The University of Portland
Donald P. Shiley School of Engineering

EGR361
Analysis of Engineering Data

HOMEWORK 4—Probability and Discrete Random Variables

<u>**Assigned:**</u>   Wednesday, May 25, 2016
<u>**Due:**</u>   Monday, June 6, 2016
<u>**Text:**</u>   3-3, 3-7
<u>**Midterm Exam:**</u>   Tuesday, June 7, 2016 (closed-book, 1 crib-sheet, calculator)

<u>**Problems:**</u>

1) Consider a standard deck of 52 playing cards used to play poker.

   a) Calculate the total number of possible hands (5 cards each) that could be dealt.
   b) What is the probability of being dealt a royal flush (of any suit)?

2) Some newspapers have a "Jumble" puzzle where the letters from certain words are listed in a scrambled order and you must unscramble the letters to solve the puzzle.

   a) How many different possible orders are there for a 7-letter scrambled word?
   b) What is the probability of a randomly selected order being the correct order?

3) Consider computer passwords with exactly 8 characters where each of the 8 characters in the password can be any one of 94 different characters (which includes upper and lower case letters, digits, punctuation marks, and special symbols).

   a) How many different passwords are there with exactly 8 characters?
   b) What is the probability of a random guess being the correct password?

4) Text, 3-96 (page 101)

5) Text, 3-99 (page 101)

<u>**Resources:**</u>

https://www.mathsisfun.com/combinatorics/combinations-permutations.html

http://www.unco.edu/nhs/mathsci/facstaff/roberson/CourseDocs/MATH%20182/Activities/Combinations%20and%20Permutations.pdf