**Problem:**

5 People are applied for credit card to a Bank in a Month. As per previous records only 60% are eligible for issuing credit card because of bank rules.

1. What is the probability of issuing credit card exactly for 3 people?
2. What is the probability of issuing credit card at least for 3 people?
3. What is the probability of issuing credit card at most for 2 people?

Solution:

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **n** | 5 |  | r |  |  | n fact | (n - r) fact | r fact | n c r | (p)**r** | (q) **n -r** |  |
| **p** | 0.6 |  | 0 | P(x=0) | 5 c 0 | 120 | 120 | 1 | 1 | 1 | 0.01024 | 0.01024 |
| q | 0.4 |  | 1 | P(x=1) | 5 c 1 | 120 | 24 | 1 | 5 | 0.6 | 0.0256 | 0.0768 |
|  |  |  | 2 | P(x=2) | 5 c 2 | 120 | 6 | 2 | 10 | 0.36 | 0.064 | 0.2304 |
|  |  |  | 3 | P(x=3) | 5 c 3 | 120 | 2 | 6 | 10 | 0.216 | 0.16 | 0.3456 |
|  |  |  | 4 | P(x=4) | 5 c 4 | 120 | 1 | 24 | 5 | 0.1296 | 0.4 | 0.2592 |
|  |  |  | 5 | P(x=5) | 5 c 5 | 120 | 1 | 120 | 1 | 0.07776 | 1 | 0.07776 |

What is the mean of this binomial distribution?

M = np = 5 x .6 = 3

Average number of people issuing credit card is 3 if 5 people are applied in a month

What is the variance of this distribution?

Var = np(1-p) = 5(.6)(1-.6) = 1.2

So, a minimum variance can be occurred as 1.2 from the average of 3 if 5 people are applied for a credit card in a month.

**Problem:**

There is a sports Bikes company. Before delivering from the company they checked and found 90% are successful.

What is the probability of next 4 bikes will be run successful?