

# 15.075 Statistical Thinking and Data Analysis

## Computer Exercises 1

Due October 13, 2011

**Instructions:** Please solve the following exercises using MATLAB. One simple way to present your solutions is to copy all of your code and results (plots, numerical answers, etc.) into a Word document, which you should submit in class. There is no online submission.

### Exercise 1

Write a MATLAB script that calculates the mean and median of a sample of 100 uniform random numbers between 0 and 2 and the percentage of points in the sample that are greater than 1.

### Exercise 2

- Generate a vector of 1000 normal random numbers with mean 8 and variance 25.
- Calculate how many elements in the vector are greater than or equal to 9.
- What is the sample mean and standard deviation for this sample of 1000 numbers?
- What are the 25<sup>th</sup> and 75<sup>th</sup> percentiles of the normal distribution with mean 8 and variance 25?
- What are the 25<sup>th</sup> and 75<sup>th</sup> percentiles of the sample of the 1000 normal random numbers generated in part (a)?
- Find  $\Phi(0.789)$  and  $\Phi(-0.543)$ . (Remember  $\Phi$  is the cumulative density function for the standard normal distribution.)

### Exercise 3

- Generate a vector of 1000 Poisson random numbers with  $\lambda = 2$ .
- Make a histogram and a boxplot of the 1000 numbers from part (a).

### Exercise 4

Answer questions (a) – (c) from 4.36 in your textbook.

### Exercise 5

Answer questions (a) – (d) from 4.44 in your textbook.

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