

Answer on Question #78402 – Math – Statistics and Probability

QUESTION

A shipment of 5 computers contains 2 that are slightly defective, is a retailer receives three of these computers at random, list the elements of the sample space using the letter D and N for defective and none defective computers respectively. to each sample point assign a value of X of the random variable X representing which is slightly defective?

SOLUTION

3N, 0D:

X=0

$$P(3N, 0D) = C_K^k \cdot C_{N-K}^{n-k} / C_N^n = C_3^3 \cdot C_2^0 / C_5^3 = 1 \cdot 1 / 10 = 0.1$$

2N, 1D:

X=1

$$P(2N, 1D) = C_K^k \cdot C_{N-K}^{n-k} / C_N^n = C_3^2 \cdot C_2^1 / C_5^3 = 3 \cdot 2 / 10 = 0.6$$

1N, 2D:

X=2

$$P(1N, 2D) = C_K^k \cdot C_{N-K}^{n-k} / C_N^n = C_3^1 \cdot C_2^2 / C_5^3 = 3 \cdot 1 / 10 = 0.3$$

$$C_K^k = \frac{K!}{k!(K-k)!}$$