Math 184, Spring 2023
Homework 7

FOR PRACTICE ONLY, DO NOT TURN IN

(1) How many integers between 1 and 1000 are divisible by at least one of 4, 6, or 7?

(2) How many ways are there to list the letters of the following words so that no two consecutive letters are the same?
   (a) PRADEEPKHOSLA
   (b) LAJOLLA
   (c) INDIVISIBLE

(3) We have $n \geq 2$ married couples ($2n$ people in total).
   (a) How many ways can we have the $2n$ people stand in a line so that no person is standing next to their spouse?
   (b) Same as (a), but replace line by circle (any rotations of a circle are considered the same).

(4) Using an alphabet of size k, how many words of period n are there where n is:
   (a) 4
   (b) 6
   (c) 15
   (d) 30

(5) How many necklaces are there of length n using k different colors for the beads where n is:
   (a) 8
   (b) 12
   (c) 30