

Name	Notation	Parameters	PDF/PMF	Support	Mean	Variance
<b>Bernoulli</b>	$\text{Bern}(p)$	$p \in [0, 1]$	$f(x) = p^x(1-p)^{1-x}$	$x \in \{0, 1\}$	$p$	$p(1-p)$
<b>Beta</b>	$\text{Beta}(a, b)$	$a, b > 0$	$f(x) = \frac{\Gamma(a+b)}{\Gamma(a)\Gamma(b)} x^{a-1}(1-x)^{b-1}$	$x \in (0, 1)$	$\frac{a}{a+b}$	$\frac{ab}{(a+b)^2(a+b+1)}$
<b>Binomial</b>	$\text{Binom}(n, p)$	$n \in \mathbb{Z}^+, p \in [0, 1]$	$f(x) = \binom{n}{x} p^x(1-p)^{n-x}$	$x \in \{0, 1, \dots, n\}$	$np$	$np(1-p)$
<b>Chi-squared</b>	$\chi_\nu^2$	$\nu \in \mathbb{Z}^+$	$f(x) = \frac{1}{2^{\nu/2}\Gamma(\frac{\nu}{2})} x^{\frac{\nu}{2}-1} e^{-\frac{x}{2}}$	$x \geq 0$	$\nu$	$2\nu$
<b>Exponential</b>	$\text{Exp}(\lambda)$	$\lambda > 0$	$f(x) = \lambda e^{-\lambda x}$	$x > 0$	$\frac{1}{\lambda}$	$\frac{1}{\lambda^2}$
<b>First Success</b>	$\text{FS}(p)$	$p \in [0, 1]$	$f(x) = p(1-p)^{x-1}$	$x = 1, 2, \dots$	$\frac{1}{p}$	$\frac{1-p}{p^2}$
<b>Gamma</b>	$\text{Gamma}(a, b)$	$a, b > 0$	$f(x) = \frac{b^a}{\Gamma(a)} x^{a-1} e^{-bx}$	$x > 0$	$\frac{a}{b}$	$\frac{a}{b^2}$
<b>Geometric</b>	$\text{Geom}(p)$	$p \in [0, 1]$	$f(x) = p(1-p)^x$	$x = 0, 1, 2, \dots$	$\frac{1-p}{p}$	$\frac{1-p}{p^2}$
<b>Hypergeometric</b>	$\text{HGeom}(w, b, n)$	$w, b, n = 0, 1, \dots$	$f(x) = \frac{\binom{w}{x}\binom{b}{n-x}}{\binom{w+b}{n}}$	$x \in \{0, \dots, w\},$ $(n-x) \in \{0, \dots, b\}$	$\frac{nw}{w+b}$	$\frac{w+b-n}{w+b-1} \left( \frac{nb}{(w+b)^2} \right)$
<b>Multinomial</b>	$\text{Multinom}_k(n, \mathbf{p})$ $\mathbf{p} = (p_1, \dots, p_k)$	$n \in \mathbb{Z}^+, p_j \geq 0$ $\sum_{j=1}^k p_j = 1$	$f(\mathbf{x}) = \frac{n!}{x_1! \dots x_k!} p_1^{x_1} \dots p_k^{x_k}$	$\sum_{j=1}^k x_j = n$		
<b>Negative Binomial</b>	$\text{NegBinom}(r, p)$	$r = 0, 1, \dots$ $p \in [0, 1]$	$f(x) = \binom{x+r-1}{x} p^r (1-p)^x$	$x = 0, 1, 2, \dots$	$\frac{r(1-p)}{p}$	$\frac{r(1-p)}{p^2}$
<b>Normal</b>	$N(\mu, \sigma^2)$	$\mu \in \mathbb{R}, \sigma^2 > 0$	$f(x) = \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{1}{2\sigma^2}(x-\mu)^2}$	$x \in \mathbb{R}$	$\mu$	$\sigma^2$
<b>Poisson</b>	$\text{Poisson}(\lambda)$	$\lambda > 0$	$f(x) = \frac{e^{-\lambda} \lambda^x}{x!}$	$x = 0, 1, 2, \dots$	$\lambda$	$\lambda$
<b>t</b>	$t_\nu$	$\nu > 0$	$f(x) = \frac{\Gamma(\frac{\nu+1}{2})}{\sqrt{\pi\nu}\Gamma(\frac{\nu}{2})} (1 + \frac{x^2}{\nu})^{-\frac{\nu+1}{2}}$	$x \in \mathbb{R}$	$0 \ (\nu > 1)$	$\frac{\nu}{\nu-2} \ (\nu > 2)$
<b>Uniform (disc.)</b>	$\text{Unif}\{a_1, \dots, a_N\}$	$a_i \in \mathbb{R}$	$f(x) = \frac{1}{N}$	$x \in \{a_1, \dots, a_N\}$	$\bar{a}$	$\frac{1}{N} \sum_{i=1}^N (a_i - \bar{a})^2$
<b>Uniform (cont.)</b>	$\text{Unif}[a, b]$	$a, b \in \mathbb{R}, a < b$	$f(x) = \frac{1}{b-a}$	$x \in [a, b]$	$\frac{a+b}{2}$	$\frac{(b-a)^2}{12}$