1. Bill and Ted play a best-of-5 game series of rock-paper-scissors. Since Bill trains in the US Rock-Paper-Scissors League, he has a 0.6 probability of winning each individual game. What is the probability that Bill wins the best-of-5 series?

2. Rob and Ben play a game where they take turns flipping a coin. The winner is the first person to flip a head, and Rob goes first. What is the probability Rob wins if
   a) the coin is fair?
   b) the coin is not fair, but shows head with probability $p$?
   c) Rob tosses a coin which shows head with probability $p_1$ and Ben tosses a coin which shows head with probability $p_2$?

3. Urn A contains 5 red balls and 5 green balls. Urn B contains 7 red balls and 3 green balls. You pick an Urn at random and draw 5 balls without replacement.
   a) Find the probability you draw exactly 4 red balls.
   b) What is the probability you chose Urn B given that you drew exactly 4 red balls.