Deck 6

* Least squares
  + The mean describes the center of data or expected result
    - The mean minimizes the sum of residuals
      * The sum itself will almost always be 0 (maybe always)
      * This is why we must square the residuals before adding them
* Likelihood
  + Using the log function lets us use smaller numbers without sacrificing precision
  + Likelihood is an estimate of how probable your particular data are given a model and a set of parameters
    - when testing, can draw a line within a curve based on a user provided mean and sd
    - if testing multiple times, we add the likelihoods together (slides 31-33)
    - you want the greatest likelihood possible, aka more positive numbers
  + maximum likelihood = 0
  + calculate using the height of the curve
* resampling
  + resampling with replacement allows us to repeat an experiment many times
  + resampling is good for:
    - nonparametric inference
    - null and alternative hypotheses
      * Monte Carlo randomization helps characterize the null hypothesis
      * Boostrapping is the alternative hypothesis
    - Confidence intervals
  + Bootstrapping
    - Samples entire rows of the data preserving structure
  + Monte Carlo
    - Resamples everything without preserving structure
    - Does not separate rows and columns