



PORTFOLIO OF EVIDENCES

EXTRAORDINARY 2° OPPORTUNITY

PROBABILITY AND STATISTICS

Student name: _____

Group: _____

Student ID: _____ Date: _____

Teacher: _____

The present portfolio is part of 50% of your grade. This value will be obtained as long as it meets the following requirements:

1. Write your complete identification data.
2. The portfolio must be delivered person as a requirement the day of the exam.

FOLLOW THE INSTRUCTIONS PROVIDED BY YOUR TEACHER FOR THE COMPLETION OF THIS PORTFOLIO

!!!WARNING!!!

Plagiarisms and trade of academic material contained in this portfolio will be punished under the terms of the University Legislation.

Guidelines

This portfolio is part of 50% of the score. This value will be obtained as long as it meets the following requirements:

1. Follow the instructions provided by the teacher for filling out this portfolio.
2. Please add your full name on each sheet.
3. Exercises should be completed with all procedures necessary to demonstrate learning and achieve the correct outcome.
4. Evidence portfolio exercises can be performed with pencil.
5. Procedures must be neat and legible.

Learning Unit Purpose: Probability and Statistics

The Probability and Statistics Learning Unit contributes in the student to the development of their probabilistic thinking which helps them make decisions in situations of uncertainty or chance in which it is not possible to predict with certainty what will happen; this type of random thinking is directly supported by concepts and procedures of probability theory, and the development of statistical thinking with the use of tools, techniques and methods to develop concepts that involve techniques of counting, organization, interpretation and analysis of statistical information. In addition, it facilitates the development of competencies of other interrelated learning units. For the learning of their studies, they have as background the learning units: Development of Algebraic Thinking, Management of Forms of Spaces and Functions and Relationships.

The course is structured in 4 stages: stages 1 and 2 correspond to Descriptive Statistics, in stage 1 it organizes, interprets and analyzes statistical information from different contexts through frequency distribution tables and statistical graphs and in stage 2 it obtains measures of central tendency and measures of variation to interpret and analyze statistical information from different contexts, in addition to analyzing the relationship between two variables through correlation; stages 3 and 4 correspond to Probability, in stage 3 it calculates probabilities through classical definition and quantifies the elements of the event through counting techniques to know the total number of possible results of an event and in stage 4 it calculates probabilities through the use of rules, axioms and theorems.

Stage 1: Organization of statistical data and graphs

Dimension 1: Recovery

I. Answer the following

1) Write the definition of the following concepts:

a) Statistics:

b) Descriptive Statistics:

c) Inferential Statistics:

d) Population:

e) Finite population:

f) Infinite population:

g) Sample:

h) Probability sample:

i) Non-probability sample:

j) Statistical unit:

k) Variable:

Dimension 2: Understanding

2) Answer the following questions:

a) Write an example of a probabilistic sample:

a) Write an example of a probabilistic sample:

c) Write an example of a situation with a qualitative variable:

d) Write an example of a situation with a quantitative variable:

e) Write an example of a situation with a discrete quantitative variable:

f) Write an example of a situation with a continuous quantitative variable:

g) Write an example involving the nominal scale variable:

h) Write an example involving the variable with ratio scale:

i) Mention the media used as data sources:

Dimension 3: Analysis

II. Answer what is asked below

The following table corresponds to the weights in kg of 50 people

62	46	47	49	49	50	50	50	50	56
48	48	48	45	58	39	63	63	64	66
51	51	51	51	52	59	52	53	53	54
54	55	44	55	56	40	42	43	55	44
52	56	51	56	56	57	59	60	61	46

1) Accommodates data in *ascending* order (from left to right)

Weight data of 50 people (kg)									

2) Arrange data in stem and leaf diagram

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3) Arrange data in double-stem diagram

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III. Explains or defines the following concepts:

- 1) Absolute frequency (f)

- 2) Relative frequency (fr)

- 3) Percent frequency ($f\%$)

- 4) Cumulative absolute frequency (cf)

- 5) Cumulative relative frequency (crf)

- 6) Cumulative percentage frequency ($f\%a$)

IV . Use the data from the Roman numeral II table and answer the following questions:

- 1) What is the absolute frequency of people weighing 52 kg?

- 2) What is the absolute frequency of people weighing 50 kg?

- 3) What is the relative frequency of people weighing 50 kg?

- 4) What is the percentage frequency of people with 48 Kg?

- 5) What is the number of people who weigh less than 56 kg?
- 6) What is the number of people who weigh more than 48 kg?
- 7) What is the relative frequency of people weighing 50 kg or less?
- 8) What is the percentage of people who weigh 57 kg or less?

