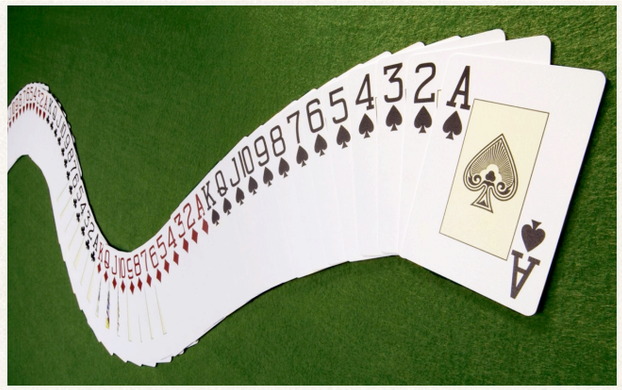
Test your understanding

A standard pack of 52 cards



Four suits : ♠, ♡, ♢, ♣.

Thirteen face values : 2, 3, . . . , 10, J, Q, K, A.

- **Problem 1**: Five packs are placed face down in order from one through five on a table. The first card of each pack is exposed to create a five card sequence of exposed cards. How many possible sequences are there?

- **Problem 2**: One card apiece from a single pack is given to each of five players, say, I, II, III, IV, and V. How many different arrangements of cards is possible?

- **Problem 3**: A selection of five cards from a standard pack is called a *poker hand*. How many different poker hands are there? [A poker player may arrange the cards in her hand any order she pleases; order does not matter.]

- **Problem 4**: A *deal of hands at bridge* is the distribution of the cards in a pack to four players, traditionally called North, South, East, and West, so that each players gets 13 cards. How many different deals are there?

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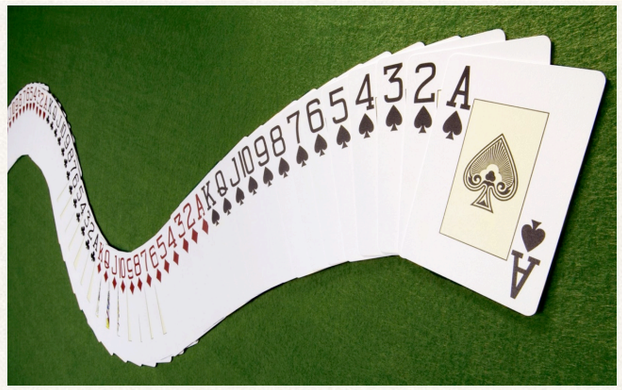

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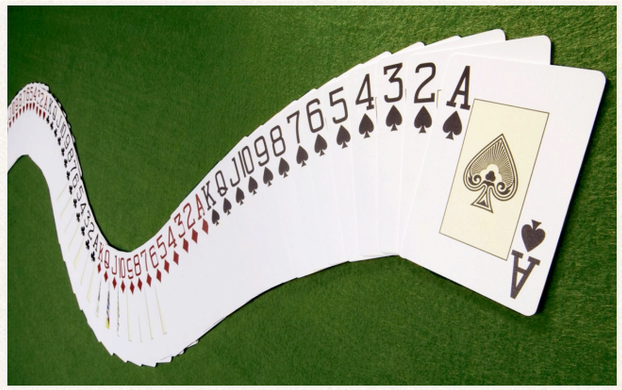

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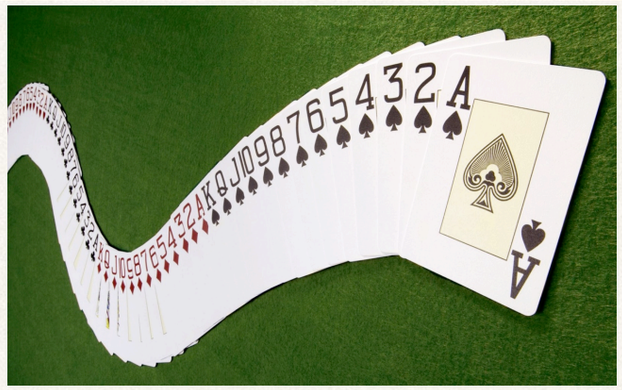

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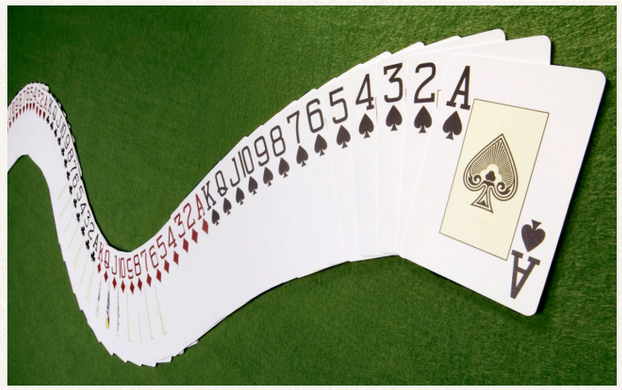

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  $$\binom{52}{13}\binom{39}{13}\binom{26}{13}\binom{13}{13} = \frac{52!}{13!^4}$$
  $$= 53,644,737,765,488,792,839,237,440,000$$