This assignment is due at the beginning of the class on the due date. Unless all problems carry equal weight, the point value of each problem is shown in [ ]. To receive full credit all your answers should be carefully justified. Please see Piazza for the updated collaboration policy.

Also, please remember to double check that you have submitted the correct version of your homework onto Gradescope by re-downloading it.

1. [15 pts] Mark and Katie are having trouble deciding on whether to put a penguin or a pigeon on the new CIS 160 merchandise. To settle the debate, each of them bets on an integer between 1 and 6 and then John, the mediator, independently rolls four fair 6-sided dice. The person who correctly guesses the largest integer that appears on any of the four dice, gets the ultimate say on the 160 merchandise (for example, if the outcome of the 4 rolls is 1, 1, 3, 5, then those who bet on the number 5 would win). While throwing the dice, John asks you to compute the expected value of the winning number, $R$, so that he can make an informed bet.

2. [15 pts]

Nikhil has 200 colorless stuffed animals. To keep them all together, Nikhil ties at most one piece of string between each pair of stuffed animals. To add some pizzazz to his room, Nikhil decides to paint each of his stuffed animals with one of three colors of paint: Burgundy, Chartreuse, or Periwinkle (leaving a stuffed animal uncolored is not an option).

However, Nikhil wants to make sure that no two stuffed animals with the same color paint are connected by a string. Unsure of how to find such a configuration of colors (or even decide whether such a configuration exists), Nikhil decides to try every single possible way of painting the stuffed animals. If it takes Nikhil 7 minutes to check each painting configuration, how long will it take him to check every possible painting configuration (in minutes)? Note that Nikhil will check every painting configuration in the end, regardless of whether or not he finds a valid one before checking them all.