LARSON—MATH 255–HOMEWORK WORKSHEET h09
Data and Simulations

1. Create a Cocalc/Sage Cloud account.

   (a) Start the Chrome browser.

   (b) Go to `http://cocalc.com`

   (c) You should see an existing Project for our class. Click on that.

   (d) Click "New", then "Sage Worksheet", then call it **h09**.

   (e) For each problem number, label it in the SAGE cell where the work is. So for Problem 1, the first line of the cell should be `#Problem 1`.

2. (**Working with Data**) There is a file *sample_data.txt* in your CoCalc project Handouts folder. Write a program (script, code, list of commands) to:

   (a) Open that file,

   (b) Read the number-string on each line and convert/cast it to an integer (type),

   (c) Then put it in a list of integers called *my_numbers*.

3. You now have a *list* of numbers from your data file. You can use built-in Sage functions to find out statistics about this list.

   (a) How many numbers are there?

   (b) What is the biggest number?

   (c) What is the sum of these numbers?

   (d) What is the average of these numbers?

   (e) What is their median?

4. (**Another Matchbook Problem**) A pipe smoker has **three** booklets of matches in his pocket, each containing 40 matches initially. Whenever a match is required he picks one of the booklets at random, removing one match. How many matches will he expect to take before at least one of the matchbooks is empty?

   (a) Write code to simulate one experiment (keep taking matches randomly until one of the three matchbooks is empty). Keep track of how many matches you took.

   (b) Repeat this experiment **lots** of times and find the average number of matches you can take before one matchbox is empty.

Getting your homework recorded

When you are done,...

(a) Click the "Make pdf" (Adobe symbol) icon and make a pdf of this worksheet. (If CoCalc hangs, click the printer icon, then "Open", then print or make a pdf using your browser).

(b) Send me an email with an informative header like "Math 255 - h09 worksheet attached" (so that it will be properly recorded).