

Exercises

Exercise 1. In a regular deck of 52 cards (two red and two black suits; 9 number and 4 picture cards in each suit), how many cards are:

- (a) red?
- (b) numbers?
- (c) red and numbers?
- (d) red or numbers (or both)?
- (e) either red or numbers (but not both)?

The goal is to use the techniques from the lecture instead of direct counting.

Exercise 2. A regular 6-sided die is thrown 5 times and the results are summed. How many ways to get an even number as the total?

Exercise 3. A wedding photographer is taking pictures of a party consisting of the bride, the groom, the bride's parents and the groom's parents (six people in total). How many ways to arrange the group so that the newlyweds are:

- (a) standing together?
- (b) separated by at least one other person?

Exercise 4. How many ways for a club with n members to elect an m -member board where one of the board members is designated as the president and the rest are vice-presidents?

Exercise 5. How many ways to distribute m identical candies among n kids so that each kid gets at least one candy?