1. Alignment 4 to 0 in preference card game: 20 cards containing 4 trump cards are dealt to 2 players (10 vs 10). What is the probability that all 4 of them are on the same hand (one of the players has them all)?

2. The probability that the letter is in the desk is ***p***, and with equal probability it can be in any of the eight drawers of the desk. 7 drawers were opened and no letter was found. What’s the probability that the letter is in the 8th drawer?

3. 6-team tournament: 6 teams play in a round-robin tournament. Each team plays the other once. All teams have different strengths, and the stronger team always wins. Team A won the first 4 matches. What is the probability that it will win the last game.

4.

P (A | B) > P (B | A). Is it true that P (A) > P (B)?

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5. The first of two twins is a boy. What’s the probability that the second is also a boy if the probability of two boys is ***p*** and two girls is ***q.*** If twins are of different genders the probability that the first is a boy is ½.

6. A dice is rolled n times. Find the correlation between the number of “1” and “2”.

7. Eight boys and seven girls bought tickets to the cinema to the 15-seat row. Assuming that all 15! seatings are equally probable, compute the expected number of the pairs of female and male neighbors. For example, in the seating bgbgbgbgbgbgbgb there are 14 such pairs.