Coin flip (Bernoulli experiment)

$p(H) = 0.5$ $\quad p(T) = 1 - p(H)$

$H = H_{ead}$

$T = T_{ail}$

$$P(y) = \begin{cases} 0.5 = p & \text{if } y = H = 1 \\ 1 - p = q & \text{if } y = T = 0 \end{cases}$$

$$P(y) = p^y \times (1-p)^{(1-y)}$$

$$P(0) = p^0 \times (1-p)^{(1-0)} = 1 \times (1-p)^1 = 1 - p$$

$$P(1) = p^1 \times (1-p)^{1-1} = p * 1 = p$$