

Exercise 1

The measurements of the number X of rainy days and the rainfall height Y (in mm) in Paris every 5 years between 1960 and 1995 are summarized in the following table.

year	1960	1965	1970	1975	1980	1985	1990	1995
X	198	196	199	164	170	163	149	162
Y	739	880	631	658	690	501	501	670

- 1 Plot the scatter plot.
- 2 Compute the correlation coefficient.
- 3 Is there a relationship between variables X and Y ?

Exercise 2

In this exercise, we will work with two variables, the concentration of nutrients in the soil (X) and the growth of a plant (Y) in centimeters after 60 days of experimentation. Here are the collected data:

Sample	Nutrient Concentration (X)	Plant Growth (Y)
1	5	8
2	7	9
3	6	8
4	9	11
5	8	10

- 1 Compute the marginal means of X and Y .
- 2 Compute the variance of X and Y .
- 3 Compute the standard deviation of X and Y .
- 4 Compute the covariance between X and Y .
- 5 Compute the correlation coefficient between X and Y .
- 6 Compute the regression line of Y as a function of X .
- 7 Is there a relationship between variables X and Y ?