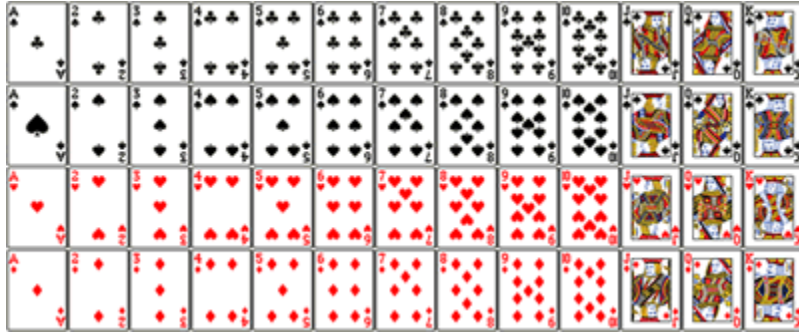


A deck of cards consists of 4 suits, 13 cards each for a total of 52 cards. The four suits are: Spades, Hearts, Diamonds, and Clubs. Each suit contains an A (Ace), numbers from 2 to 10, and three face cards: J, The Jack; Q, the Queen and K, the King.



**QUESTIONS:** Let's assume a well shuffled deck of card is available for every trial.

Find the probability of (in all these events you are choosing just one card):

1. Choosing a red or a black card.
2. Choosing a spade or a heart.
3. Choosing a King or an Ace.
4. Choosing a King or a spade.
5. Choosing a red card or a Queen.
6. Choosing an even numbered card or a black card.
7. Choosing and spade or an Ace.

Find the probability of (for the following events you are choosing more than one card; and, every time, before you choose a new card, you put the chosen one back, and shuffle again):

8. Choosing two spades.
9. Choosing a spade and a heart.
10. Choosing three Aces in a row.
11. Choosing a heart, a King, a Jack in that order.

Find the probability of (for the following events you are choosing more than one card without replacement):

12. Choosing three spades in a row.
13. Choosing two hearts.
14. Choosing a King, a Queen and a Jack in that order.
15. Choosing five cards and they all are diamonds.

Find the probability of (in all these events you are choosing just one card, but a **given** condition is known):

16. Choosing a King given that is a black card.
17. Choosing a diamond given that is a red card.
18. Choosing a Queen given that is a face card.
19. Choosing and Ace given that is a face card.
20. Choosing a diamond given that is an Ace card.
21. Choosing a Queen given that the card is a spade.

Permutations and combinations:

24. In how many way you can choose 5 cards out of the 52 cards?
25. In how many ways you can you can arrange the three face cards of a given suit?

Find the probability of (without replacement):

26. Choosing 5 cards at random and they all are diamonds.
27. Choosing 3 cards such that one is a King and the two others are Aces.
28. Choosing three cards and they all are red cards.
29. Choosing 5 cards and getting 3 hearts and 2 clubs.
30. Choosing 5 cards and they are all Hearts. (Is this question the same as "Choosing 5 cards and they are all of the same suit: hearts, clubs, diamonds or spades)?)