A soccer team plays a series of three games. Sports analysts predict that independently of each other the team:

- Wins the 1st game with probability 0.6
- Wins the 2nd game with probability 0.5
- Wins the 3rd game with probability 0.1

Compute the probability that the team wins at least one game.

There are four communication links between two servers to provide resilience to failures. Each link fails with probability 0.4 independently of the others. What is the probability that a message is successfully sent ?

The following table reports the fraction of students getting a first class honours conditioned on whether their leaving cert points are above 500 or not.

	Points < 500	Points > 500
<1st class honours	0.8	0.2
1st class honours	0.2	0.8

In the general population the fraction of people getting Leaving Cert points of 500 or greater is 5%. Is getting a 1st class honours degree independent of getting more than 500 points in the leaving cert ?

A bag contains 3 red balls and 4 white balls. One ball is drawn from the bag and put to one side. A second ball is now drawn from the bag. What is the probability that the first ball is red and the second ball is white ? Are the events of drawing are red ball and then a white ball independent ? Suppose now that we put the first ball back into the bag after drawing it. What is the probability the first ball is red and the second ball is white now ? Now are the events of drawing are red ball and then a white ball independent ?

Write a Matlab simulation for drawing two balls from a bag. Run the experiment multiple times and record what fraction of time a red then a white ball is drawn. This output of the simulation is itself random. How does changing the number of times we run the experiment change the fluctuations in the simulation output ?