Probability: Playing Cards

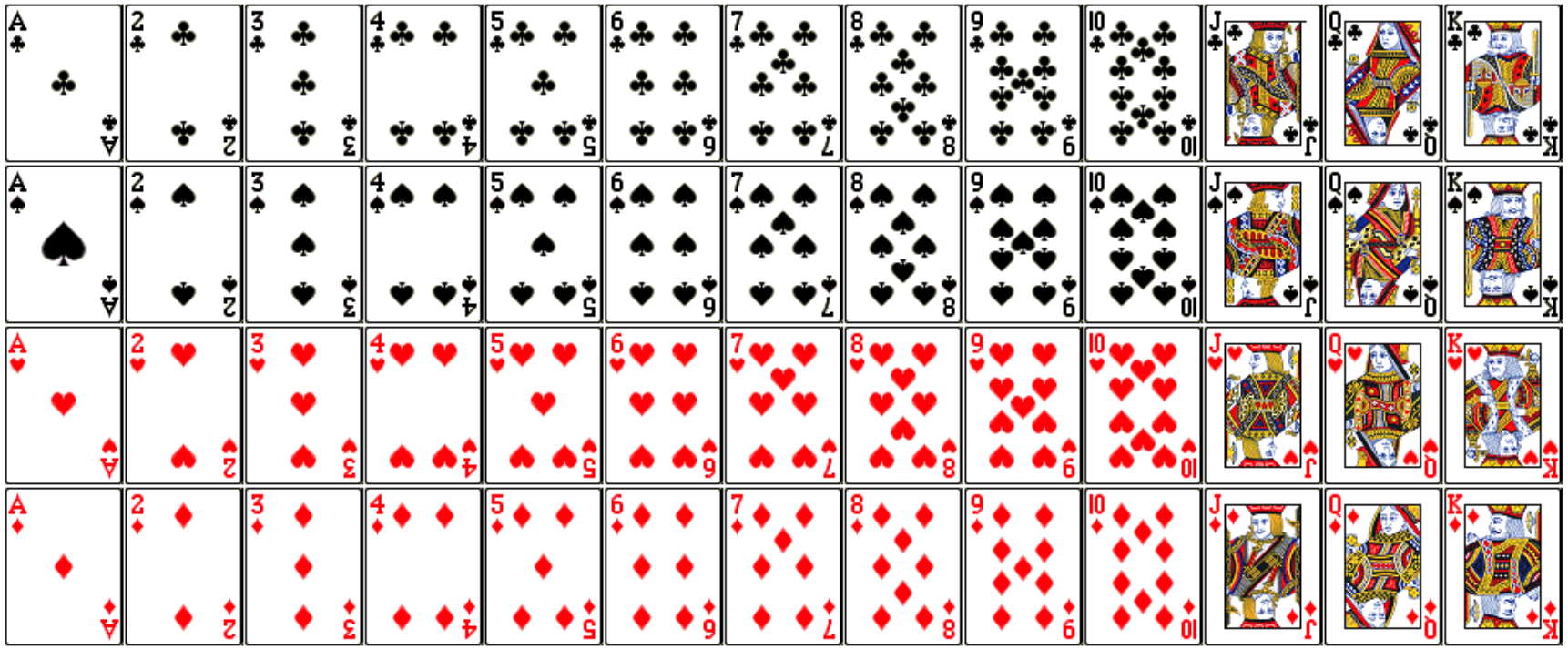
Anglo-American Version

The primary deck of 52 playing cards in use today and includes thirteen ranks of each of the four French suits, diamonds (♦), spades (♠), hearts (♥) and clubs (♣), with reversible Rouennais "court" or face cards (some modern face card designs, however, have done away with the traditional reversible figures).

Each suit includes an ace, depicting a single symbol of its suit; a king, queen, and jack, each depicted with a symbol of its suit; and ranks two through ten, with each card depicting that many symbols (*pips*) of its suit.

Two (sometimes one or four) Jokers, often distinguishable with one being more colorful than the other, are included in commercial decks but many games require one or both to be removed before play … A deck often comes with two Joker Cards that do not usually have hearts, diamonds, clubs or spades, because they can be any card in certain games. In most card games, however, they are not used.

http://en.wikipedia.org/wiki/Playing_cards#Anglo-American



Probability: Playing Cards

Playing cards involves probability. The better you understand probability, the better you will play!

What is the probability of picking up an ace in a 52 card deck?

The probability of picking up an ace in a 52 deck of cards is 4/52 since there are 4 aces in the deck. The odds of picking up any other card is therefore 52/52 - 4/52 = 48/52.

What is the probability of picking up an ace or king in a 52 card deck?

The probability of picking up an ace or a king is 8/52 since in a deck of 52 cards there are 4 aces and 4 kings, which totals 8. The probability of not picking up an ace or king is simply 52/52 - 8/52 = 44/52.

What is the probability of picking an ace in five consecutive attempts in a 52 card deck?

In order to determine this probability, first you must determine the probability of not picking up an ace in 5 attempts; removing a non-ace after each attempt. The probability of not picking up an ace in the first attempt is 48/52. The probability of not picking an ace in the second attempt is 47/51. This is the case because you had previously removed one of the non-aces in the first attempt reducing the non-aces from 48 to 47. Also, the total amount of cards also dropped after the first attempt reducing the total number of cards from 52 to 51. Continuing with this logic on the third attempt the probability of picking a non-ace is 46/50. You can see that the numerator and denominator are both being reduced by 1 with each attempt. On the fourth attempt the probability of picking a non-ace is 45/49 and on the fifth attempt is 44/48. So, the total probability of picking a non-ace in 5 consecutive attempts removing the card after each attempt is the product of each individual attempt. The product of each individual attempt is 48/52 * 47/51 * 46/50 * 45/49 * 44/48 = 0.66. Multiplying this value by 100 will give you 66 percent. So there is a 66 percent chance of not picking up an ace in 5 consecutive attempts removing the card after each attempt.

In order to determine the probability of picking up an ace in 5 consecutive attempts you must subtract 66 from 100 which will give you 34 percent. So, there is a 34 percent chance of picking up an ace in 5 consecutive attempts removing the card after each attempt.

Source: Dr. John Costello, http://voices.yahoo.com/probability-cards-3718130.html, 2009