Distribution	Probability Density Function	Mean	Variance	Moment Generating Function
Binomial, $B(n,p)$	$f(x)=\binom{n}{x}p^x q^{n-x},\ x=0,1,\ldots,n;\ 0<p<1,\ q=1-p$	np	npq	$M(t)=(pe^t+q)^n,\ t\in\Re$
Bernoulli, $B(1,p)$	$f(x)=p^x q^{1-x},\ x=0,1$	p	pq	$M(t)=pe^t+q,\ t\in\Re$
Geometric	$f(x)=pq^{x-1},\ x=1,2,\ldots;\ 0<p<1,\ q=1-p$	$\frac{1}{p}$	$\frac{q}{p^2}$	$M(t)=\frac{pe^t}{1-qe^t},\ t<-\log q$
Poisson, $P(\lambda)$	$f(x)=e^{-\lambda}\frac{\lambda^x}{x!},\ x=0,1,\ldots;\ \lambda>0$	λ	λ	$M(t)=\exp(\lambda e^t-\lambda),\ t\in\Re$
Hypergeometric	$f(x)=\frac{\binom{m}{x}\binom{n}{r-x}}{\binom{m+n}{r}}$, where $x=0,1,\ldots,r\left(\binom{m}{r}=0, r>m\right)$	$\frac{mr}{m+n}$	$\frac{mnr(m+n-r)}{(m+n)^2(m+n-1)}$	—
Gamma	$f(x)=\frac{1}{\Gamma(\alpha)\beta^\alpha}x^{\alpha-1}\exp\left(-\frac{x}{\beta}\right),\ x>0;\ \alpha,\beta>0$	$\alpha\beta$	$\alpha\beta^2$	$M(t)=\frac{1}{(1-\beta t)^\alpha},\ t<\frac{1}{\beta}$
Negative Exponential	$f(x)=\lambda\exp(-\lambda x),\ x>0;\ \lambda>0;$ or $f(x)=\frac{1}{\mu}e^{-x/\mu},\ x>0;\ \mu>0$	$\frac{1}{\lambda}$ μ	$\frac{1}{\lambda^2}$ μ^2	$M(t)=\frac{\lambda}{\lambda-t},\ t<\lambda;$ or $M(t)=\frac{1}{1-\mu t},\ t<\frac{1}{\mu}$
Chi-Square	$f(x)=\frac{1}{\Gamma\left(\frac{r}{2}\right)2^{r/2}}x^{\frac{r}{2}-1}\exp\left(-\frac{x}{2}\right), x>0;\ r>0$ interger	r	$2r$	$M(t)=\frac{1}{(1-2t)^{r/2}},\ t<\frac{1}{2}$
Normal, $N(\mu,\sigma^2)$	$f(x)=\frac{1}{\sqrt{2\pi}\sigma}\exp\left[-\frac{(x-\mu)^2}{2\sigma^2}\right],\ x\in\Re;\ \mu\in\Re,\ \sigma>0$	μ	σ^2	$M(t)=\exp\left(\mu t+\frac{\sigma^2t^2}{2}\right),\ t\in\Re$
Standard Normal, $N(0,1)$	$f(x)=\frac{1}{\sqrt{2\pi}}\exp\left(-\frac{x^2}{2}\right),\ x\in\Re$	0	1	$M(t)=\exp\left(\frac{t^2}{2}\right),\ t\in\Re$
Uniform, $U(\alpha,\beta)$	$f(x)=\frac{1}{\beta-\alpha},\ \alpha\le x\le\beta;\ -\infty<\alpha<\beta<\infty$	$\frac{\alpha+\beta}{2}$	$\frac{(\alpha-\beta)^2}{12}$	$M(t)=\frac{e^{t\beta}-e^{t\alpha}}{t(\beta-\alpha)},\ t\in\Re$

Distribution	Probability Density Function	Means	Variances	Moment Generating Function
Multimomial	$f(x_1,\ldots,x_k)=\frac{n!}{x_1!x_2!\ldots x_k!}\times$ $p_1^{x_1}p_2^{x_2}\ldots p_k^{x_k}, x_i \geq 0$ integers, $x_1+x_2+\ldots+x_k=n; p_j>0, j=1,2,\ldots,k,$ $p_1+p_2+\ldots+p_k=1$	$np_1,\ldots,np_k$	$np_1q_1,\ldots,np_kq_k,$ $q_i=1-p_i,$ $j=1,\ldots,k$	$M(t_1,\ldots,t_k)=(p_1e^{t_1}+\ldots+p_ke^{t_k})^n,$ $t_1,\ldots,t_k\in\Re$
Bivariate Normal	$f(x_1,x_2)=\frac{1}{2\pi\sigma_1\sigma_2\sqrt{1-\rho^2}}\exp\left(-\frac{q}{2}\right),$ $q=\frac{1}{1-\rho^2}\left[\left(\frac{x_1-\mu_1}{\sigma_1}\right)^2-2\rho\left(\frac{x_1-\mu_1}{\sigma_1}\right)\times\left(\frac{x_2-\mu_2}{\sigma_2}\right)+\left(\frac{x_2-\mu_2}{\sigma_2}\right)^2\right],$ $x_1,x_2\in\Re;\ \mu_1,\mu_2\in\Re,\ \sigma_1,\sigma_2>0,$ $-1\leq\rho\leq 1,\ \rho=$ correlation coefficient	μ_1,μ_2	σ_1^2,σ_2^2	$M(t_1,t_2)=$ $\exp\left[\mu_1t_1+\mu_2t_2+\frac{1}{2}(\sigma_1^2t_1^2+2\rho\sigma_1\sigma_2t_1t_2+\sigma_2^2t_2^2)\right],$ $t_1,t_2\in\Re$
k **-Variate Normal,** $N(\mu,\Sigma)$	$f(\mathrm{x})=(2\pi)^{-k/2}\lvert\Sigma\rvert^{-1/2}\times$ $\exp\left[-\frac{1}{2}(\mathbf{x}-\mu)'\Sigma^{-1}(\mathbf{x}-\mu)\right],$ $\mathbf{x}\in\Re^k;\ \mu\in\Re^k,\ \Sigma: k\times k$ nonsingular symmetric matrix	$\mu_1,\ldots,\mu_k$	Covariance matrix: Σ	$M(t)=\exp\left(t'\mu+\frac{1}{2}t'\Sigma t\right), t\in\Re^k$