

2016-2017 Analysis Probability Quiz 1

is probably going to ace this  
Period: \_\_\_\_\_

*\*\*Please leave your answer in terms of C, P, exponents, and factorials. No need to evaluate to a number.*

1. I'm trying to figure out a good way to display my collection of Funko Pop dolls. I own 5 different Star Wars dolls, 7 different X-men dolls, and 14 different Pokémon dolls.

- a) How many ways can I arrange them in a line on a shelf?
  - b) How many ways can I arrange them on a shelf, if I want to group them together (Star Wars together, X-men together, and Pokemon together)?
  - c) How many ways can I arrange them in a circle on my spinning circular table?
  - d) How many ways can I arrange them in a circle on my spinning circular table if I want to group them together?
  - e) I randomly pick 4 of the dolls. What is the probability that all the dolls are from Pokemon?

2. If you randomly select a 5-digit number, what is the probability that your number will contain only odd digits?

3. In how many ways can we select two distinct integers from the set  $\{1, 2, 3, \dots, 100\}$  so that the sum of the two numbers is even?

4. Given the letters of the word PREMONITION (11 letters in the word, with 2 O's, 2 N's, and 2 I's)...

a) How many ways can I rearrange the letters to create a distinct sequence of letters?

b) How many of the ways from (a) have the letters PRE together (but not necessarily in order)?

c) How many of the ways from (a) will have the letters PRE next to each other in order, and have the M appear somewhere after the PRE?