$$\frac{1}{30} \sum_{x=1}^{30} \frac{1}{20} \sum_{y=1}^{29} \mathbb{1}\{y<x\}\, x - \mathbb{1}\{y \geq x\}\, y$$

$$\frac{1}{600} \sum_{x=1}^{29} \cdot \left(\sum_{y=1}^{x-1} x + \sum_{y=x}^{20} y \right)$$

$x \cdot (x-1)$ $\qquad \frac{(20+x)\cdot(20-x+1)}{2}$

$$2 \cdot \left(\frac{4}{2^6} + \frac{10}{2^6} + \frac{15}{2^6} \right) \qquad \frac{29}{2^7}$$

$\frac{56}{64}$

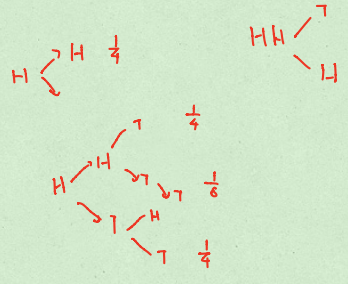
hen-go $\qquad$ Count # combinations

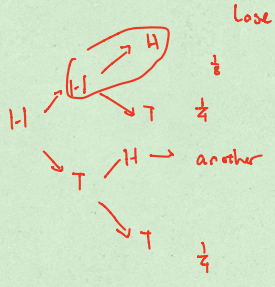
1. Coin 3 seq

HHT

HTT

TTHHTHTT





lose $\qquad \sum_{1}^{\infty} \frac{1}{2^n} = \frac{1}{2}$

10 digit

1 2 3

no 11 72

{ 1 9 1 2 3 4 5 6 7 8 9
  6 2 1 0 0 0 1 0 0 0

1 2 3 4 5 6 7 8 9 0

Black-Scholes's equation