

## Module : Probability-Statistics

### Worksheet n°1

#### (Basic definitions - One-variable statistical series)

**Exercise n°1 :** (The different types of statistical variables )

- 1) Classify the variables below according to their type :
  - a) Number of people per household   b) Height (cm)   c) Sex.
  - d) marital status   e) Weight (kg)   f) Level of education
- 2) Specify the measurement or values they can take.

**Exercise n°2 :** (qualitative variable) The following table shows the blood groups of 2<sup>nd</sup> year ST students

B	AB	A	A	O	A	A	B	AB	O	A	B	O	AB	B	O	O	A
A	O	B	O	A	A	O	O	O	O	O	A	A	AB	B	A	A	A
A	O	O	A	AB	B	B	A	A	B	AB	AB	B	A	A	AB	A	O

- 1) Indicate the population studied, the statistical unit, the character studied and its nature .
- 2) Draw up the table of the absolute frequencies  $n_i$  representing this statistical serie, calculating the relative frequencies  $f_i$  and percentages  $p_i$ .
- 3) Give two graphical representations suitable for this type of characteristic.
- 4) What is the mode of the series ?

**Exercise n°3 :**(Interpret a Bar Graph)

Karima surveyed the students at her school about their favourite sports. She chose a bar graph to display her results. Use the bar graph to answer each question.

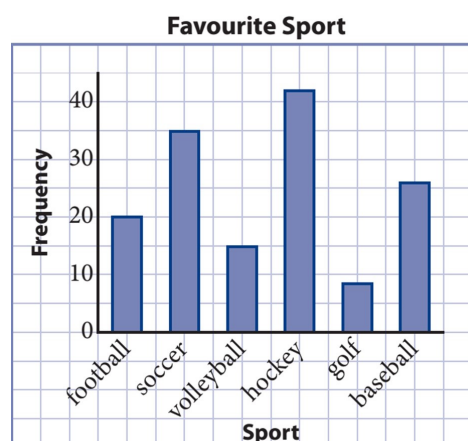


FIGURE 1 – Bar Graph of favourite sports

- Which sport is the most popular?
- Which sport is the least popular?
- Does your answer to part b) mean that students do not like this sport? Explain.
- How many students said that volleyball was their favourite sport?
- How many students participated in Karima's survey?

**Exercise n°4 :** We are interested in the age of each of the 50 employees in a company. We have the following raw data : 36 ; 30 ; 30 ; 56 ; 58 ; 47 ; 30 ; 45 ; 47 ; 18 ; 47 ; 33 ; 26 ; 51 ; 41 ; 33 ; 45 ; 39 ; 36 ; 41 ; 51 ; 21 ; 33 ; 30 ; 18 ; 56 ; 24 ; 26 ; 41 ; 26 ; 37 ; 26 ; 33 ; 39 ; 51 ; 56 ; 33 ; 24 ; 51 ; 37 ; 24 ; 37 ; 41 ; 41 ; 45 ; 33 ; 45 ; 33 ; 30 ; 37.

- Indicate the population studied, the statistical unit, the character studied and its nature ;
- Represent the data in a statistical table, calculating the frequencies, percentages and ascending cumulative frequencies ;
- Determine the arithmetic mean of the age, the mode , the median ;
- Group these results into classes of the same widths, then draw up a table of the frequencies, specifying the central of the classes, the percentages and the ascending cumulative frequencies ;
- Construct a histogram for frequency distribution ;
- Determine the mode (by calculation and graphically), median and mean ;
- Compare the two means and comment on the results.

**Exercise n°5 :** A taxi company is interested in the mileage performed by its vehicles. To this end, it recorded the mileage of 50 of its taxis for a morning's work.

Classes	[10; 20[	[20; 30[	[30; 40[	[40; 60[	[60; 90[	$\Sigma$
frequencies	8	12	20	6	4	

- Indicate the population, its size, the variable and its type.
- Draw the histogram of this distribution.
- Give the modal class, median, mean and standard deviation of the distribution.

**\*Exercise n°6 :** We consider two groups of students. We record their exam marks in the following two tables :

Group A marks	8	9	10	11	Group B marks	6	8	9	13	14
frequencies	6	6	3	3	frequencies	6	6	3	3	3

- Calculate the mean and standard deviation for each group.
- Compare the two groups.

**\*Exercise n°7 :** In a city, 45 families were surveyed for the number of cell phones they used. Prepare a discrete frequency array based on their replies as recorded below. 1 ; 3 ; 2 ; 2 ; 2 ; 2 ; 1 ; 2 ; 1 ; 2 ; 2 ; 3 ; 3 ; 3 ; 3 ; 3 ; 3 ; 2 ; 3 ; 2 ; 2 ; 6 ; 1 ; 6 ; 2 ; 1 ; 5 ; 1 ; 5 ; 3 ; 2 ; 4 ; 2 ; 7 ; 4 ; 2 ; 4 ; 3 ; 4 ; 2 ; 0 ; 3 ; 1 ; 4 ; 3.

- Indicate the population studied, the statistical unit, the character studied and its nature ;
- Represent the data in a frequency table, calculating the frequencies, percentages and ascending cumulative frequencies ;
- Determine the mean of the marks, the mode, the median and standard deviation ;
- Give the appropriate graphical representation for this type of characteristic.