1. Consider two dice. One is a 6-sided die that has 2 red sides and 4 green sides. The other is a 4-sided die that has 1 red side and 3 green sides. One die is selected at random and rolled. The result is red. What is the conditional probability that the first die (i.e., the one with 2 red sides and 4 green sides) was chosen?

2. Research company Gartner suggests that 80.7% of people own an Android, and 17.7% own an iPhone. For simplicity, assume nobody owns both types. Also assume that the other 1.6% of people do not have a cell phone. Suppose that 90% of iPhone customers are “satisfied,” and 70% of Android customers are “satisfied”, and 0% of people without a cell phone are satisfied.

2a. If you meet a satisfied customer, what is the probability they own an iPhone?
2b. If you meet an unsatisfied customer, what is the probability they do not own a cell phone?
2c. If you interview people until you meet the first Android customer, and then you stop after that, what is the probability that you meet 4 or more people?

3. The website http://joshmadison.com/mms-color-distribution-analysis/ claims that 24% of M&M’s are blue, 13% are brown, 16% are green, 20% are orange, 13% are red, and 14% are yellow. Suppose that 10% of reds, blues, yellows, and greens are broken, and 15% of browns and oranges are broken.

3a. If you blindly grab a broken M&M, what is the probability that it is red?
3b. If you blindly grab a whole (non-broken) M&M, what is the probability that it is blue?

4. Bob flips a coin until he gets a head for the first time, and then he stops afterwards. Say it takes him $n$ flips.

Based on that number $n$, Bob’s friend Alice flips a coin exactly $n$ times. What is the probability that Alice gets no heads at all, during her $n$ flips?