1. A biased coin has probability $p$ of returning “heads” (H).
   (a) What is the probability of tails (T) on a single coin toss?
   (b) If the coin is tossed 6 times, what is the probability of getting the pattern ‘HTTTHT’?

2. At a jury pool you are given a ticket with a (uniformly) random number between 1 and 100.
   Candidates with numbers 1-50 go to Room #1, where they each have a 30% chance of being
   assigned to a jury in the Municipal Court, and a 70% chance of being assigned to a jury in the
   Superior Court.
   Candidates with numbers 51-80 go to Room #2, where they each have a 40% chance of being
   assigned to a jury in the Superior Court, and are otherwise sent home.
   Candidates with numbers 81-100 can just go home.
   (a) What is the probability that you go to room #1 and then go to Superior Court?
   (b) What is the probability that you go to Superior Court (along any path)?
   (c) What is the probability that you serve on some kind of jury?

3. An urn holds 3 red candies and 7 green candies. The green ones have worms inside.
   Norbert pulls out a candy. If it’s green, he drops it on the floor and flees the room in terror.
   If it’s red, he eats it, and then picks another. The process repeats until he leaves the room.
   (a) What is the probability that Norbert eats all of the red candies?
   (b) After he is gone, Agatha picks a candy out of the urn. What is the probability that she picks
       a green candy?

4. A biased coin has probability $p$ of returning “heads” (H).
   If the coin is tossed twice, the probability of getting two tails (TT) is 10.24%.
   What is the probability of getting two heads (HH)?

**Answers:**

1. (a) $1 - p$
   (b) $p^2 (1 - p)^4$

2. (a) 0.35
   (b) 0.47
   (c) 0.62

3. (a) $\frac{3}{10} \cdot \frac{2}{9} \cdot \frac{1}{8} = \frac{1}{120}$
   (b) 0

4. 10.4624 or 10.46%