Answer on Question #83675 – Math – Statistics and Probability

Question

The probability that a patient recovers from a delicate heart operation is 0.9. What is the probability that exactly 5 of the next 7 patients having this operation survive?

Solution

The probability that exactly k of the next n patients having this operation survive is equal to

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

where p is the probability that a patient recovers from a delicate heart operation.

In our problem $n = 7$, $k = 5$, $p = 0.9$.

Thus,

$$P_7(5) = \frac{7!}{5!*(7-5)!} * 0.9^5 * (1-0.9)^{7-5} = \frac{7!}{5!*2!} * 0.9^5 * 0.1^2 = 0.1240029$$

Answer:

The probability that exactly 5 of the next 7 patients having this operation survive is equal to 0.1240029.