1 Distributions

Types of Distributions:

- Binomial
- Poisson
- Normal
- Gamma
- Exponential
- Chisquare
- Uniform

1.1 Binomial Distribution

Here there are 2 events such that if probability of one is p, then the probability of other is $1-p$. Probability is in terms of a random variable X that denotes number of favorable cases.

$$\boxed{P(X=k) = \binom{n}{k} p^k (1-p)^{n-k}}$$

It is denoted by $\boxed{X \sim B(n,p)}$.

$X:$	0	1	...	n-1	n
$P(X=k):$	$1-p)^n$	$\binom{n}{1} p\,(1-p)^{n-1}$	...	$\binom{n}{n-1} p^n - 1\,(1-p)$	$\binom{n}{n} p^n$

- $E(x) = np$
- $E(x^2) = n(n-1)p^2 + np$
- $V(x) = np(p-1) = npq$