DATA 152 HW2

NAME: _____

Due February 8, 2023 @ 11:59pm

INSTRUCTIONS: Complete the following questions on your own paper, clearly identifying your final answer on questions requiring multiple steps. You may use R to perform the algebraic operations, but you must show how you arrived to your answer. No credit will be given if you don't show your work. (It also makes it easier to receive partial credit.)

QUESTION 1 (20)

A commuter must pass through 5 traffic lights on the way to work and will have to stop at each one that is red. She estimates the probability model for the # of red lights she hits to be as follows:

```
tibble(numberOfReds=0:5,probs=c(0.06,0.16,0.33,0.26,0.16,0.03))
```

```
## # A tibble: 6 x 2
##   numberOfReds probs
##          <int> <dbl>
## 1            0  0.06
## 2            1  0.16
## 3            2  0.33
## 4            3  0.26
## 5            4  0.16
## 6            5  0.03
```

1A (10)

How many red lights should she expect to hit each day?

1B (10)

What is the standard deviation?

QUESTION 2 (30)

A consumer organization inspecting new cars found that many had appearance defects (dents, scratches, paint chips, etc). While none had more than 3 of these defects, 7% had three, 11% had two, and 21% had one defect.

2A (10)

What is the probability model?

2B (10)

What is the expected # of appearance defects for a new car?

2C (10)

What is the standard deviation?

QUESTION 3 (30)

In a multiple choice exam, there are 5 questions and 4 choices for each questions (a,b,c,d). James has not studied for this exam and decides to randomly guess the answers. What is the probability that...

3A (10)

the first question he gets right is the 5th question?

3B (10)

he gets all of the questions right?

3C (10)

he gets at least one question right?

QUESTION 4 (10)

The game of roulette involves spinning a wheel with 38 slots: 18 red, 18 black, and 2 green. A ball is spun onto the wheel and will eventually land in a slot, where each slot has an equal chance of capturing the ball .

4A (5)

You watch a roulette wheel spin 3 consecutive times and the ball lands on a red slot each time. What is the probability that the ball will land on a red slot on the next spin?

4B (5)

You watch a roulette wheel spin 300 consecutive times, and the ball lands on a red slot each time. What is the probability that the ball will land on a red slot the next spin?

"QUESTION" 5 (10)

Set up a 30-minute appointment with Dr. Gore to discuss your group project's topic. Your appointment date should be before 2/16 (Milestone #2). Subject line: "DATA152-01 LASTNAME1, LASTNAME2, LASTNAME3 - Milestone #2" if you're in section 1 and "DATA152-02 LASTNAME1, LASTNAME2, LASTNAME3 - Milestone #2" if you're in section 2.