Quiz 1 2016.03.16

1. Consider the experiment of flipping a fair coin twice. Construct a probability model $(\Omega, \mathcal{F}, \mathbf{P})$ with exactly 2 events.

2. Romeo and Juliet have a date, and each will show up with a delay between 0 and 1 hour, with all pairs of delays being equally likely. Romeo would wait for no more than 15 minutes, and Juliet would wait for no more than 5 minutes. What is the probability that they will meet?

3. A class consisting of 5 graduate and 10 undergraduate students is divided into 5 groups of 3 students. What is the probability that each group includes a graduate student?

4. A conservative design team C and an innovative design team N are asked to separately design a new product within a month. From past experience we know that

   - Team C is successful with probability 1/5.
   - Team N is successful with probability 1/3.
   - At least one team is successful with probability 1/2.

   Assuming that exactly one team is successful, what is the probability that it is team N?

5. In a go tournament, your probability of winning the first game is 0.4 against half the players, 0.3 against a quarter of the players, and 0.6 against the remaining players. You play the first game against a randomly chosen opponent. What is the probability of winning?