Answer on Question #46544, Math, Statistics and Probability

Six bullets of which four are blanks, are randomly inserted into a gun. If three shots are fired from the gun, find the probability that all three bullets fired will be blank

Solution

Here we are dealing with binomial distribution and hence we will use formula for probability mass function:

$$f(k;n,p) = \Pr(X = k) = \binom{n}{k} p^k (1-p)^{n-k}$$

where n=3 is number of randomly selected(shot) bullets, k=3 is number of blank bullet and p=4/6=2/3 is probability to find blank bullet So, the probability to 3 blank bullets from 3 is

$$\Pr(X = 3) = \binom{3}{3} 2/3^3 1/3^0 = 2/3^3 \approx 0.296$$

Probability that all 3 are blank is 0.296