

Theorem

Assuming fair and independent coins, the probability to flip k heads in n tosses is

$$2^{-n} \binom{n}{k} = \frac{\binom{n}{k}}{2^n}.$$

Proof.

- List all sequences of H, T of length n ;
- There are 2^n of these;
- The probability of any given sequence is 2^{-n} ;
- The number of sequences with k heads is $\binom{n}{k}$.

