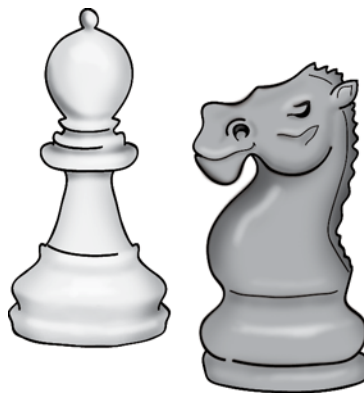
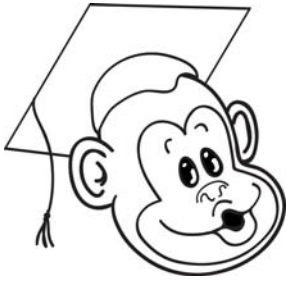




This brainteaser was written by Derrick Niederman.

Two chess players compete in a best-of-five match. If Chekmatova has a 60% chance of winning any particular game, what is the likelihood that she will win the match?





Solution: 68.256%.

There are three possibilities:

1. Chekmatova wins the first three games, in which case it doesn't matter what happens in the fourth or fifth games.
2. Chekmatova wins two of the first three games and then wins the fourth game, in which case it doesn't matter what happens in the fifth game.
3. Chekmatova wins two of the first four games and then wins the fifth game.

In the first scenario, it doesn't matter what happens in the fourth or fifth games, and the probability of Chekmatova winning the first three games is $(0.6)^3 = 0.216$.

In the second scenario, it doesn't matter what happens in the fifth game. The probability of Chekmatova winning three out of four is $3 \times (0.6)^3 \times (0.4) = 0.2592$. (The 3 at the beginning indicates that her opponent could win any of the first three games.)

In the third scenario, the probability of Chekmatova winning three out of five is $6 \times (0.6)^3 \times (0.4)^2 = .20736$. (The 6 at the beginning of the expression represents the ${}_4C_2$ ways to choose which two games her opponent wins.)

The combined probability is $0.216 + 0.2592 + 0.20736 = 0.68256$, or 68.256%.