

Democratic and Popular Republic of Algeria

Mila university center

Institute of Informatic and Mathematic

Introduction to probability and descriptive statistics

Year: 2024/2025

Filed: LMD Mathematic

1st Year

Series 2

Exercise 1

A machine cuts 12 cm bars, but unfortunately it is not well adjusted and the lengths are around the expected value. The results are determined by the following table:

Length in cm	11.5	11.6	11.7	11.8	11.9	12	12.1	12.2	12.3
Frequency	3	9	6	12	15	8	25	10	12

1. What is the population, the variable, the data set (modalities), the type of the variable?
2. Trace: the bar chart, integral diagram.
3. Calculate the measures of position and the measures of dispersion
4. Construct the box plots.

Exercise 2

We complete exercise 6 of series number 1

4. Calculate the measures of position and the measures of dispersion
5. Construct the box plots.
6. Determine the percentage of individuals belonging to the interval $[c_1, c_2]$ such that $c_1 = \bar{X} -$, $c_2 = \text{interval}[c_1, c_2]$ such that $c_1 = \bar{X} +$

Exercise 3

A survey of 200 families on their summer vacation budget gave the following results:

Classes	c_i	n_i	f_i	$F_i \uparrow$
$[800, 1400[$				0.22
$[1400, 1600[$				0.38
$[1600, \alpha[$				0.64
$[\alpha, 2400[$				0.73
$[2400, \beta[$				1

1. What is the population, the variable and its type?
2. Calculate the missing bound β knowing that the range of this data is equal to 3200. Calculate the missing bound α if the average (mean) budget is equal to 2012.

3. *Complete the table.*

4. *Calculate the mode, the median, the quartiles, the variance, the standard deviation, and the coefficient of variation.*