



3. LESSON: PROPOSED EXERCISES

To solve the following proposed exercises, the theory corresponding to lesson 3 as well as the examples shown in the solved exercises of the same lesson will be very helpful.

1. The telephone line of the vice-chancellor's office of a university is occupied 60% of the time. Assuming that calls to the vice-chancellor's office are independent:
 - a) If a call is made, which is the probability that the telephone line is not occupied?
 - b) If 10 calls are made, which is the probability that the line is occupied in at most three calls?
 - c) If 25 calls are made one morning, which is the probability that the line is not occupied on 10 occasions?

Solution: a) 0.4; b) 0.0548; c) 0.1612.

2. In a laboratory, a group of scientist inject to some mice, one by one, the virus of a concrete disease. Mice have the probability of contracting the disease of 0.15. Calculate:
 - a) The probability that the virus has to be injected to 7 mice for one of them to get the disease.
 - b) The probability that the virus has to be injected to 40 mice for 12 of them to get the disease.
 - c) The probability that the virus has to be injected at maximum to 50 and at minimum to 45 mice to 10 of them contract the disease.

Solution: a) 0.0566; b) 0.0023; c) 0.0953.

3. In a warehouse of a French factory there are 90 refrigerators. Of these, 12 are the refrigerators with ice formation module. Calculate:
 - a) If a customer buys 5 refrigerators the probability that at least one has the ice formation module.
 - b) If 60 refrigerators have to be sent to another warehouse, the probability that a tenth of the refrigerators have ice module.
 - c) If 10 refrigerators were introduced in a truck, which is the probability that the truck is full of refrigerators without ice formation module?

Solution: a) 0.5196; b) 0.1085; c) 0.2200.



4. A perfume house in Paris has 70 perfumes in its catalogue. Of these, 4 perfumes contain in their composition the vanilla essence of Madagascar. Calculate:
- The probability that a maximum of 3 perfumes contains vanilla essence.
 - If 10 perfumes are bought, the probability that at least two have the vanilla essence.

Solution: a) 0.4335; b) 0.0081.

5. Every day in an airport, on average 12% of the planes leave the runway late. If there are 125 scheduled flights in one day, calculate:
- The probability that 5 flights have late departure.
 - The probability that a maximum of 10 flights and a minimum of 5 leave the runway late.
 - In the airport control tower, if there is a director per working day (8 hours), the probability that in the working day of a director a maximum of 3 flights leave the runway late.

Solution: a) 0.0019; b) 0.1176; c) 0.2650.