❖ *Bernoulli (p)*

$$P_X(x) = \begin{cases} 1-p, x = 0 \\ p, \quad\quad x = 1 \\ 0, otherwise \end{cases}$$

- x – whether the event happened or not

- $E(X) \quad = p$
- $var(X) = p(1-p)$

❖ *Geometric (p)*

$$P_X(x) = \begin{cases} p(1 - p)^{x-1}, x = 1, 2, 3 \ldots \\ \quad\quad 0, otherwise \end{cases}$$

- x – nr of tests before the event happens

- $E(X) \quad = \frac{1}{p}$
- $var(X) = \frac{1-p}{p^2}$

❖ *Binomial (p, n)*

$$P_k(x) = C_n^x \cdot p^x \cdot (1-p)^{n-x}$$

- x, k – nr of passed tests
- n – total nr of tests

- $E(X) \quad = n \cdot p$
- $var(X) = n \cdot p \cdot (1-p)$

❖ *Pascal (p, k)*

$$P_X(x) = C_{x-1}^{k-1} \cdot p^k \cdot (1-p)^{x-k}$$

- x – total nr of tests
- k – nr of passed tests

- $E(X) \quad = \frac{k}{p}$
- $var(X) = \frac{k \cdot (1-p)}{p^2}$

❖ ***Poisson (α)***

$$P_X(x) = \begin{cases} \dfrac{\alpha^x \cdot e^{-\alpha}}{x!}, x = 0, 1, 2 \dots \\ 0, otherwise \end{cases}$$

- x – nr of events
- $\alpha = \lambda T$ – events/unit duration

- $E(X) = \alpha$
- $var(X) = \alpha$

❖ ***Discrete (k, l)***

$$P_X(x) = \begin{cases} \dfrac{1}{l - k + 1}, x = k + 1, k + 2 \dots, l \\ 0, otherwise \end{cases}$$

- x – event nr (equal probability for all)
- k – min
- l – max

- $E(X) = \frac{k+l}{2}$
- $var(X) = \frac{(l-k)\cdot(l-k+2)}{12}$