CEU	**EXAM OF STATISTICS (Descriptive Statistics and Reg**	
	2nd Physiotherapy	Name:
	Subject: Statistics	DNI:
	Date: May, 30 2023	Version A

Duration: 1 hour.

1. To see if the confinement due to COVID-19 influenced the performance of a course, the number of failed subjects of each student in the current course and in the previous year course has been counted, obtaining the table below.

   Failed subjects

   Previous year course

   Current course

   0
   7
   8
   1
   15
   12
   2
   11
   8
   3
   5
   7
   4
   4
   3
   5
   2
   2
   6
   1
   2
   8
   0
   1

   a) Draw the box plots of the failed subjects in the current and the previous year courses and compare them.

   b) Can we assume that both samples come from a normal population?

   c) In which sample is the mean more representative?

d) Which number of failed subjects is relatively greater, 7 in the current course or 6 in the previous year course?

Use the following sums for the computations:
Previous year course: $\sum x_i = 84$ subjects, $\sum x_i^2 = 254$ subjects^2, $\sum(x_i - \bar{x})^3 = 122{,}99$ subjects^3 y $\sum(x_i - \bar{x})^4 = 669{,}21$ subjects^4.
Current course: $\sum x_i = 91$ subjects, $\sum x_i^2 = 341$ subjects^2, $\sum(x_i - \bar{x})^3 = 301{,}16$ subjects^3 y $\sum(x_i - \bar{x})^4 = 2012{,}88$ subjects^4.

2. The following table shows the reduction of inflammation in trauma (in percentage) for different doses of dexketoprofen given for 4 days (in mg).

Dose (mg)	50	62	71	75	82	90	96	102
Inflammation reduction (%)	38	45	60	68	70	86	88	95

a) Draw the scatter diagram of inflammation reduction versus dose of dexketoprofen.

b) What percentage of inflammation reduction variability does the linear model explain? And the logarithmic model?

c) According to the best of the two previous models, what is the expected percentage of inflammation reduction if we use 75 mg of dexketoprofen? Which dose should be administered to attain an inflammation reduction of 90 %? Are these predictions reliable?

Use the following sums for the computation (X=Dose, Y=inflammation reduction):
$\sum x_i = 628$ mg, $\sum \log(x_i) = 34{,}7152$ log(mg), $\sum y_j = 550\,\%$, $\sum \log(y_j) = 33{,}4922$ log(%),
$\sum x_i^2 = 51454$ mg^2, $\sum \log(x_i)^2 = 151{,}0394$ log(mg)^2, $\sum y_j^2 = 40758\,\%^2$, $\sum \log(y_j)^2 = 140{,}9659$ log(%)^2,
$\sum x_i y_j = 45668$ mg·%, $\sum x_i \log(y_j) = 2668{,}6416$ mg·log(%), $\sum \log(x_i) y_j = 2420{,}2169$ log(mg) %,
$\sum \log(x_i)\log(y_j) = 145{,}8748$ log(mg) log(%).