N.I. Lobachevsky State University
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Probability theory and mathematical statistics:

Multiplication theorem, independence — Practice

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There are 5 ”good” questions among 25 prepared for a test (a question is good if a student knows the answer). Two students take one question in turn. What’s the probability that a) the first student took a ”good” question, b) both students have ”good” questions?

Two players take balls in turn from an urn with M red and $N - M$ brown balls in it. A player wins if he gets a red ball. What's the probability the first player wins? Consider $N = 4$, $M = 1$.

The probability for a letter to be in the desk's drawers equals p, and if it's in the drawers then each drawer has equal probability to have the letter. There 8 drawers in the desk. What's the probability to find the letter in the 8-th drawer?

Two shooters are shooting at a target. The first shooter hits the target with the probability 0.8, the second shooter hits the target with the probability 0.7. What's the probability they both hit the target? What's the probability at least one on them hits the target?

Two players of equal skills play a game of chance several times. The winner should win 6 times in total. Each of them made a stake of 1000 roubles. Finally the game was interrupted when the first player has won 4 games while the second has won only two. They divide the stakes proportional to the probabilities of winning for each one. How much money do they receive?