Chapter Nine: Randomness

A _____ is an event in which the outcome is unknown before the event occurs.

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Intuitively we can understand randomness. If we were to flip a coin, we would assume that there is a 50% chance that the coin lands on heads or tails. Why do we do this?

If we flip a coin 10 times and we don't get 5 heads and 5 tails, does that mean our model is wrong?

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However, if we _____ a coin toss by tossing a virtual coin millions of times, the proportion of heads and the proportion of tails will roughly be 50%. This is what is known as _____

_____ are based off of a model for a random event. If we use random numbers to simulate a random event, then the probability of each event occuring is equal. To determing the long-term probabilities, we need to conduct many _____. Meaning, we need to simulate our random event many many times.

The generagl procedure for simulating a random event is as follows:

1.
2.
3.

4.

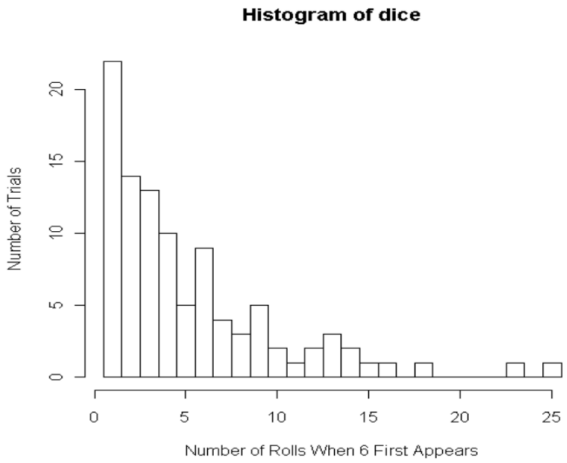
5.

6.

So a key aspect of simulation is in fact generating some form of randomness. However randomness is much harder to obtain that we think.

Example *Pick a number, then draw the distribution of 1s, 2s, 3s, and 4s: 1 2 3 4*

How would we determine the how many rolls it will take to obtain the first 6 on a die? Simulate rolling a 6 using an online random number generator to try and answer this question. Create and outline a simulation procedure then conduct 10 trials and record your results.



Min	1.00
Q1	2.00
Median	4.00
Mean	**5.24**
Q3	7.00
Max	25.00