1) Give a paired data (x, y) with $x, y \in \mathbb{R}^n$, explain what are the scatter diagram, the regression line and the correlation coefficient for (x, y). Explain how to obtain the equation of the regression line.

2) Explain why the number of outcomes α in a Bernoulli process of length n has distribution $\mathrm{Binomial}\,(n, p)$, where p is the probability of obtaining α at each trial.

3) How are constructed two-side confidence intervals for the unknown parameter μ for a sample from the distribution $\mathrm{N}\,(\mu, \sigma^2)$, with σ unknown.