EECS 861
Homework 2

1. What is the sample space for the following experiments:
    a. Balls in a bag are numbered 1 to 40. Experiment: Select a ball from the bag.
    b. Four balls are placed in a bag, balls numbered 1 & 2 are blue, balls numbered 3 & 4 are red. Experiment: Select a ball from the bag.
    c. Experiment: Pick a number X between 0 &1, then pick a number between X & 1.
    d. A packet is transmitted over a noisy link until it is received error free. Experiment: Transmit a packet and count the number of required transmissions.
2. An event on experiment a) in problem 1 is A_1 = the number on the selected ball is greater than or equal to 31. What is $P(A_1)$? State you assumptions.
3. An event on experiment b) in problem 1 is B_1 = the number on the selected ball is even and red.
    a. What is $P(B_1)$?
    b. State the definition of probability you used and associated assumptions.
4. For this problem use the data in the file http://www.ittc.ku.edu/~frost/EECS_861/EECS_861_HW_Fall_2017/Gaussian-data.csv
    a. Given this data what is P(value>0)?
    b. Given this data what is P(value<.5)?
    c. Given this data what is P(-1<value<1)?
    d. State the definition of probability and associated assumptions you used in Part a) and b).
5. Chapter 2: 2.6
6. Chapter 2: 2.10
7. Chapter 2: 2.11
8. Show that $Var[X]=E[X^2]-(E[X])^2$
9. The probability that you pass this class given you do all the homework is 0.975. The probability that you pass this class given you do not do all the homework is 0.1. The probability that you do all the homework is .8. Given you pass this course what is the probability you did all the homework.