

Discrete:	$p(k) = P(X = k)$	$E(X)$	$Var(X)$
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Bernoulli $Bern(p)$	$p(k) = \begin{cases} p & k = 1 \\ (1-p) & k = 0 \end{cases}$	$p$	$p(1-p)$
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Binomial $Bin(n, p)$	$p(k) = \binom{n}{k} p^k (1-p)^{n-k},$ $k = 0, \dots, n$	$np$	$np(1-p)$
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Poisson $Poi(\lambda)$	$p(k) = e^{-\lambda} \frac{\lambda^k}{k!}, k = 0, 1, \dots$	$\lambda$	$\lambda$
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Continuous:	$f(x)$	$E(X)$	$Var(X)$
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Uniform $U(\alpha, \beta)$	$f(x) = \frac{1}{\beta-\alpha}, \alpha \leq x \leq \beta$	$\frac{\beta+\alpha}{2}$	$\frac{(\beta-\alpha)^2}{12}$
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Normal $N(\mu, \sigma)$	$f(x) = \frac{1}{\sqrt{2\pi}\sigma} e^{-(x-\mu)^2/2\sigma^2}$	$\mu$	$\sigma^2$
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Exponential $Exp(\lambda)$	$f(x) = \lambda e^{-\lambda x}, x \geq 0$	$\frac{1}{\lambda}$	$\frac{1}{\lambda^2}$
<u>or</u> using $\beta = \frac{1}{\lambda}$ :	$f(x) = \frac{1}{\beta} e^{-x/\beta}$	$\beta$	$\beta^2$

Gamma $Ga(\alpha, \beta)$	$f(x) = \frac{\beta^\alpha}{\Gamma(\alpha)} e^{-\beta x} x^{\alpha-1}, x \geq 0$	$\frac{\alpha}{\beta}$	$\frac{\alpha}{\beta^2}$
<u>or</u> using $\theta = \frac{1}{\beta}$ :	$f(x) = \frac{1}{\Gamma(\alpha)\theta^\alpha} e^{-x/\theta} x^{\alpha-1}, x \geq 0$	$\alpha\theta$	$\alpha\theta^2$

Chi-square $\chi^2(n),$ $= Ga(n/2, 1/2).$	$f(x) = cx^{n/2-1}e^{-x/2},$ $c = \frac{1}{2^{n/2}\Gamma(n/2)}, x > 0$	$n$	$2n$
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