1) 2 things "and": total total

2) 1 thing: total total

3) 2 things (given that): condition (last)

4) 2 things (no keywords): condition (first)

Name Schlansky Date _____
Mr. Schlansky Algebra

Two Way Probability Tables

1.	Tacos	Pizza	Total
Male	6	7	13
Female	5	9	14
Total	11	16	27

Data will vary by class

Find the following probabilities

Circumstance 1

Male and tacos $\frac{6}{27}$ Male and pizza $\frac{7}{27}$ Female and tacos $\frac{5}{27}$ Female and pizza $\frac{9}{27}$

Circumstance 2

Male $\frac{13}{27}$ Female $\frac{14}{27}$ Tacos $\frac{11}{27}$ Pizza $\frac{16}{27}$

Circumstance 3

Male given that tacos $\frac{6}{11}$ Female given that pizza $\frac{9}{16}$

Pizza given that male $\frac{7}{13}$ Tacos given that female $\frac{5}{14}$

Circumstance 4

The probability that a female likes pizza $\frac{9}{14}$ The probability a male likes tacos $\frac{6}{13}$

The probability a pizza fan is a female $\frac{9}{16}$ The probability a taco fan is male $\frac{6}{11}$

2.	Sports	No Sports	Total
Music	8	7	15
No Music	4	2	6
Total	12	9	21

Data will vary by class

a) Find the probability that someone plays music given that they play sports. C3

$\frac{8}{12}$

b) Find the probability that someone does not play music. C2

$\frac{6}{21}$

c) Find the probability that a musician does not play sports. C4

$\frac{7}{15}$

d) Find the probability that someone does not play music and does not play sports. C1

$\frac{2}{21}$

e) Find the probability that someone plays sports. C2

$\frac{12}{21}$

f) Find the probability that an athlete does not play music. C4

$\frac{4}{12}$

g) Find the probability that someone plays music given that they do not play sports. C3

$\frac{7}{9}$

h) If someone plays music, find the probability that they do not play sports. C4

$\frac{7}{15}$

3. 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. Express the following probabilities as fractions and rounded to the nearest percent.

	In Favor	Against	
Male	15	45	60
Female	4	36	40
	19	81	100

a) Find the probability that they are male and in favor

$$\frac{15}{100}$$

b) Find the probability that they are female one thing

$$\frac{40}{100}$$

c) Find the probability that a male is in favor

$$\frac{15}{60}$$

d) Find the probability that they are against given that they are female

$$\frac{36}{40}$$

e) Find the probability that someone is in favor is a male

$$\frac{15}{19}$$

f) Find the probability that someone is female and against

$$\frac{36}{100}$$

g) Find the probability that a female is in favor

$$\frac{4}{40}$$

h) Find the probability that someone is male given that they are in favor

$$\frac{15}{19}$$

4 11. 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.

Programming Preferences

	Comedy	Drama	
Male	70	35	105
Female	48	42	90
	118	77	195

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

$\frac{70}{195}$

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

$\frac{70}{105}$

What is the probability that a student is male? I think

$\frac{105}{195}$

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

$\frac{42}{77}$

5 12. 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	50
41–60	20	40	15	75
Over 60	25	35	15	75
	75	87	38	200

What is the probability that someone has no opinion? I think

$\frac{38}{200}$

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

$\frac{35}{200}$

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

$\frac{30}{50}$

6 14. A survey about television-viewing preferences was given to randomly selected freshmen and seniors at Fairport High School. The results are shown in the table below.

	Favorite Type of Program			
	Sports	**Reality Show**	**Comedy Series**	
Senior	83	110	67	260
Freshmen	119	103	54	276
	202	213	121	536

A student response is selected at random from the results. State the *exact* probability the student response is from a freshman, given the student prefers to watch reality shows on television.

$\frac{103}{213}$

7 15. At Berkeley Central High School, a survey was conducted to see if students preferred cheeseburgers, pizza, or hot dogs for lunch. The results of this survey are shown in the table below.

	Cheeseburgers	**Pizza**	**Hot Dogs**	
Females	32	44	24	100
Males	36	30	34	100
	68	74	58	200

Based on this survey, what percent of the students preferred pizza?

1) 30
2) 37
3) 44
4) 74

$\frac{74}{200} = 37\%$

8 16. A middle school conducted a survey of students to determine if they spent more of their time playing games or watching videos on their tablets. The results are shown in the table below.

	Playing Games	**Watching Videos**	**Total**
Boys	138	46	184
Girls	54	142	196
Total	192	188	380

Of the students who spent more time playing games on their tablets, approximately what percent were boys?

1) 41
2) 56
3) 72
4) 75

$\frac{138}{192} = 71.875\%$

9 17. A survey was given to 12th-grade students of West High School to determine the location for the senior class trip. The results are shown in the table below.

	Niagara Falls	Darien Lake	New York City	
Boys	56	74	103	233
Girls	71	92	88	251
	127	166	191	484

To the *nearest percent*, what percent of the boys chose Niagara Falls?

1) 12
2) 24
3) 44
4) 56

$\frac{56}{233} \approx 24\%$

10 18. Jenna took a survey of her senior class to see whether they preferred pizza or burgers. The results are summarized in the table below.

	Pizza	Burgers	
Male	23	42	65
Female	31	26	57
	54	68	122

Of the people who preferred burgers, approximately what percentage were female?

1) 21.3
2) 38.2
3) 45.6
4) 61.9

$\frac{26}{68} \approx 38.2$

11 19. Students were asked to name their favorite sport from a list of basketball, soccer, or tennis. The results are shown in the table below.

	Basketball	Soccer	Tennis	
Girls	42	58	20	120
Boys	84	41	5	130
	126	99	25	250

What percentage of the students chose soccer as their favorite sport?

1) 39.6%
2) 41.4%
3) 50.4%
4) 58.6%

$\frac{99}{250} = 39.6\%$