V. Answer the following questions

- 1) Write the class interval definition.
- 2) What is the range of the following data: 5, 8, 8, 9, 10, 10, 15, 16, 17, 18?
- 3) What is the amplitude of a class interval, if you want to build a table of 7 intervals and the data range is 49 units?
- 4) Defined as the difference between class marks of two continuous intervals
- 5) If the lower limit of a class range is 9 and the upper limit is 14, what is the class mark of that range?

VI. Based on the formula $K = 1 + 3.3 \log n$, determine the number of class intervals needed to group:

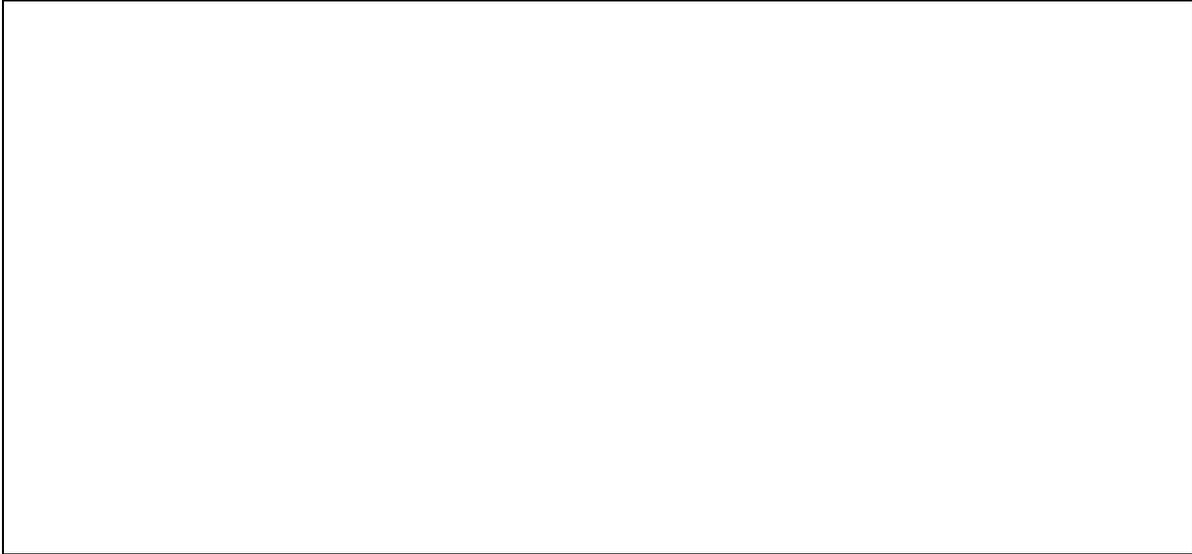
- 1) 30 data
- 2) 45 data
- 3) 60 data
- 4) 80 data
- 5) 100 data
- 6) 120 data
- 7) 140 data

