

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