
CS 173 DISCUSSION 12: COUNTING

Date: November 13/14, 2019.

Problem 1. How many positive integers between 100 and 999 inclusive

1. are multiples of 7?
2. are odd?
3. have the same three decimal digits?
4. are not divisible by 4?
5. are divisible by 3 and 4?

Problem 2. A circular r -permutation of n people is a seating of r of these n people around a circular table, where seatings are considered to be the same if they can be obtained from each other by rotating the table. How many circular r -permutation of n people are there?

Problem 3. Call a positive integer *monotonous* if it is a one-digit number or its digits, when read from left to right, for either a strictly increasing or a strictly decreasing sequence. For example 3, 23578, and 987620 are monotonous, but 88, 7434, 7345, and 23557 are not. How many monotonous positive integers are there?