VII. Draw a hypothetical graph of the following types:

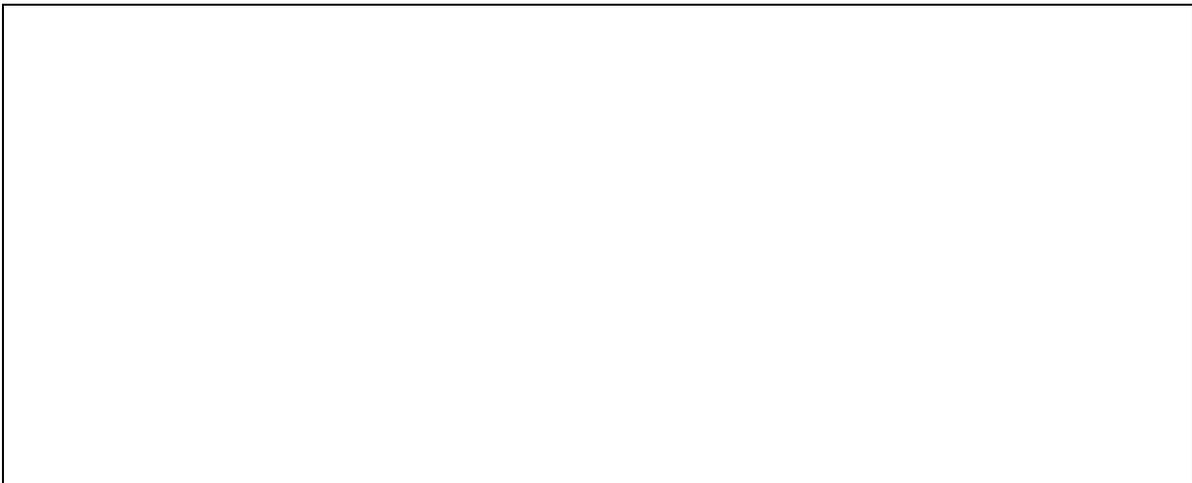
- 1) Frequency Polygon



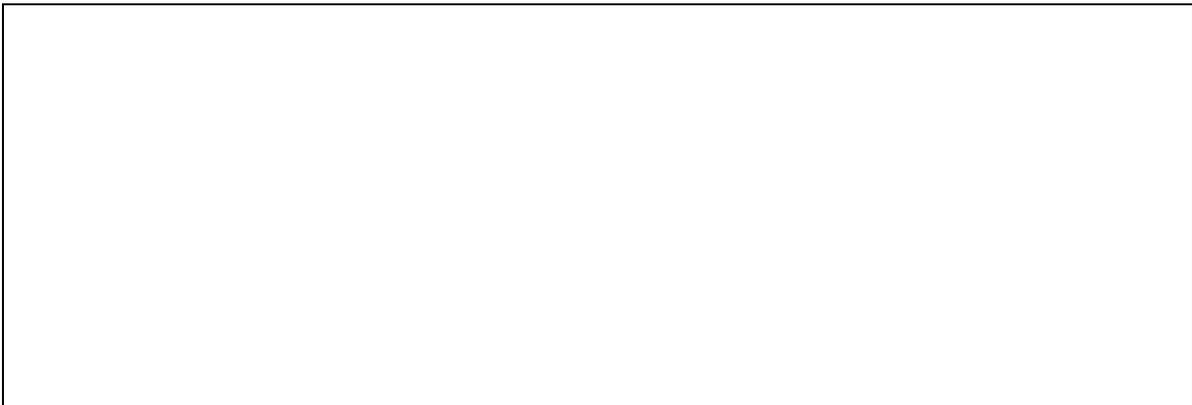
2) Histogram



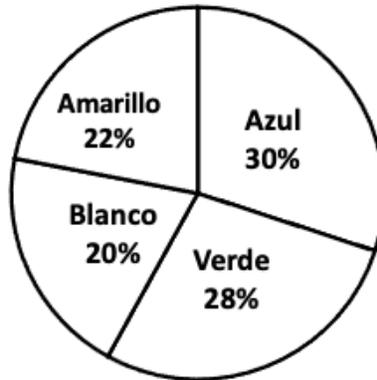
3) Bar graph



4) Circular graphic



VIII. A survey of 700 people is conducted and the following graphic is obtained on the color taste of a school sports shirt.



- 1) How many people like the color yellow?
- 2) How many people like the color blue?
- 3) How many people like the color green?
- 4) How many people like the color white?

STAGE 1 ASSESSMENT

Checklist				
Type of evaluation: heteroevaluation				
Criteria			Yes	No
1	Performed procedures in all exercises			
2	There was a legible letter and ordered processes			
3	The correct answers were reached			

Stage 2: Statistical measures

Dimension1: Recovery

I. Please answer the following questions.

1) Write the definitions of the measures of central tendency:

a) Mode _____

b) Arithmetic mean _____

c) Median _____

Dimension 2: Understanding

II. Solve the following problems by writing your formula and procedure as the case may be.

The chart below represents the ages (p) and frequencies (f) of a group of people. It determines mode.

p	47	49	50	52	54	55
f	15	20	31	17	37	12

1 . Of the following values:

19, 21, 23, 24, 24, 24 25, 26, 28, 29, 34.

a) Calculate mode

b) Calculates median

c) Calculates arithmetic mean

2. A table of frequencies of weights from a sample of 90 people shows that $\sum_{i=1}^n f_i(x_i - \bar{x})^2 = 3328.6$

a) What is the variance?

b) What is the standard deviation?

Dimension3: Analysis

3. Find the mode of data grouped in a frequency table, with the following specifications: The range it contains on trend has a frequency of 9. The lower limit of the range containing the mode is 6 units and the upper limit is 11 units. The anterior frequency of the interval containing the mode is 6 and the posterior frequency is 5. Considers a range width of 5 units.

4. Finds the median of 30 data grouped in a frequency table, with the following specifications: The interval containing the median has a frequency of 9. The lower limit of the range containing the median is 6 and the upper limit of the range is 11. The sum of the previous frequencies of the interval it contains at the median is 7. Considers a range width of 5 units.

5. In a frequency table with grouped data, there are 3 class intervals, which are: 1 - 6 with a frequency of 6; 6 - 11 with a frequency of 9; and 11 - 16 with a frequency of 5. Find the arithmetic mean.

