Math 477, Homework 2

1. Suppose a coin is flipped three times, and at least one of the flips results in heads. What is the probability that there are at least two heads?

2. Given a container with 6 white balls and 9 black balls, if 4 balls are chosen randomly, what is the probability that exactly two are white?

3. Given a container with 6 white balls and 9 black balls, if 4 balls are chosen randomly, and one of the chosen balls is black, what is the probability that exactly two are white?

4. If 4 cards are randomly chosen from a deck of 52 cards, what is the probability that each has a different suit?

5. Suppose that we have a collection of brown and white eggs. Suppose $1/3$ of the brown eggs are rotten, and $7/10$ of the white eggs are rotten.

   (a) If an egg is chosen at random, with an equal chance of being white or brown, what is the probability that it is rotten?

   (b) Suppose that an egg is chosen at random, with an equal chance of being white or brown. If the egg is found to be rotten, what is the probability that it was a white egg?