Lab 2

1. Suppose that X is a random variable that takes the value 10 with probability 2/3 and the value -20 with probability 1/3. What is the expected value and standard deviation of X?

2. From the website `http://www.socr.ucla.edu/` go to EXPERIMENTS $\rightarrow$ COIN SAMPLE EXPERIMENT. Adjust 'n' to 4 (number of coins) and choose p=0.6. Let X be the total number of heads in each toss. Run 20 trials of this experiment and answer the following questions:

   (a) Construct the pdf for this experiment.

   (b) Compute $\mathbb{P}(X \geq 3)$ and $\mathbb{P}(X < 4)$.

   (c) Find the expected value of X.

3. From the website `http://www.socr.ucla.edu/` go to EXPERIMENTS $\rightarrow$ DICE EXPERIMENT. Read the information tab. Change 'n' to 2 (two dice) and run a sample of 20 rolls. (Note: Y represents the sum of both dice and V represents the maximum number of both dice.)

   (a) Construct the pdf of Y and the pdf of V for this experiment.

   (b) What is the probability that a random throw yields a sum of 8?

   (c) What is the probability that a random throw yields a maximum of 5?

   (d) What is the probability that a random throw yields a sum of 8 given that the maximum number was greater than or equal to 5?