**Pop Quiz #2**

MAT 120

June 7th 2018

Instructions: Break up into groups of two or three (*NO MORE THAN THREE*!). You are allowed to work together, but everyone should turn in a separate sheet. You may use your notes or text. Be sure to show all of your work. *NOTE: THIS WILL BE GRADED AS QUIZ AND INCLUDED IN THE QUIZ PORTION OF YOUR OVERALL GRADE.*

1. *( 3 points)* A car full of you and four friends decide to go to the McDonald's Drive-Thru. Three of your friends order a Double Cheeseburger each while you and the other person order a delectable Spicy McChicken each. All of your orders are randomly mixed in the bag you are given at the window.

a. If one of you randomly select an order from the bag, what is the sample space for this experiment?

b. If one of the three friends who ordered a double cheeseburger randomly selects a sandwich from the bag first, what is the probability he or she will select the correct order?

c. If one of the people who ordered a McChicken randomly selects a sandwich from the bag first, what is the probability he or she will select the correct one?

2. ( 10  *points* )

**Part 1.** *(6 points / 10 points)* As a young romantic, you can't decide if you should purchase red or white flower for your beloved. Furthermore, you can't decide whether it should be a rose or an orchid. In a fit of indecision, you purchase the following from the florist,

{ *Red Orchid, Red Rose, White Orchid, White Rose* }

And then consult your I-Ching that tells you the best way to pick a flower is to let the universe decide. You put all of the flowers in a box and select one at random.

a. What is the probability of selecting a red flower?

b. What is the probability of selecting a rose?

c. What is the probability of selecting a red rose?

d. What is the probability of selecting a rose or red flower?

e. Given that you have selected a red flower, what is the probability of selecting a rose?

i. Is the event of selecting a red flower independent of the event of selecting a rose?

ii. Are the events of red flower and rose mutually exclusive?

**Part 2.** (4 *points / 10 points*) The florist convinces you a red tulip is definitely the way to go. You decide to buy one and add it to the mix. The box of flowers now contains,

{ *Red Orchid, Red Rose, White Orchid, White Rose, Red Tulip*}

You perform the same experiment of randomly selecting a flower from the box.

a. What is the probability of selecting a rose?

b. Given that you have selected a red flower, what is the probability of selecting a rose?

i. Is the event of selecting a red flower independent of the event of selecting a rose?

ii. Are the events of red flower and rose mutually exclusive?

3. *(10 points)* You conduct a survey of FRCC students at Westminster regarding their favorite Star Wars trilogy and tally the results in the following table,

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Original Trilogy** | **Prequel Trilogy** | **Sequel Trilogy** | **Total** |
| **Male** | 205 | 52 | 111 |  |
| **Female** | 156 | 63 | 235 |  |
| **Total** |  |  |  |  |

a. Fill in the *Total* columns and rows appropriately.

b. What is the probability of a randomly selected student preferring the original trilogy?

c. What is the probability of a randomly selected student preferring either the sequel trilogy or the original trilogy?

d. What is the probability of female not liking the original trilogy?

e. What is the probability of a male not liking the prequel trilogy?

f. Given that a randomly selected student is a male, what is the probability of him liking the prequel trilogy?

g. Given that a randomly selected student is female, what is the probability of her liking the prequel trilogy?

h. Given that a randomly selected student liked the prequel trilogy, what is the probability of that student being male?

i. Given that a randomly selected student liked the prequel trilogy, what is the probability of the student being female?

e. Are males or females more likely to prefer the prequel trilogy?

**EXTRA CREDIT** *(2 points)*

Given that a randomly selected student does not prefer the sequel trilogy, what is the probability of them being male or liking the original trilogy?