Name:			Section: <u>MAT098/181C-</u>			
	1	MAT09	8/181C EXAM #	² 2 (FORM C)		
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pe ojj provide		ring the e	exam. Show all work	on the test or on	the work paper	
		. 10 1		T 1 / T /	, DI :1	
-	elow is a table of F en down by gender		(A, B, or C) from Profes	ssor Jackson's Intro	to Philosophy course	
DION	en down by gender	<u>. (20 points)</u> <u>A</u>	<u>B</u>	<u>C</u>	<u>Total</u>	
	Male	10	13	18	41	
	Female	13	19	15	47	
	Total	23	32	33	88	
i. ii.	Then write your What is the probal Marginal Probabil Calculate the prob	answer as a pility that a ity pability.	conditional or joint prob fraction and as a percen a randomly selected st Conditional Probability dent received an "A", a	tudent received a Joint Pro	n "A"? (5 pts) bbability nale student? (5 pts)	
c.) F	ind the probabilit	y a studen	t is female, given they	received a "C" in	the course? (5 pts)	
i. ii.	Marginal Probabil Calculate the prob	-	Conditional Probability	y Joint Pro	bability	
in the	e course? (5 pts)	-	a randomly selected s			
i. ii.	Marginal Probabil Calculate the prob	-	Conditional Probability	y Joint Pro	bability	

2.) Below is a table of the hair color and eye color of the students at a local elementary school. *(15 points)*

	Black hair	Brown hair	Red hair	Blonde hair	Total
Brown eyes	28	48	9	3	
Blue eyes	8	32	7	29	
Hazel eyes	6	12	2	5	
Green eyes	3	7	6	5	
Total					

(**You may write probabilities as fractions or percentages**)

- a.) Fill in the column and row totals in the above graph (2pts)
- b.) What is the probability a student has Blue eyes AND Blonde hair? (4 pts)

c.) What is the probability a student has Hazel eyes OR Red hair? (4 pts)

- d.) Which statement below is more likely: (5 pts)
 - 1. If I choose a student with Blue eyes, they will have Brown hair
 - 2. If I choose a student with Hazel eyes, they will have Brown hair.

Explain why you chose your answer.

3.) A local weatherman has predicted that is will rain on either 0, 1, 2 or 3 days next week (x). The likelihood of how many days it will rain is given in the probability distribution below. (21 points)

x	P(x)	xP(x)	$x - \mu$	$(x-\mu)^2$	$(x-\mu)^2 P(x)$
0	0.15				
1	0.25				
2	0.40				
3	0.20				

- a.) What is the probability that it will not rain at all next week? (3 pts)
- b.) Find the probability that it will rain on at least 1 day next week? (3 pts)
- c.) Find the probability that it will rain no more than 2 days next week? (3 pts)
- d.) What is the expected value (mean) for the total number of days it will rain next week? (6 pts)
- e.) What is the Standard Deviation for the total number of days it will rain next week? (6 pts)

4.) A wedding menu has a choice of soup or salad for an appetizer and for the main course the choices are either chicken, beef or fish. (12 points)
a.) Draw a tree diagram and specifically list all the possible combinations you have for the appetizer and main course. (8 pts)
b.) If the next night you went to a restaurant that had 6 choices for appetizer, 12 choices for the main course, and 4 choices for dessert, how many possible combinations are there? (4 pts) (**Do not draw a tree diagram, just find the total number of possible meals**)
5.) For the questions below state which formula you are using and show the work answering each question. (10 points)
a.) The BHCC basketball team needs to name a captain and an assistant captain. If there are 12 members on the team, how many different possibilities are there for these positions?
b.) William is hosting a dinner party and would like to invite some of his friends. He has 8 friends he would like to invite but only has enough seats for 5 of them. How many different groups of 5 people could he invite over?

6.) A study done at BHCC has shown that for all the students who pass a developmental
math course, only 85% of them register for their next math course in the following
semester. (8 points)

If we took a survey of 10 students who passed developmental math this semester:

a.) Identify the following: (3 pts)

n =

p =

q =

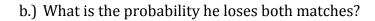
b.) Find the probability that *exactly* 7 students register for math next semester. (5 pts)

7.) Mary's first exam for her Psycholo Multiple Choice questions with 4 answis going to randomly guess on every q	wer choice	s each. Since Mary d	
a.) Find the probability that Mary get	s <u>at least</u> 8	of the 10 True/Fals	e questions correct.
**Begin by identifying the following:	n =	p =	q =
b.) If the Multiple Choice questions ha probability that she gets <i>less than</i> 2 co		es for answers instea	d of 4, what is the
**Begin by identifying the following:	n =	p =	q =

(EXTRA CREDIT)

Mike is going to play two tennis matches against two different opponents. The probability
that he wins his first match is 0.80. But the probability that he wins his second match
against a tougher opponent is only 0.25.

a.j	What is the probability he wins both matches?



c.) What is the probability he wins exactly 1 of the 2 matches?

Formulas

Mean for discrete probability distribution:

$$\mu = \sum [x \cdot P(x)]$$

Standard Deviation for a discrete probability distribution:

$$\sigma = \sqrt{\Sigma[(x - \mu)^2 \cdot P(x)]}$$
 OR $\sigma = \sqrt{\Sigma[x^2 \cdot P(x)] - \mu^2}$

Factorial:

$$n! = n \cdot (n-1) \cdots 2 \cdot 1$$

Permutation:

$$_{n}P_{r} = \frac{n!}{(n-r)!}$$

Combination:

$$_{n}C_{r} = \frac{n!}{r! \cdot (n-r)!}$$

Binomial Probability:

$$P(r) = {}_{n}C_{r} \cdot p^{r} \cdot q^{(n-r)}$$

Mean & Standard Deviation for *binomial* probability distribution:

$$\mu = np$$

$$\sigma = \sqrt{npq}$$