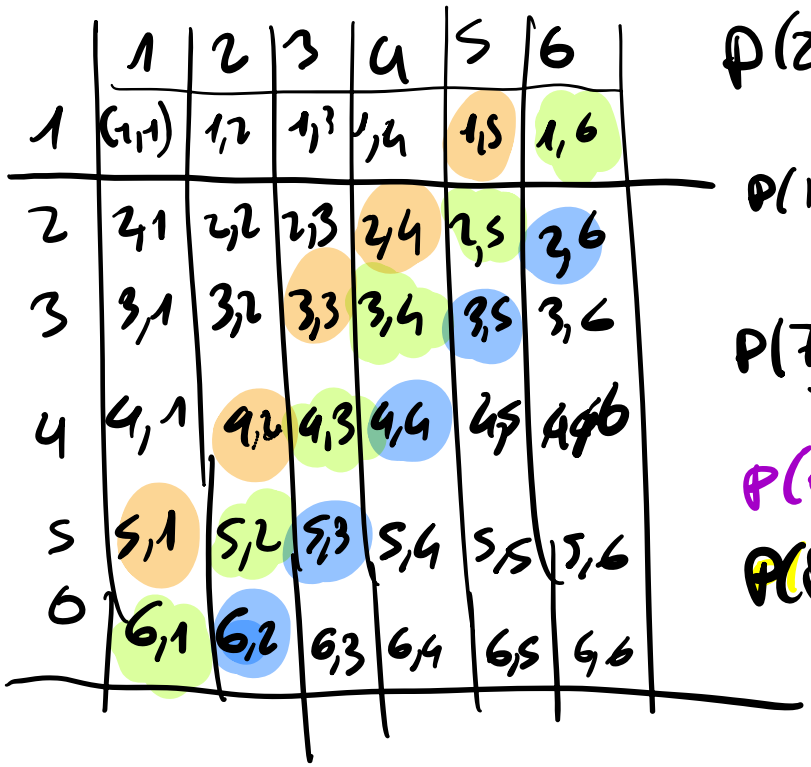



$P(2) = \frac{1}{36}$

$P(12) = \frac{1}{36}$

$P(7) = \frac{6}{36} = \frac{1}{6}$

$P(6) = \frac{5}{36}$

$P(8) = \frac{5}{36}$

Valore atteso

$$E[X] = \sum_{1}^{n} x_i \, p(x_i)$$

LANCIO DEL DADO

1, 2, 3, 4, 5, 6

$\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$ - - -

$$E[X] = 1 \cdot \frac{1}{6} + 2 \cdot \frac{1}{6} + 3 \cdot \frac{1}{6} + 4 \cdot \frac{1}{6} + 5 \cdot \frac{1}{6} + 6 \cdot \frac{1}{6}$$

$$= \frac{1}{6}[1 + 2 + 3 + 4 + 5 + 6]$$

$$= \frac{21}{6}$$

T C

1 1

1 0

$$E[X] = \frac{1}{2} \cdot 0 + \frac{1}{2} \cdot 1$$

$$= \left(\frac{1}{2}\right)$$

$\frac{1}{2}$ $\frac{1}{2}$

$$Var(X) = E\left[(X - E(X))^2\right]$$

$$E(X) = \mu = m$$

$$Var(X) = \sum_i (x_i - m)^2 P(x_i)$$

$x_1$ $x_2$ $x_3$

$$= (x_1 - m)^2 \cdot P(x_1) + (x_2 - m)^2 P(x_2) + (x_3 - m)^2 P(x_3)$$

$$\sigma = \sqrt{Var(X)}$$

↓

sigma

DEVIAZIONE STANDARD

$n = 5$

$P(X=0) = \binom{5}{0}\left(\frac{1}{2}\right)^0 \cdot \left(\frac{1}{2}\right)^{5-0}$ $\quad p = \frac{1}{2}$ $\quad (1-p) = q = \frac{1}{2}$

