Problems due: 1,2,3,6

1. Each of you who has an elder sibling enter into google spreadsheet (link to be provided in class on Tuesday) the following:

   (a) your gender and height (in cm)
   (b) gender and height of your oldest sibling

2. Each of you survey your parent(s) who have an elder sibling and enter into google spreadsheet (link to be provided in class on Tuesday) the following:

   (a) parent gender and height (in cm)
   (b) gender and height of parent's oldest sibling

3. Simulate 1000 samples from Normal$(0, 1)$ in R. Implement R-codes to do the following:

   (a) Assume that variance known to be 1. Find a 95% confidence interval for the mean μ.
   (b) Assume that variance unknown to be 1. Find a 95% confidence interval for the mean μ.

4. Implement via an R-code to perform 100 trials of question 1. Compute the following

   (a) In both cases (known and unknown variance) find the number of trials in which the intervals contain the true mean.
   (b) Plot the difference of the length of intervals observed in both cases (known and unknown variance) across trials.

5. Cracker-Free-rang-dal wants to understand the noise level of firecracker 10000 strip. Measuring the noise level of a random sample of 12 crackers, it gets the following data (in decibels).

   94.0,   98.6,   96.8,   95.5,   93.8,   95.6,   99.3,   95.8,   93.9,   90.2,   91.0,   93.9

   Find a 95% confidence interval for the average noise level of such crackers. Do not round the final answer. Enter the data with 1 decimal place.

6. Use the inbuilt `iris` data set in R. For each of the species `setosa, versicolor, virginica` find a 95% confidence interval for: `Sepal.Length`, `Sepal.Length`, `Sepal.Width`, `Petal.Length`, and `Petal.Width`