

Bernoulli Trials and Binomial Distributions

Bernoulli trials:

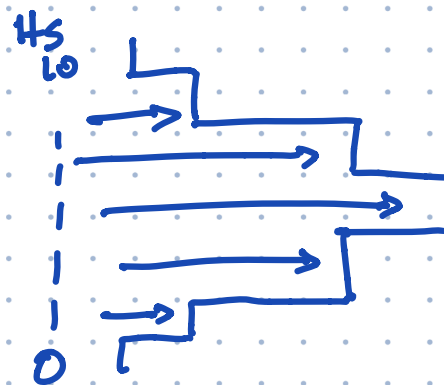
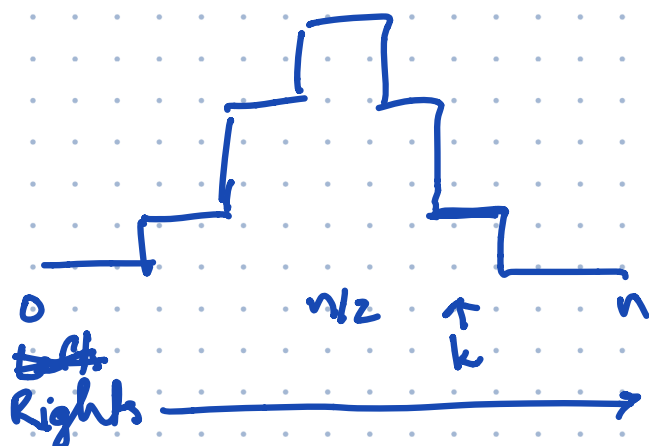
1. Two outcomes per trial: success or failure
2. Constant probability of success
3. Outcome of each trial is independent of any other trial

Quickcruix : Coin
Left/Right : Heads/Tails
0.5/0.5 : 0.5/0.5



Binomial Distribution

The distribution of the number of successes in n Bernoulli trials.



$${}^nC_k \cdot 0.5^n$$

Other uneven situations: $p(\text{success}) = 0.8$
 $p(\text{failure}) = 1 - 0.8 = 0.2$

$${}^nC_k \cdot 0.8^k \cdot 0.2^{n-k} = p(k \text{ successes in } n \text{ trials})$$

for $k = 0$ to n

$$p(k/n) = {}_n C_k p^k q^{n-k}$$

$$p = p(\text{success})$$

$$q = p(\text{failure})$$

$$p(k/n) = \binom{n}{k} p^k q^{n-k}$$

success

trials

$$0 \leq k \leq n$$

↑ whole #s.

(Discrete function)