



5. Suppose you are playing roulette in Las Vegas, and you bet on red each time (recall that an American roulette wheel has 18 red, 18 black, and 2 green slots). You play 50 times, and bet on red every single time. Let  $X$  be the number of times you win in 50 plays. What is the distribution of  $X$ ? Make sure to state the parameters of the distribution. What is the probability that you win at least 12 times? Use an appropriate function to compute this probability in R and copy your code here.

6. I tried to use the *Hypergeometric* distribution to simulate drawing spades (♠) from a standard 52-card deck with the following line of code, but I received an error and the code would not run.

```
rhyper(m = 13, n = 39, k = 60, nn = 1)
```

Why didn't my code run? What caused the error?

7. I decided to try again to use the function `rhyper()` to simulate drawing 5 cards from a standard deck and counting the number of ♠s.

```
rhyper(m = 13, n = 52, k = 5, nn = 1)
```

This code runs, but is it correct? Explain your answer clearly.

8. How would you simulate tossing a coin 10 times and counting the number of heads? Let  $X$  be the number of heads in 10 tosses. What is the distribution of  $X$ ? Write code to simulate 100 values from this distribution, and plot the empirical histogram for  $X$ . Copy the code here.