

Answer on Question #48411 – Math – Statistics and Probability

A computer chip is manufactured such that every 200 chips, 10 are defective. If 20 chip are chosen at random from a nearly manufactured 200 chips. What is the probability that none of the chips will be defective?

Solution

This is a Bernoulli distribution with $p = \frac{10}{200} = \frac{1}{20}$ and $n = 20$. The probability that none of the chips will be defective is

$$P(0) = \frac{20!}{0!(20-0)!} \left(\frac{1}{20}\right)^0 \left(1 - \frac{1}{20}\right)^{20-0} = \left(\frac{19}{20}\right)^{20} = 0.358.$$

Answer: 0.358.