

Worksheet 6.5 and 7.1

Max's Lecture
MATH 55

July 18, 2019

Exercise A (from previous worksheet. Compute the following:

1. The number of different strings that can be made from rearranging the 8 letters in AARDVARK.
2. There are 5 different flavors of donuts. How many ways can I make an order of 8 donuts?
3. How many 8-letter strings can I make using the letters A,R,D,V,K
4. How many ways can you put r indistinguishable balls into n distinguishable boxes?

Exercise B (Various problems from 7.1). Compute the following probabilities:

1. What is the probability that the sum of the numbers on two dice is even when they are rolled?
2. What is the probability that a 5-card poker hand contains at least one ace?
3. What is the probability that a positive integer not exceeding 100 is divisible by 3?
4. What is the probability that a positive integer not exceeding 100 selected at random is divisible by 5 or 7?

Exercise C: Monty Hall Problem. Suppose you are game show contestant. You have the chance to win a large prize. You are asked to select one of three doors to open, the prize is behind one of the doors. The procedure is as follows: You select a door. Once you do so, the game show host, who knows what is behind each door, opens one of the other doors and shows you there is nothing inside. Then he asks you whether you would like to switch doors. Should you keep your original choice, switch doors, or does it not matter?

Exercise D: Example 2 in 7.3. Suppose that a die is biased so that 3 appears twice as often as each other number but all other options are equally likely. What is the probability that an odd number appears when we roll the dice?