

TOPIC 8: Combinatorics I (Basics) (Homework Problems):

1)

A jar has 10 red candies and 10 blue candies. Terry picks two candies at random, then Mary picks two of the remaining candies at random. What is the probability that they get the same color combination ?

2)

How many ways are there to write 2009 as the sum of three positive odd integers?

3)

a) How many positive integers have exactly two proper divisors each of which is less than 50? A proper divisor is a divisor other than the number itself.

b) How many positive integers have exactly three proper divisors each of which is less than 50?

4)

Consider a circular row of n seats. A child sits on each seat. Each child may move by at most one seat. Find the number of ways b_n they can rearrange.