STAT/MA 41600
In-Class Problem Set #10: September 12, 2018

1a. Draw five cards from a deck with replacement (and reshuffling) in between the draws. Let X denote the number of cards with pictures of people (Jacks, Queens, and Kings) that appear. Find the probability mass function of X.

1b. Find the expected value of X.

2a. Draw five cards from a deck, this time *without replacement*. Let X denote the number of cards with pictures of people (Jacks, Queens, and Kings) that appear. Find the probability mass function of X.

2b. Find the expected value of X.

3. Roll three 4-sided dice. Let X denote the minimum of the values that appear.
   Use the probability mass function (problem set 7) to find the expected value of X.

4. Consider a collection of 6 bears. There is a pair of red bears consisting of one father bear and one mother bear. There is a similar green bear pair, and a similar blue bear pair. These 6 bears are all placed in a straight line, and all arrangements in such a line are equally likely. A bear pair is happy if it is sitting together. Let X denote the number of happy bear pairs.
   Use the probability mass function (problem set 8) to find the expected value of X.