

### Probability Practice Problems.

- (1) Seven car accidents happened in a week. What is the probability that they all happened the same day?
- (2) Two distinct numbers are chosen from  $\{1, 2, \dots, 100\}$ . What is the probability that the sum of the numbers is divisible by 3? What if the set of numbers is changed to  $\{1, 2, \dots, n\}$ ?
- (3) One of ten keys opens a door. What is the probability that the first key tried opens the door? Second key?  $i$ th key? Show that the sum of all probabilities for the individual keys is 1.
- (4) There are 10 pairs of shoes in a closet. If you select 8 shoes at random, what is the probability that no matching pair is chosen?
- (5) You have a red box, a green box and a yellow box, and you have 10 identical balls of each color. What is the probability that a distribution of balls to boxes has no ball in a box of the same color. What is the probability that no ball goes in a box of the same color and (in addition) every box must get a ball?
- (6) Rank the 5-card poker hands according to their likelihood. (One pair, two pair, three of a kind, full house, straight, flush, straight flush, royal flush.)