Name of distribution of X	ImX	Parameters	p.m.f. $P(X=x)$/p.d.f $f_X(x)$
Discrete distributions			
Bernoulli: $X \sim \mathrm{Bern}(p)$	$\{0,1\}$	$p \in (0,1)$	$p^x(1-p)^{1-x}$
Binomial: $X \sim \mathrm{Bin}(n,p)$	$\{0,1,\ldots,n\}$	$n \in \mathbb{N}, p \in (0,1)$	$\binom{n}{x}p^x(1-p)^{n-x}$
Hypergeometric: $X \sim \mathrm{HGeom}(N,K,n)$	$\{0,1,\ldots,\min(n,K)\}$	$N \in \mathbb{N} \cup \{0\}$, $K,n \in \{0,1,\ldots,N\}$	$\frac{\binom{K}{x}\binom{N-K}{n-x}}{\binom{N}{n}}$, for $x \in \{0,1,\ldots,K\}$, $n-x \in \{0,1,\ldots,N-K\}$
Poisson: $X \sim \mathrm{Poi}(\lambda)$	$\mathbb{N}_0 = \{0,1,2,\ldots\}$	$\lambda > 0$	$\frac{\lambda^x}{x!}e^{-\lambda}$
Geometric (1): $X \sim \mathrm{Geom}(p)$	$\mathbb{N} = \{1,2,\ldots\}$	$p \in (0,1)$	$(1-p)^{x-1}p$
Geometric (2): $X \sim \mathrm{Geom}(p)$	$\mathbb{N}_0 = \{0,1,2,\ldots\}$	$p \in (0,1)$	$(1-p)^x p$
Negative binomial: $X \sim \mathrm{NBin}(r,p)$	$\mathbb{N}_0 = \{0,1,2,\ldots\}$	$r \in \mathbb{N}, p \in (0,1)$	$\binom{x+r-1}{r-1}p^r(1-p)^x$
Continuous distributions			
Uniform: $X \sim \mathrm{U}(a,b)$	(a,b)	$a,b \in \mathbb{R}, a < b$	$\frac{1}{b-a}$
Exponential: $X \sim \mathrm{Exp}(\lambda)$	$(0,\infty)$	$\lambda > 0$	$\lambda e^{-\lambda x}$
Gamma: $X \sim \mathrm{Gamma}(\alpha,\beta)$	$(0,\infty)$	$\alpha,\beta > 0$	$\frac{\beta^\alpha}{\Gamma(\alpha)}x^{\alpha-1}e^{-\beta x}$, where $\Gamma(\alpha) = \int_0^\infty x^{\alpha-1}e^{-x}dx$
Chi-squared: $X \sim \chi^2(n)$ $(X \sim \chi^2_n)$	$(0,\infty)$	$n \in \mathbb{N}$	$\frac{1}{2\Gamma(n/2)}\left(\frac{x}{2}\right)^{n/2-1}e^{-x/2}$
Beta: $X \sim \mathrm{Beta}(\alpha,\beta)$	$(0,1)$	$\alpha,\beta > 0$	$\frac{1}{B(\alpha,\beta)}x^{\alpha-1}(1-x)^{\beta-1}$, where $B(\alpha,\beta) = \int_0^1 x^{\alpha-1}(1-x)^{\beta-1}dx = \frac{\Gamma(\alpha)\Gamma(\beta)}{\Gamma(\alpha+\beta)}$
Normal: $X \sim \mathrm{N}(\mu,\sigma^2)$	$\mathbb{R}$	$\mu \in \mathbb{R}, \sigma > 0$	$\frac{1}{\sqrt{2\pi\sigma^2}}e^{-\frac{(x-\mu)^2}{2\sigma^2}}$
Student-t: $X \sim \mathrm{Student}(\nu)$	$\mathbb{R}$	$\nu > 0$	$\frac{\Gamma\left(\frac{\nu+1}{2}\right)}{\sqrt{\nu\pi}\Gamma\left(\frac{\nu}{2}\right)}\left(1+\frac{x^2}{\nu}\right)^{-\frac{\nu+1}{2}}$