

5) A 7-card hand is chosen from a standard 52-card deck. What is the probability of getting four spades and three hearts?

6) A popular website asks the users to create a password consisting of digits only. If no digit may be repeated, and the password should be at least 9 digits long, how many possible passwords do we have?

Picking one user at random what is the probability that his password ends up with a 5.

7) In a group of 6 boys and 8 girls, four children are to be selected. What is the probability that your selection have at least one boy?

8) A family has 3 children.

- a) What is the probability that their middle child is a girl?
- b) What is the probability that they have exactly two boys?

9) An urn contains 5 red balls, 4 black balls and 3 green balls. Three balls are randomly selected from the urn. Consider the following events:

- E: The three selected balls have the same color
- F: The three selected balls have three different colors
- G: Only two of the three selected balls have the same color.

The selection of the three balls is done simultaneously.

i) Calculate the probabilities $p(E)$, $p(F)$ and $p(G)$

ii) Knowing that only two of the three selected balls have the same color, calculate the probability that one of the balls is red.

10) In a shop there are 1000 leather wallets, of which some are defective. These wallets were manufactured by three factories A, B and C according to the following table

	A	B	C
Number of Wallets	200	350	450
Percentage of defective wallets	5%	4%	2%

A wallet is chosen at random from these 1000 wallets, and consider the following events :

- A : The chosen wallet was produced by the factory A .
- B : The chosen wallet was produced by the factory B .
- C : The chosen wallet was produced by the factory C .
- D : The chosen wallet is defective .

a) Find the probability $P(D/A)$?

b) Calculate the following probabilities: $P(D/B)$, $P(D/C)$ and $P(D)$?

c) Knowing that the chosen wallet is not defective, what is the probability that it was manufactured by the factory A ?

11) A box contains 60 tokens distributed as shown in the following table:

	Blue	Green
Large	15	10
Small	17	18

1) A token is drawn randomly from this box.

a- What is the probability that it is small?

b- What is the probability that it is small and blue?

c- Knowing that the chosen token is small, what is the probability that it is blue ?

2) Two tokens are drawn randomly from this box. What is the probability of drawing 2 small tokens ?