Learning Goal: Interpret probability as a long run relative frequency.

Introduction: Previously, in our discussion of categorical variables, we used the word *probability* to mean "likelihood" or "chance." The probability of an event is a number between 0 and 1. If the event never occurs (occurs 0% of the time), its probability is 0. If the event always occurs (occurs 100% of the time), its probability is 1.

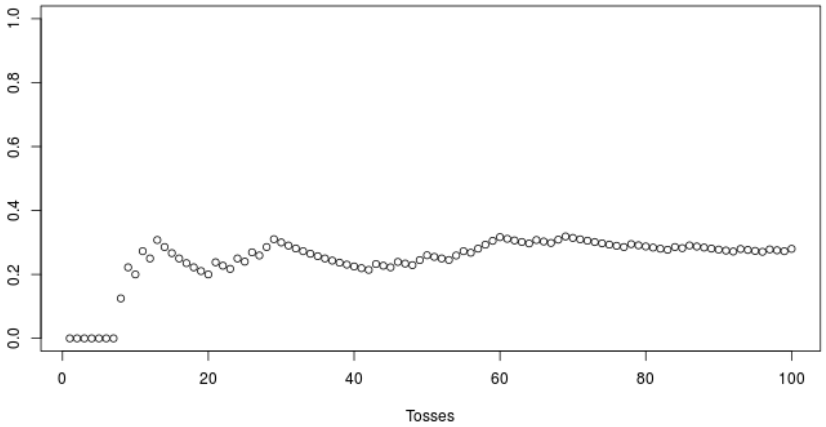
1) Consider the following three scenarios. Which of the three can we easily estimate the probability? Why is that?

- What is the probability that a toss of a fair coin lands on heads?
- What is the probability that the toss of a bottle cap lands right-side up?
- What is the probability that a randomly selected LMC student is a female?

2) A random event is unpredictable in the short run, but has a pattern in the long run that relates to probability. Your instructor will use an applet to simulate the flipping of an unfair coin. After the demonstration check your understanding by answering these questions:

a) Explain why flipping a biased coin is a random event.

b) Here a snapshot of the simulation for 100 tosses of an unfair coin. What is the probability of a getting a head with this coin?



3) If you pick a student at random from our class, what is the probability that she eats in the cafeteria today?