CSE 312
Foundations, II
Distributions
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See also Ross, pp 358–359.

Name	PMF	$E[k]$	$E[k^2]$	σ^2	Ross
Bernoulli(p)	$f(k) = \begin{cases} 1-p & \text{if } k=0 \\ p & \text{if } k=1 \end{cases}$	p	p	$p(1-p)$	p134
Binomial(p, n)	$f(k) = \binom{n}{k} p^k (1-p)^{n-k}, k = 0, 1, \ldots, N$	np		$np(1-p)$	p134
Poisson(λ)	$f(k) = e^{-\lambda} \frac{\lambda^k}{k!}, k = 0, 1, \ldots$	λ	$\lambda(\lambda+1)$	λ	p143
Geometric(p)	$f(k) = p(1-p)^{k-1}, k = 1, 2, \ldots$	$1/p$	$(2-p)/p^2$	$(1-p)/p^2$	p155
Hypergeometric(n, N, m)	$f(k) = \frac{\binom{m}{k}\binom{N-m}{n-k}}{\binom{N}{n}}, k = 0, 1, \ldots, N$	nm/N	$\frac{nm}{N}\left(\frac{(n-1)(m-1)}{N-1} + 1\right)$	$\frac{nm}{N}\left(\frac{(n-1)(m-1)}{N-1} + 1 - \frac{nm}{N}\right)$	p160

Name	$Density$	$E[k]$	$E[k^2]$	σ^2	Ross
Uniform(α, β)	$f(x) = 1/(\beta - \alpha), \alpha < x < \beta$	$(\alpha+\beta)/2$		$(\beta-\alpha)^2/12$	p194
Normal(μ, σ^2)	$f(x) = \frac{1}{\sqrt{2\pi}\sigma} e^{-((x-\mu)/\sigma)^2/2}$	μ		σ^2	p198
Exponential(λ)	$f(x) = \lambda e^{-\lambda x}, x \geq 0$	$1/\lambda$		$1/\lambda^2$	p208