Our first four classic probability distributions after week 1

During the semester we will encounter two dozen of extremely important probability distributions. You should learn about each of them: what is their name, what is the formula used to compute with this distribution, what is the mean if it exists, what kind of problems use that distribution, etc.

During the first week we have already encountered (briefly) four of these distributions:

- The uniform distribution on a finite set, e.g., $\Omega = \{1, 2 \ldots, n\}$, that is $P(\{i\}) = 1/n$ for each $i \in \{1, \ldots, n\}$.
- The (symmetric or balanced) binomial distribution (with parameters $n, 1/2$): $\Omega = \{0, 1, \ldots, n\}$ and $P(\{k\}) = 2^{-n} \binom{n}{k}$ for $k \in \{0, \ldots, n\}$.
- The geometric distribution (with parameter $q = 1/6$): $\Omega = \{1, 2, \ldots\}$ and $P(\{k\}) = 1/6(5/6)^{k-1}$.
- The Poisson distribution (with parameter $\lambda = 1$): $\Omega = \{0, 1, 2, \ldots\}$ and $P(\{k\}) = e^{-1} \frac{1}{k!}$. Actually, this will be discussed on Monday August 28.