

Answer on Question # 86026 – Math – Statistics and Probability

Question

A binomial probability experiment is conducted with the given parameters. Compute the probability of x successes in the n independent trials of the experiment.

$$n=60, p=0.02, x=2$$

Solution

The probability of x successes in the n independent trials of the experiment is equal to

$$P_n(x) = \frac{n!}{x!(n-x)!} p^x (1-p)^{n-x},$$

where p is the probability of success in the independent trial of the experiment.

In our problem $n = 60$, $x = 2$, $p = 0.02$.

$$\begin{aligned} \text{So } P_{60}(2) &= \frac{60!}{2!(60-2)!} * 0.02^2 * (1 - 0.02)^{60-2} = \frac{60!}{2!*58!} * 0.02^2 * 0.98^{58} = \\ &= 1770*0.0004*0.30982 = 0.2194 \end{aligned}$$

Answer:

The probability of 2 successes in the 60 independent trials of the experiment is equal to 0.2194.