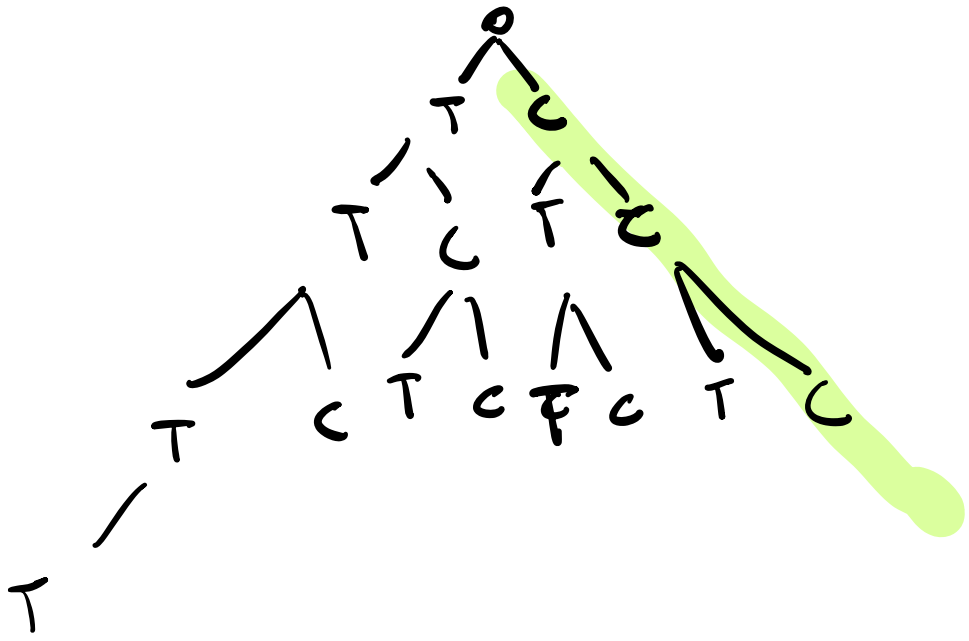
$k = 0$

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

$$P(X=0) = \frac{5!}{0!(5-0)!} \cdot \left(\frac{1}{2}\right)^0 \cdot \left(\frac{1}{2}\right)^5$$

$$P(X=0) = \frac{5!}{5!} \cdot 1 \cdot \left(\frac{1}{2}\right)^5 = \frac{1}{32}$$

$$\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{32}$$




$k=3 \qquad 5 \qquad \left(\frac{1}{2}\right)^{5-3}=\left(\frac{1}{2}\right)^{2}$

$$P(X=3)=\binom{5}{3}\left(\frac{1}{2}\right)^{3}\cdot\left(\frac{1}{2}\right)^{5-3}$$

$$P(X=3)=\frac{5!}{3!(5-3)!}\cdot\frac{1}{8}\cdot\frac{1}{4}$$

$$P(X=3)=\frac{5!}{3!\,2!}\,\frac{1}{8}\cdot\frac{1}{4}$$

$$P(X=3)=\frac{5\cdot 4\cdot \cancel{3!}}{\cancel{3!}\;2!}\,\frac{1}{8}\cdot\frac{1}{4}$$

$$P(X=3) = \frac{20}{2} \cdot \frac{1}{8} \cdot \frac{1}{4} = 10 \cdot \frac{1}{32} = \frac{5}{16}$$

DSDD (6) Wurf mit 6

$$P(X=3) = \binom{6}{3} \left(\frac{1}{6}\right)^3 \cdot \left(\frac{5}{6}\right)^3$$

$n = 6$

$k = 3$

$$P(X=3) = \frac{6!}{3!\,(6-3)!} \cdot \left(\frac{1}{6}\right)^3 \left(\frac{5}{6}\right)^3$$

$P(6) = \frac{1}{6}$

$q = 1 - p = 1 - \frac{1}{6} = \frac{5}{6}$

$$P(X=3) = \frac{6 \cdot 5 \cdot 4 \cdot 3!}{3! \cdot 3 \cdot 2 \cdot 1} \left(\frac{1}{6}\right)^3 \left(\frac{5}{6}\right)^3$$

$$P(X=3) = 20 \cdot \frac{1}{6^3} \cdot \frac{5^3}{6^3} = \frac{20 \cdot 5^3}{6^6}$$

Intervallo

$$P(X = k) = \frac{\lambda^k e^{-\lambda}}{k!}, \quad k = 0, 1, 2, \ldots$$

$\lambda = 5$

$k = 3$

$$P(X = 3) = \frac{5^3 e^{-5}}{3!}$$