

This homework set involves the die experiment that you were given in class. Note that you really have to roll the die as many times as I ask, as ~60% of the die are not fair die and you will get incorrect results if you just “make up” the data [not that ANYONE would ever do such a vile act].

1. Assuming that you have a fair die and rolled it an infinite number of times, what do you expect the mean of all those roll results to be? How did you calculate this mean, and what assumptions are you making about the experiment?
2. Roll your die 50 times. Record the outcome for each roll and read them into MatLAB. Compute the mean and standard deviation of the 50 results. Compare this mean value to your “expected” result in 1, above.
3. Roll your die 50 more times and repeat step 2.
4. Roll your die 50 more times and repeat step 2.
5. Roll your die 50 more times and repeat step 2.
6. Roll your die 50 more times and repeat step 2.
7. Roll your die 50 more times and repeat step 2.
8. Roll your die 200 more times and record the data and repeat step 2.
9. With the entire collection of 500 rolls, repeat the calculation and comparison in step 2. Discuss the results of the computation of the mean from steps 2 through 9 [e.g., How does the value change? Does it ever match the expected mean of step 1?]
10. Make a “journal quality” figure of the raw data.
11. Make a “journal quality” histogram figure of the 500 outcomes.
12. Print out your MatLAB code. Include header information, notation, etc.

SAVE THESE DATA!!! WE WILL RETURN TO IT IN HWK 3.
