

### Important distributions and densities

Name	Parameter(s)	Distribution function or density function	E(X)	V(X)
Binomial	$n, p$	$\binom{n}{k} p^k q^{n-k}, k = 0, 1, 2, \dots, n$	$np$	$npq$
Geometric	$p$	$q^{n-1} p, n = 1, 2, \dots$	$\frac{1}{p}$	$\frac{q}{p^2}$
Poisson	$\lambda$	$\frac{\lambda^k}{k!} e^{-\lambda}, k = 0, 1, 2, \dots$	$\lambda$	$\lambda$
Exponential	$\lambda$	$\lambda e^{-\lambda x}, x \geq 0$	$\frac{1}{\lambda}$	$\frac{1}{\lambda^2}$
Normal	$\mu, \sigma$	$\frac{1}{\sqrt{2\pi} \sigma} e^{-(x-\mu)^2/2\sigma^2}, x \in \mathbf{R}$	$\mu$	$\sigma^2$

For the binomial and geometric distributions, I have used the notation  $q = 1 - p$ .