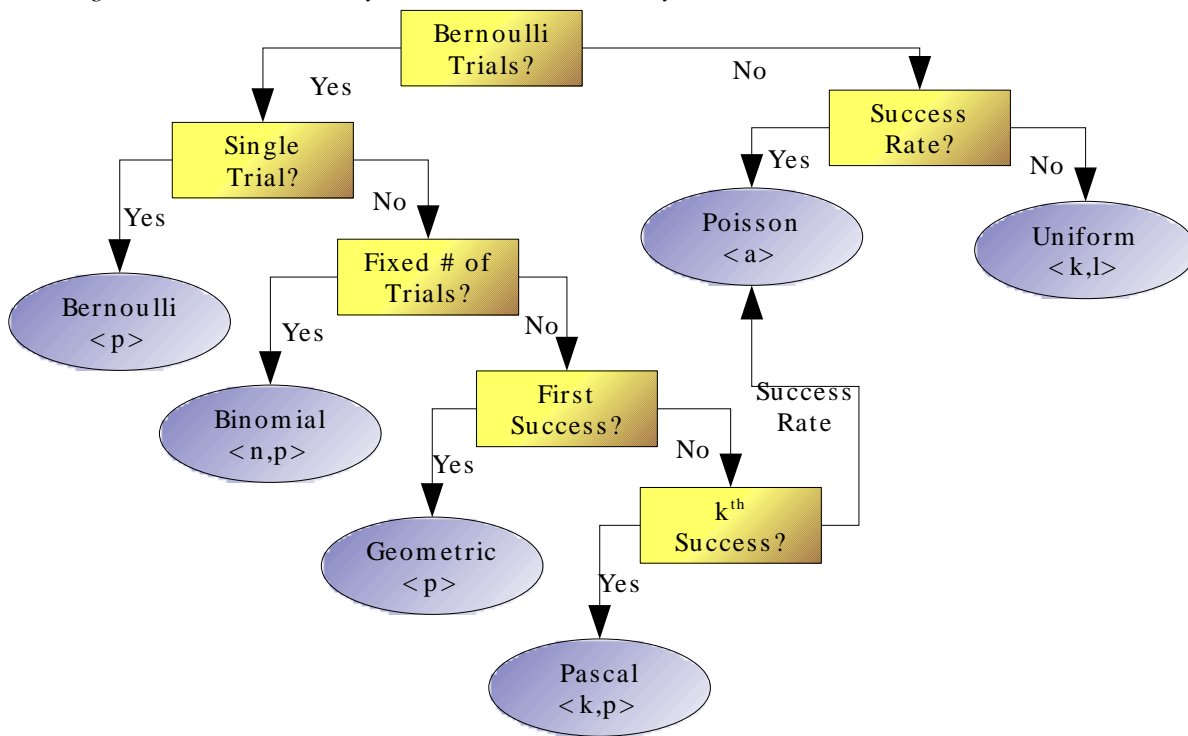


Drawing 1 Discrete Probability Distribution Taxonomy



Distribution	<Parameters> Moments	Probability Mass Function
Bernoulli <single trial>	<p> E[X]=p V[X]=p(1-p)	$P_x(x) = \begin{cases} 1-p & x=0 \text{ event fail} \\ p & x=1 \text{ event success} \\ 0 & \text{else} \end{cases}$
Binomial <fixed trial>	<n,p> E[X]=np V[X]=np(1-p)	$P_x(x) = \begin{cases} \binom{n}{x} p^x (1-p)^{(n-x)} & x=0,1,\dots,n \\ 0 & \text{else} \end{cases}$
Geometric <first success>	<p> E[X]=1/p V[X]=(1-p)/p ²	$P_x(x) = \begin{cases} p(1-p)^{(x-1)} & x=1,2,\dots \\ 0 & \text{else} \end{cases}$
Pascal <k th success>	<k,p> E[X]=k/p V[X]=k(1-p)/p ²	$P_x(x) = \begin{cases} \binom{x-1}{k-1} p^k (1-p)^{(x-k)} & x=k,k+1,\dots \\ 0 & \text{else} \end{cases}$
Poisson <counts/unit>	<a> E[X]=a V[X]=a	$P_x(x) = \begin{cases} a^x e^{-a} / x! & x=0,1,\dots \\ 0 & \text{else} \end{cases}$

<i>Distribution</i>	<i><Parameters> Moments</i>	<i>Probability Mass Function</i>
Uniform <even odds>	<k,l> E[X]=(k+l)/2 V[X]=(l-k+1)(l-k+2)/12	$P_x(x) = \begin{cases} 1/(l-k+1) & x = k, k+1, \dots, l \\ 0 & \text{else} \end{cases}$