for the predictor variables  
**const:** TRUE = calculate intercept normally, FALSE = force intercept to be zero  
**stats:** TRUE = calculate additional regression statistics, FALSE = only calculate coefficients

**The following example shows how to interpret the**

## output of the LINEST function in practice.

### Example: How to Interpret LINEST Output in Excel

Suppose we have the following dataset that contains one predictor variable (x) and one response variable (y):

	A	B	C	D	E	F
1	<b>x</b>	<b>y</b>				
2	1	4				
3	2	6				
4	2	5				
5	4	5				
6	5	7				
7	6	8				
8	6	7				
9	7	8				
10	9	9				
11	10	14				
12	12	10				
13	13	13				
14	17	14				
15	18	17				
16						
17						
18						
19						

We can type the following formula into cell D1 to perform simple linear regression with this dataset:

**=LINEST(A2:A15, B2:B15, TRUE, TRUE)**

The output from the LINEST function contains the

**coefficients of the regression model along with several additional statistics:**

D1 :  $\times$   $\checkmark$  *fx* =LINEST(B2:B15, A2:A15, TRUE, TRUE)

	A	B	C	D	E	F
1	<b>x</b>	<b>y</b>		0.693717	3.52169	
2	1	4		0.070978	0.678147	
3	2	6		0.888399	1.387248	
4	2	5		95.52565	12	
5	4	5		183.8351	23.09349	
6	5	7				
7	6	8				
8	6	7				
9	7	8				
10	9	9				
11	10	14				
12	12	10				
13	13	13				
14	17	14				
15	18	17				
16						
17						
18						

**The following screenshot provides an explanation of each value in the output:**

	A	B	C	D	E	F
1	<b>x</b>	<b>y</b>		0.693717	3.52169	
2	1	4		0.070978	0.67815	
3	2	6		0.888399	1.38725	
4	2	5		95.525651	12	
5	4	5		183.835079	23.09349	
6	5	7				
7	6	8		<b>β1</b>	<b>β0</b>	
8	6	7		<b>Std Error β1</b>	<b>Std Error β0</b>	
9	7	8		<b>R-Squared</b>	<b>Res. Std Error</b>	
10	9	9		<b>F-Value</b>	<b>deg freedom</b>	
11	10	14		<b>SS Regression</b>	<b>SS Residual</b>	
12	12	10				
13	13	13				
14	17	14				
15	18	17				
16						
17						
18						

From the output we can see:

The coefficient for  $\beta_0$  is 3.52169. The coefficient for  $\beta_1$  is 0.693717.

$$y = 3.52169 + 0.693717(x)$$

We interpret this to mean that each additional one unit increase in the predictor variable,  $x$ , is associated with an average increase of 0.693717 in the response variable,  $y$ .

We interpret the intercept term to mean that when  $x$  is equal to zero, the average value of  $y$  is 3.52169.

**We can also see:**

**The R-squared value of the model is 0.888.**

**We interpret this to mean that the predictor variable is able to explain 88.8% of the variation in the response variable of the model.**

**The following tutorials provide additional information on regression in Excel:**

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