Problem 1. An urn contains 6 white and 9 black balls. Suppose four balls are to be randomly selected without replacement.
(a) What is the probability that the first two selected are white and the last two are black?
(b) What is the probability that the first two selected are white given that the last two are black?

Problem 2. Ninety-eight percent of all babies survive delivery. However, 15% of all births involve Cesarean (C) section, and when a C section is performed, the baby survives 96% of the time. If a randomly chosen pregnant woman does not have a C section, what is the probability that her baby survives?

Problem 3. An ectopic pregnancy is twice as likely to develop when the pregnant woman is a smoker as it is when she is a nonsmoker. If 32% of women of childbearing age are smokers, what percentage of women having ectopic pregnancies are smokers?

Problem 4. Urn-I contains 2 white and 4 red balls, whereas urn-II contains 1 white and 1 red ball. A ball is randomly chosen from urn-I and put into urn-II, and a ball is then randomly selected from urn-II.
(a) What is the probability that the ball selected from urn-II is white?
(b) What is the probability that the transferred ball was white given that a white ball is selected from urn-II?

Problem 5. Frank and Gayle alternate rolling a pair of dice, stopping either when Frank rolls the sum 9 or when Gayle rolls the sum 6. Assuming that Frank rolls first, compute the probability that the final roll is made by Frank.

Problem 6. Harris and Irene play a series of games. Each game is independently won by Harris with probability 0.4 and by Irene with probability 0.6. They stop when the total number of wins of one of the players is two greater than that of the other player. The player with the greater number of total wins is declared to be the final winner of the series.
(a) Find the probability that a total of 4 games will be played.
(b) Find the probability that Irene will be the winner of the series.