First and last name : ....

Exercise 01 (03 points) : Find the median, the first and the third quartile for each the following set of data :

A. 13, 11, 10, 5, 6, 10, 4, 2, 10, 6

The median Me_A

The 1ˢᵗ quartile q_{1_A}

The 3ʳᵈ quartile q_{3_A}

B. 4, 1, 10, 12, 7, 8, 10, 12, 7, 11, 9

The median Me_B

The 1ˢᵗ quartile q_{1_B}

The 3ʳᵈ quartile q_{3_B}

Draw the box plot for each set of data A and B. (0.5 pt)

Which box plot has the wider spread for the middle 50% of the data ? (0.5 pt)

Exercise 02 (07 points) : Consider the following frequency table :

Weight (kg)	[30, 40[	[40, 50[	[50, 60[	[60, 70[
Number of packages	10	20	8	2

1. Determine the population studied, its size n, the variable studied, and its type. (01 pt)

2. Draw the frequency histogram and the frequency curve. (02 pts)

3. Calculate the median, the mode, the rang and the standard deviation. (03 pts)

4. Find α such that the interval $[Me, \alpha]$ contains 20% of the population studied. (01 pt)

Exercise 03 (02 points) : Let $(\Omega, \mathcal{F}, P)$ be a probability space. Show that

$$\mathcal{G} = \{A \in \mathcal{F}, \quad P(A) = 0 \quad or \quad P(A) = 1\}$$

is a tribe on Ω.

Exercise 04 (02 points) : Let $(\Omega, \mathcal{F}, P)$ be a probability space. Let B be an event of Ω. Prove that P_B is a probability on Ω such that :

$$P_B(A) = \frac{P(A \cap B)}{P(B)}$$

Exercise 05 (06 points) : A box contains n white balls and 5 black balls.

1. We draw 2 balls randomly. What is the probability that
   a) both balls are white ?

   b) both balls are the same color ?

   c) at least one of the two balls is white ?

2. We draw 2 balls successively with replacement. What is the probability that
   a) both balls are white ?

   b) both balls are the same color ?

   c) at least one of the two balls is white ?

Good luck.