



Discrete Structures

CS 241 - 001

Department of Physical and Computer Sciences

Medgar Evers College

Workshop Lab 7: Probability

Name: _____

Name: _____

Name: _____

Name: _____

Directions: Write or type solutions on a separate paper(s) and attach this paper to the front of your work.

1. A survey of a 100 people yielded

Blood Types

	A	B	AB	O
Male	9	8	7	16
Female	8	9	23	20

- (a) If a person is selected at random, what is the probability that the person is female?.
 - (b) If a person is selected at random, what is the probability that the person is either A or O?
 - (c) If a person is selected at random, what is the probability that the person is male given that the person is AB?
2. From a standard 52-card deck, if a hand consists of 4 cards
 - (a) what is the probability of getting a pair?
 - (b) what is the probability of getting three of a kind?
 - (c) what is the probability of getting two pairs?
 3. If a jar contains 5 red marbles, 4 green marbles, and 3 blue marbles,
 - (a) what is the probability of drawing three red marbles with replacement?

- (b) what is the probability of drawing three green marbles without replacement?
 - (c) what is the probability of drawing a red, green and blue marble in that order without replacement?
4. A test for a virus is positive 98% of the time whenever the person has the virus, 10% of the time whenever the person does not have the virus. If the virus infects 15% of the population,
- (a) what is the probability of being tested positive?
 - (b) what is the probability of being infected given that the test is positive?
 - (c) what is the probability of not being infected given that the test is negative?
5. If a loaded coin with a heads to tails ratio of 3 : 2, is tossed 5 times
- (a) what is the probability of getting all heads?
 - (b) what is the probability of getting at least 3 heads?
 - (c) what is the probability of getting at most 1 head?

Extra Credit A dice game that is played with two dice, scores a player as follows

$$g(n, m) = \begin{cases} -(n + m) & \text{if } |n - m| < 2 \\ n + m & \text{if } |n - m| \geq 2 \end{cases}$$

where n and m are the faces of the dice after a roll. Find the expected value of the game and state if the game is in favor of the player.