PROBABILITY ASSIGNMENT

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Contents

X	0	1	2
P(X)	$^nC_0 P^0 q^n$	$^nC_1 P^1 q^{n-1}$	$^nC_2 P^2 q^{n-2}$
P(X)	$^2C_0(\frac{5}{6})^2$	$^2C_1(\frac{5}{36})$	$^2C_2(\frac{1}{6})^2$

The Expectation of X=Mean of the variable X

$$E(X){=}\mu = \sum_{i=1}^{n} x_i P(x_i)$$

$$\mu = 0 \times {}^2C_0(\tfrac{5}{6})^2 + 1 \times {}^2C_1(\tfrac{5}{36}) + 2 \times {}^2C_2(\tfrac{1}{6})^2$$

Mean of X$=\mu = \frac{1}{3}$

1 problem

Two dice are thrown simultaneously. If X denotes the number of sixes, find the expectation of X.

2 solution

consider each trial results in sucess(getting six on a dices) or failures (not getting sixes on disces)
so,
X may have value 0,1,or 2
Total number of possible outcomes = 36
number of outcomes n =2
when a two discs are rolled once,

probability P $=\frac{1}{6}$

so , q = 1-P = 1-$\frac{1}{6}$ = $\frac{5}{6}$

In Bernoulli trials with X sucess and (n-x) failures,the probability of x sucess in n-Bernoulli trilas can be given as ,

$$^nC_x P^x q^{n-x} \tag{1}$$

Therefore,The required probability distribution as follows