

Name _____
Mr. Schlansky

Date _____
Algebra

Two Way Frequency Tables

1.	Tacos	Pizza	Total
Male			
Female			
Total			

Find all of the joint probabilities in the table.

$P(\text{male} \cap \text{tacos})$ $P(\text{male} \cap \text{pizza})$ $P(\text{female} \cap \text{tacos})$ $P(\text{female} \cap \text{pizza})$

Find all of the marginal probabilities in the table.

$P(\text{male})$ $P(\text{female})$ $P(\text{tacos})$ $P(\text{pizza})$

Find all of the conditional probabilities in the table.

$P(\text{male} / \text{tacos})$ $P(\text{female} / \text{tacos})$ $P(\text{male} / \text{pizza})$ $P(\text{female} / \text{pizza})$

$P(\text{tacos} / \text{male})$ $P(\text{pizza} / \text{male})$ $P(\text{tacos} / \text{female})$ $P(\text{pizza} / \text{female})$

2.	Sports	No Sports	Total
Music			
No Music			
Total			

What is the probability that a student chosen at random:

Plays music and sports

Plays music but not sports

Plays sports but not music

Does not play sports or music

Plays sports

Does not play sports

Plays music

Does not play music

What is the probability that a student who plays music:

Plays sports

Does not play sports

What is the probability that a student who does not play music:

Plays sports

Does not play sports

What is the probability that a student who plays sports:

Plays music

Does not play music

What is the probability that a student who does not play sports:

Plays music

Does not play music

One-hundred employees of a company were asked their opinion on paying high salaries to the CEO. Their responses are summarized in the following contingency table.

	In Favor	Against
Male	15	45
Female	4	36

3. Find each of the joint probabilities.

$P(\text{male and in favor})$

$P(\text{female and in favor})$

$P(\text{male and against})$

$P(\text{female and against})$

4. Find each of the marginal probabilities.

$P(\text{male})$

$P(\text{in favor})$

$P(\text{female})$

$P(\text{against})$

5. Find each of the conditional probabilities:

$P(\text{male/in favor})$

$P(\text{male/against})$

$P(\text{in favor/male})$

$P(\text{against/male})$

$P(\text{female/in favor})$

$P(\text{female/against})$

$P(\text{in favor/female})$

$P(\text{against/female})$

The following table gives the distribution of grades for three professors for a few randomly selected classes that each of them taught during the past few years.

	Miller	Smith	Moore
A	18	36	20
B	25	44	15
C	85	73	82
D&F	17	12	8

Round all decimals to the *nearest thousandth*.

6. What is the probability of receiving a B and having Professor Moore?	7. What is the probability of receiving an A?
8. What is the probability of having Professor Smith?	9. What is the probability of receiving a C given that the student had Professor Miller?
10. If a student received a D or F, what is the probability that they had Professor Smith?	11. What percent of Professor Moore's students received a C?
12. With which professor does a student have the best chance of receiving a grade of A? Justify your answer.	

13. A statistics class surveyed some students during one lunch period to obtain opinions about television programming preferences. The results of the survey are summarized in the table below.

	Comedy	Drama
Male	70	35
Female	48	42

What is the probability that a student is male and prefers comedy?

What is the probability that a male student would prefer comedy?

What is the probability that a student is male?

What is the probability that a student is female given that they like drama?

14. A public opinion poll was taken to explore the relationship between age and support for a candidate in an election. The results of the poll are summarized in the table below.

Age	For	Against	No Opinion
21–40	30	12	8
41–60	20	40	15
Over 60	25	35	15

What is the probability that someone has no opinion?

What is the probability that someone is over 60 and against?

What is the probability that someone is for the candidate given that they are between 21-40?

15. The set of data in the table below shows the results of a survey on the number of messages that people of different ages text on their cell phones each month.

Age Group	Text Messages per Month		
	0–10	11–50	Over 50
15–18	4	37	68
19–22	6	25	87
23–60	25	47	157

What is the probability that someone texts 0-10 messages per month?

What is the probability someone texts over 50 messages per month and are 23-60?

What is the probability that someone texts over 50 messages per month given that the person is between the ages of 23 and 60?

16. A radio station did a survey to determine what kind of music to play by taking a sample of middle school, high school, and college students. They were asked which of three different types of music they prefer on the radio: hip-hop, alternative, or classic rock. The results are summarized in the table below.

	Hip-Hop	Alternative	Classic Rock
Middle School	28	18	4
High School	22	22	6
College	16	20	14

What percentage of college students prefer classic rock?

What percentage of the students that prefer classic rock are college students?