List of named distributions

$X \sim \text{Bernoulli}(p)$, PMF: $p_X(0) = 1-p, \quad p_X(1) = p$

$X \sim \text{Binomial}(n,p)$, PMF: $p_X(k) = \binom{n}{k} p^k (1-p)^{n-k}, \quad 0 \le k \le n$

$X \sim \text{Geometric}(p)$, PMF: $p_X(k) = p(1-p)^{k-1}, \quad k = 1, 2, \ldots$

$X \sim \text{Poisson}(\lambda)$, PMF: $p_X(k) = \frac{\lambda^k}{k!} e^{-\lambda}, \quad k = 0, 1, 2, \ldots$

$X \sim \text{Hypergeometric}(N, N_A, n)$, PMF: $p_X(k) = \frac{\binom{N_A}{k}\binom{N-N_A}{n-k}}{\binom{N}{n}}, \quad 0 \le k \le n$

$X \sim \text{Uniform}(a,b)$, PDF: $f_X(x) = \begin{cases} \frac{1}{b-a} & \text{for } x \in [a,b], \\ 0 & \text{otherwise} \end{cases}$

$X \sim \text{Normal}(\mu, \sigma^2)$, PDF: $f_X(t) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(t-\mu)^2}{2\sigma^2}}, \qquad t \in \mathbb{R}$

$X \sim \text{Exponential}(\lambda)$, PDF: $f_X(t) = \begin{cases} \lambda e^{-\lambda x} & \text{for } x > 0, \\ 0 & \text{otherwise} \end{cases}$

$(X_1, \ldots, X_k) \sim \text{Multinomial}(n, k, p_1, \ldots, p_k)$,
joint PMF: $p(a_1, \ldots, a_k) = \frac{n!}{a_1! a_2! \ldots a_k!} p_1^{a_1} \cdots p_k^{a_k}$ for $a_1, \ldots, a_k \ge 0$ with $a_1 + \cdots + a_k = n$.