Deck 4

* Sampling with Replacement
* Hypergeometric Distribution samples without replacement
  + Fixed number of trials
  + Do not replace acorns after removing them from the bag
  + Trials are non-independent
    - The chances change after each sampling
* Binomial distribution
  + Sampling with replacement
  + Trials are independent of one another
* Discrete distribution
  + Integer or categories are used to space out the numbers, not half numbers or quarters
* Combinations and permutations
  + Combinatorics
    - Study the possible ways we arrange sets of objects
    - Order is not important
    - How many categories are there
  + Permutations
    - More permutations than combinations
    - Order is very important, for example spelling
    - Another example is using factorials to see the different permutation possibilities
  + Continuous sample space
    - All continuous distributions have infinite sample spaces
    - May have bound or unbounded sample spaces
  + Normal distributions have two parameters
    - Mean and standard deviation
    - Mean dictates the center of the curve
    - Standard deviation controls the width
  + Exponential distributions decay
    - One parameter (lambda)
    - Mean does not matter
    - Helpful for lots of small observations and few large observations
  + T distribution
    - It’s the sample-size adjusted version of the standard normal
    - Adjustments use degrees of freedom
    - As DF approach infinite, the t-distribution approaches the standard normal
* Skew and Kurtosis
  + Higher order moments of distribution
  + Mean is the first moment, variance is the second
  + Skew is a measure of asymmetry
    - T distribution is not skewed because it is symmetrical
  + Kurtsosis is a measure of pointiness
    - How wide is the peak compared to other more normal looking ones
    - Platykurtotic is a flat curve
    - Leptokurtotic is very pointy