Distribution Overview

	Uniform(Continuous)	Binomial(Discrete)	Poisson(Discrete)	Normal(Continuous)	CRVs(Continuous)
Notation	$\mathcal{U}(a,b)$	$B(n,p)$	$P_o(\lambda)$	$\mathcal{N}(\mu,\sigma^2)$	$f(x) = \begin{cases} f(x), & \text{for } a \leq x \leq b \\ 0, & \text{otherwise} \end{cases}$
Parameters	a= Start value b= End value	n= Number of trials p= Probability of success	λ= Mean number of occurrences in the time period	μ= Mean σ= Standard Deviation	a= Start value b= End value
PDF or PMF	$f(x) = \begin{cases} \dfrac{1}{b-a}, & \text{for } a \leq x \leq b \\ 0, & \text{otherwise} \end{cases}$	$f(r) = \begin{cases} \binom{n}{r}p^r(1-p)^{n-r}, & \text{for } 0 \leq r \leq n \\ 0, & \text{otherwise} \end{cases}$	$f(r) = \begin{cases} \dfrac{e^{-\lambda}\lambda^k}{k!}, & \text{for } 0 \leq r \leq n \\ 0, & \text{otherwise} \end{cases}$	Don't need to know	Given in question or: $\frac{dy}{dx}F(x)$
CDF	$f(x) = \begin{cases} 0, & \text{for } x < a \\ \dfrac{x-a}{b-a}, & \text{for } a \leq x < b \\ 1, & \text{for } x \geq b \end{cases}$	Use tables	Use tables	$z = \dfrac{x-\mu}{\sigma}$ Then use tables	$F(x) = \displaystyle\int_a^x f(x)dx$
Mean	$\frac{1}{2}(a+b)$	np	λ	μ	$\displaystyle\int_a^b xf(x)dx$
Variance	$\frac{1}{12}(b-a)^2$	$np(1-p)$	λ	σ^2	$\displaystyle\int_a^b x^2 f(x)dx - \mu^2$
Median	$\frac{1}{2}(a+b)$	Don't need to know	Don't need to know	μ	Where F(x)=0
Mode	Any Value	Don't need to know	Don't need to know	μ	Where $f'(x)=0$
$\approx$ Binomial	No	N/A	Check using inverse	$P = 1 - \frac{\sigma^2}{\mu}$ $n = \frac{\mu}{P}$	No
$\approx$ Poisson	No	**Where p $<$ 0.1 and n $>$ 50** $X \sim B(n,p) \approx Y \sim P_o(np)$	N/A	**Where $\mu \approx \sigma^2$ and $\mu > 10$** $\mathcal{N}(n,p) \approx X \sim P_o(n \text{ or } p)$	No
$\approx$ Normal	No	**Where n $>$ 10 and P $<$ 0.5** $X \sim B(n,p) \approx \mathcal{N}(np, np(1-p))$ Don't forget continuity correction	**Where $\lambda > 10$** $X \sim P_o(\lambda) \approx \mathcal{N}(\lambda, \lambda)$ Don't forget continuity correction	N/A	No