1. At the faculty 25 % of students fail the exam in mathematics, 15 % of students fail the exam in physics and 10 % of students fail both exams.

   (a) What is the probability that a randomly chosen student passes exam in mathematics and fails physics? R: $P = 0.050$

   (b) What is the probability that a randomly chosen student passes both exams? R: $P = 0.700$

2. In the table there are 150 traffic accidents, categorized according to their consequences and causes.

|  |  | Consequences | |
|---|---|---|---|
|  |  | death | wounds |
| Cause | speed | 24 | 16 |
|  | alcohol | 46 | 14 |
|  | other | 30 | 20 |

   (a) What is the probability that for a randomly chosen accident alcohol was not the cause and there were no victims? R: $P = 0.240$

   (b) What is the probability that for a randomly chosen accident with no victims neither the alcohol nor inappropriate speed were the cause of it? R: $P = 0.400$

3. One third of products are made on machine A, half of them are made on machine B and the rest are made on machine C. 8 % of products from machine A, 14 % of products from machine B and 10 % of products from machine C are of poor quality. A product is randomly selected.

   (a) What is the probability that a randomly selected product is of poor quality? R:$P = 0.113$

   (b) If a randomly selected product is of poor quality, what is the probability that it was made on machine A? R: $P = 0.236$

   (c) If a randomly selected product is of good quality, what is the probability that it was made on machine B? R: $P = 0.485$

4. Three missiles are shot at a plane. The probabilities of hitting a plane are 0.5, 0.6 and 0.8 for the first, second and the third shot, respectively. A plane that is hit only once is shot down with probability 0.3, a plane that is hit two times is shot down with probability 0.6 and a plane that is hit three times is shot down for sure. What is the probability that a plane is going to be shot down after three shots? R:$P = 0.594$

5. It has been statistically found out that 41 % of people have blood type A, 9 % of people have blood type B, 4 % of people have blood type AB and the rest have blood type 0. On the notes of the bags with donated blood mistakes occur. For 88 % of donors with bood type A notes are correct, while for 4 % of donors with blood type B, 10 % of donors with blood type AB and 4 % of donors with blood type 0 notes are for blood type A instead of correct blood type.

   (a) What is the probability that a randomly chosen donor has blood type A and his/her bag has a correct note? R: $P = 0.361$

   (b) What is the probability that in a randomly chosen bag with a note for blood type A there actually is blood of type A? R: $P = 0.933$

6. Medical experts developed a new test for finding a virus of some incurable disease, by which every one in ten thousand of citizens of Slovenia is infected. The test gives positive result in 99.9 % of cases of infection, while the test is negative in 99 % of cases when the person is not infected. As a citizen of Slovenia you have been tested and the result is positive. What is the probability that you are actually not infected? R: $P = 0.990$

7. Among scanned products which can only have one type of defect 30 % of products have defect A, 50 % of products have defect B and the rest of the products have some other defects. 30 % of products with a defect A do not work, among products with a defect B there are 10 % of them that do not work and among other product there are 20 % of products that do not work. A product is randomly selected.

(a) What is the probability the selected product works? R: $P = 0.820$

(b) If the selected product works, what is the probability it has a defect A or defect B? R: $P = 0.805$