Class Range	Frequency	Class mark
1 – 6	6	
6 – 11	9	
11, 16	5	

STAGE 2 ASSESSMENT

Checklist				
Type of evaluation: heteroevaluation				
Criteria			Yes	No
1	Performed procedures in all exercises			
2	There was a legible letter and ordered processes			
3	The correct answers were reached			

Stage 3: Counting Techniques

Dimension1: Recovery

I. Solve the following problems:

1) 4 coins are thrown into the air, how many different ways can they fall?

Dimension 2: Understanding

2) The license plates of certain cars carry 3 letters and 4 numbers. How many different plates you can count, if you can repeat the letters and numbers? Consider 26 letters of the alphabet and the numbers zero through nine.

3) How many different ways can you eat if you can choose between restaurant A or B? In restaurant A, there are four dishes and three drinks to choose from, and in restaurant B, there are six dishes and five drinks to choose from.

4) How many arrangements would you have when seating 10 people around a circular table?

5) How many ways can 8 children play the round accommodate?

6) Eight people compete against each other. How many different ways can the competition end?

7) 4 places are awarded in a competition. If there are 18 contestants, how many ways could the four places be obtained?

8) In a race, trophies will be awarded to the first 3 places. If there are 22 participants, how many ways could the three locations be obtained?

9) Find the number of different signs, each made up of 7 aligned flags, which can be made with a set of 4 red flags and 3 blue flags.

10) How many different signals can be formed by lining up 5 yellow flags and 4 green flags?

Dimension 3: Analysis

11) In how many ways can a team of 3 people from a group of 25 people be formed?

12) There is a group of 20 people, of which 12 are men and 8 are women. How many different ways can you build a 7-person team that includes 4 men and 3 women?

13) Develop the following binomial based on the binomial theorem: $(a + b)^8$

14) How many different ways can it happen that when throwing 8 coins exactly three eagles come out? Apply the binomial theorem.

STAGE 3 ASSESSMENT

Checklist		
Type of evaluation: heteroevaluation		
Criteria	Yes	No

1	Performed procedures in all exercises		
2	There was a legible letter and ordered processes		
3	The correct answers were reached		

Stage 4: Probability

Dimension 1: Recovery

I. Answer the following questions:

- 1) Define "probability"
- 2) Define "Sample Space"

Dimension 2: Understanding

- 1) Write two examples of subjective probability situations.
- 2) Write two examples of common probability situations.
- 3) Write two examples of classic probability situations.

Dimension 3: Analysis

II. I. Solve the following problems:

1) When rolling a die:

- a) What is the probability that a 4 will come out?

- b) What is the probability of a 2 coming out?

- c) What is the probability of an even number coming up?

- d) How likely is it that an odd number will come out?

2) An airline provides the following information:

Arrival	Frequency
Early	93
On time	780
Delayed	70
Cancelled	57
Total	1000

- a) What is the probability that a plane arrived early or on time?

- b) What is the probability that it was delayed or cancelled?

- c) What is the probability that it arrived early or was cancelled?

3) Two dices are rolled, a white one and a black one. Consider your sample space. Find the probability of a two on the white die or a three on the black die.

4) Two dices are rolled, a white one and a black one. Consider their sample space. Find the probability of a five on the white die or a three on the black die.

5) In a urn there are 13 spheres of which 8 are black. If two spheres are randomly drawn, what is the probability that both are black? (no replacement).

6) Consider that there are four white balls and five blue balls in one box. If a ball is taken out and returned (replaced) and then another ball is taken out, what is the probability that both are blue?

7) Consider that you throw a die and without seeing you take a ball out of a box in which there are 6 white balls, 3 red balls and 2 green balls. What is the probability of getting a white and a three with the dice?

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- 8) Two dices are rolled, one white and one black, what is the probability that the sum of their points is greater than 6, knowing that in the white die a number less than 3 was obtained. (Conditional probability, consider the sample space when performing your process).
- 9) Two dices are rolled, one white and one black, what is the probability that the sum of their points is greater than 8, knowing that on the white die a number less than 5 was obtained. (Conditional probability, consider the sample space when performing your process).

STAGE 4 ASSESSMENT

Checklist		
Type of evaluation: heteroevaluation		
Criteria	Yes	No

1	Performed procedures in all exercises		
2	There was a legible letter and ordered processes		
3	The correct answers were reached		

Metacognition Activity (Self-Evaluation)

1. Do you think that after completing this portfolio you have improved your math skills?

A lot ()

Somehow ()

Not at all ()

2. Do you feel you can make further progress in your math skills?

A lot ()

Somehow ()

Not at all ()

3. How would you rate your performance in realizing the portfolio of evidence?

High ()

Average ()

Low ()

Performed: M.C. Jesus Enrique Treviño del Río

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Verified: Class Development and Support Area

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