

SIMPLE LINEAR REGRESSION

Example



What is simple linear regression?

Simple linear regression allows us to study the relationship between only two variables:

One variable (X) is called independent variable

The other variable (Y) is known as a dependent variable.

$$Y = B_0 + B_1X$$

X – the value of the independent variable,

Y – the value of the dependent variable.

B₀ – is a constant

(shows the value of Y when the value of X=0)

B₁ – the regression coefficient

(shows how much Y changes for each unit change in X)



Online Store	Monthly E- Commerce Sales (in 1000 s)	Online Advertising Dollars (1000 s)
1	368	1.7
2	340	1.5
3	665	2.8
4	954	5
5	331	1.3
6	556	2.2
7	376	1.3

Example :

You have to study the relationship between the monthly e-commerce sales and the online advertising costs. You have the survey results for 7 online stores for the last year.

Your task is to find the equation of the straight line that fits the data best.

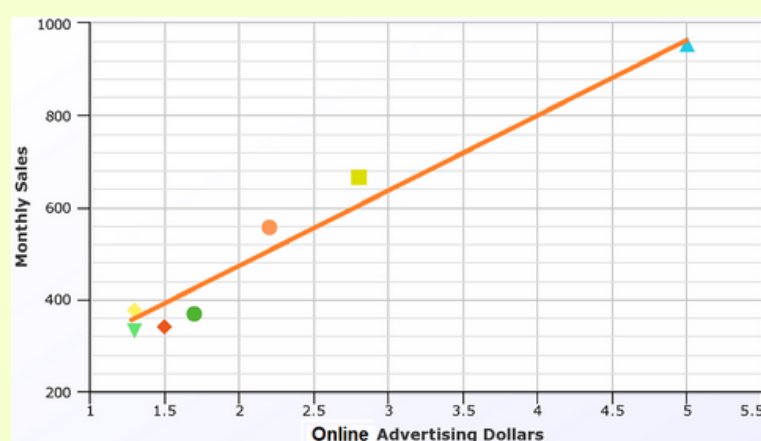
The table on the left represents the survey results from the 7 online stores.

We can see that there is a **positive relationship** between the monthly e-commerce sales (Y) and online advertising costs (X).

$$Y = 125.8 + 171.5 * X$$

The regression line shows the predicted score on e-commerce sales for each possible value of the online advertising costs.

Scatter diagram With The Regression Line:



Note: You can find easily the values for B₀ and B₁ with the help of paid or free statistical software, online linear regression calculators or Excel.

Interpretation of the results:

The formula estimates that for each increase of 1 dollar in online advertising costs, the expected monthly e-commerce sales are predicted to increase by \$171.5.

