

EXAM

Exercise 1 (08 pts).

The heights X (in cm) of 100 students were measured. The results are presented in the following table:

Classes (in cm)	[150; 160[[160; 165[[165; 170[[170; 175[[175; 180[[180; 190[
Counts	8	24	42	14	10	2

Questions:

- (1) Calculate the mean \bar{X} , the variance $\text{Var}(X)$, and the standard deviation σ_X .
- (2) Calculate the median (Me) using linear interpolation.
- (3) Determine the percentage of individuals within the interval $[\bar{X} - \sigma_X; \bar{X} + \sigma_X]$.

Exercise 2 (08 pts).

A pharmaceutical product has just been launched on the market. It has experienced considerable success during the first 8 months. The recorded sales are presented in the table below:

T Variable (Time in months)	1	2	3	4	5	6	7	8
V Variable (Number of sold boxes)	10	23	38	77	165	318	642	1270

Questions:

- (1) Calculate the means \bar{T} and \bar{V} and the standard deviation σ_T and σ_V . Calculate the covariance $\text{Cov}(T, V)$.
- (2) Calculate the linear correlation coefficient.
- (3) Adjust this series using an exponential function of the form $V = BA^T$.

Exercise 3 (02 pts). what is the (theoretical) capacity of a telephone network knowing that a number is made up of 6 digits.

Exercise 4 (02 pts). A 6-sided die is rolled only once.

Questions:

- (1) Calculate the probabilities of the following events:
 A: "Having an even number."
 B: "Having a number divisible by 3."
- (2) What is the probability of having an even number knowing that it is divisible by 3?

Good luck