

The Science and Mathematics of Card Games

Mathematics & Game Theory · Answer Key · 5 Questions

1. According to the Bayer-Diaconis theorem, how many ideal riffle shuffles are required to thoroughly randomize a standard 52-card deck?

- A) 3
- B) 7**
- C) 12
- D) 20

2. In a standard 52-card deck, what is the exact mathematical probability of being dealt a 5-card royal flush in poker?

- A) 1 in 649,740**
- B) 1 in 72,192
- C) 1 in 2,598,960
- D) 1 in 10,000,000

3. In game theory, standard two-player heads-up Texas Hold'em is mathematically classified as what type of game?

- A) Finite game with imperfect information**
- B) Infinite game with perfect information
- C) Cooperative game with symmetric information
- D) Non-zero-sum sequential game

4. Which mathematical expression represents the total number of unique sequence permutations for a standard 52-card deck?

- A) 52^{52}
- B) $52!$ (52 factorial)**
- C) 2^{52}
- D) 52×51

5. What cognitive strategy is commonly used by memory athletes to rapidly memorize the exact order of a shuffled deck of cards?

- A) Method of Loci (Memory Palace)**
- B) Eidetic visual imagery
- C) Retrograde consolidation
- D) Phonological loop repetition