

Answer on Question #63600 – Math – Statistics and Probability

Question

Suppose three cell phones are tested randomly. We want to find out the number of defective cellphones that occur.

Let D represent the defective and N for non-defective cell phone. If we let X be the random variable representing the number of cell phones, can you show the values of random variable X ?

Solution

We want to find out the number of defective cellphones that occur in test.

After testing of the cell phones we can receive 4 types of result:

- 1) In the case 1 all cell phones are working. So we have 0 cell phones that don't work and X has value 0.
- 2) In the case 2 only one of the phones is broken and others are good. Then X has value 1.
- 3) In the case 3 we have two broken cellphones and one working cellphone. So X has value 2.
- 4) In the case 4 all three cellphones are defective. X has value 3.

After analysis of all possible cases we receive that X may be equal to 0, 1, 2 or 3.

Distribution law for X :

X	0	1	2	3
p_i	p_0	p_1	p_2	p_3

Here p_i stands for probability of the i -th case and

$$\sum_{i=0}^3 p_i = 1.$$

Answer: $X \in \{0,1,2,3\}$.