5.1 Frequency Tables

PRACTICE

Use the survey results to make a two table. Include marginal frequency.

1. Bob asked students what grade they got on a math test and did they study for the math test?

   Students with an A: 17 studied and 4 did not

   Students with a B: 14 studied and 8 did not

   Students with a C: 9 studied and 13 did not

   Students with a D: 2 studied and 6 did not

   Students with a F: 1studied and 3 did not

Grade on Math Test

Study	A	B	C	D	F	Total
YES	17	14	9	2	1	43
NO	4	8	13	6	3	34
Total	21	22	22	8	4	77

2. Sarah inventoried the cars on a dealership's lot.

   Hondas: 14 new and 12 used

   Fords: 12 new and 4 used

   Chryslers: 8 new and 4 used

   BMW: 12 new and 1 used

Type of Car

Condition of Car	Honda	Ford	Chrysler	BMW	Total
New	14	12	8	12	46
Used	12	4	4	1	21
Total	26	16	12	13	67

Fill in the missing cells of the two way frequency tables.

3.

Favorite Cafeteria Food

People	Pizza	Taco	Burger	Total
Teachers	12	32	21	65
Students	120	66	34	220
Total	132	98	55	285

4.

Color of hair

Hand Preference	Brown	Blonde	Red	Total
Left	30	16	4	50
Right	110	118	2	230
Either	10	8	2	20
Total	150	142	8	300

Convert the two way frequency tables from above into relative frequency tables.

5.

Favorite Cafeteria Food

People	Pizza	Taco	Burger	Total
Teachers	0.042	0.112	0.073	0.228
Students	0.421	0.231	0.119	0.771
Total	0.463	0.343	0.192	1

a. How many people were surveyed?

285 people

b. What percent prefer Tacos?

34.3%

c. What cafeteria food do students prefer?

Pizza 42.1%

6.

Color of hair

Hand Preference	Brown	Blonde	Red	Total
Left	0.1	0.053	0.013	0.166
Right	0.366	0.393	0.006	0.766
Either	0.033	0.026	0.006	0.066
Total	0.5	0.473	0.026	1

a. What percent are left handed? 16.6%

b. What hand do Blondes prefer?

Right 39.3%

Use the two way frequency table to answer the following.

7.

GENDER

MUSIC TYPE	Male	Female	Total
Punk	24	10	34
Techno	4	1	5
Classic	18	12	30
Metal	9	8	17
Total	55	31	86

a. What type of music do females like most? Classic $\frac{12}{31} = 38.7\%$

b. What is the most popular type of music among men and women? Punk $\frac{34}{86} = 39.5\%$

c. What is the least favorite music for men? Techno $\frac{4}{55} = 7.2\%$

d. How many people were surveyed? 86 people

e. For which gender was the response greater? Male 55 to 31

f. What percent of the participants were female? $\frac{31}{86} = 36\%$

Finish converting the two way frequency table above into a conditional frequency table described below.

8. Given a person's gender find the conditional relative frequency of the person's music type.

Music Type	Gender: Male	Gender: Female	Gender: Total
Punk	$\frac{24}{55}$ = .436	$\frac{10}{31}$ = .322	$\frac{34}{86}$ = .395
Techno	$\frac{4}{55}$ = .072	$\frac{1}{31}$ = .032	$\frac{5}{86}$ = .058
Classic	$\frac{18}{55}$ = .327	$\frac{12}{31}$ = .387	$\frac{30}{86}$ = .348
Metal	$\frac{9}{55}$ = .163	$\frac{8}{31}$ = .258	$\frac{17}{86}$ = .197
Total	$\frac{55}{55}$ = 1	$\frac{31}{31}$ = 1	$\frac{86}{86}$ = 1

a. What percent of Male's prefer Metal?

$\frac{9}{55}$ = 16.3%

b. What percent of Female's prefer Punk?

$\frac{10}{31}$ = 32.2%

9. Given a person's music type find the conditional relative frequency of the person's gender.

Music Type	Gender: Male	Gender: Female	Gender: Total
Punk	$\frac{24}{34}$ = .705	$\frac{10}{34}$ = .294	$\frac{34}{34}$ = 1
Techno	$\frac{4}{5}$ = .8	$\frac{1}{5}$ = 0.2	$\frac{5}{5}$ = 1
Classic	$\frac{18}{30}$ = .6	$\frac{12}{30}$ = .4	$\frac{30}{30}$ = 1
Metal	$\frac{9}{17}$ = .529	$\frac{8}{17}$ = .47	$\frac{17}{17}$ = 1
Total	$\frac{55}{86}$ = .639	$\frac{17}{86}$ = .36	$\frac{86}{86}$ = 1

a. Given a person prefers Punk music, what percent are Male? 70.5%

b. If you randomly selected a person that prefers Classic music, what is the probability the person is female? $\frac{12}{30}$ = 0.4

10. Is there an association between gender and music preference? Construct a viable argument to support.

	Male	Female
Punk	$\frac{24}{34}$ = .705	$\frac{17}{34}$ = .294
Techno	$\frac{4}{5}$ = .8	$\frac{1}{5}$ = 0.2
Classic	$\frac{18}{30}$ = .6	$\frac{12}{30}$ = .4
Metal	$\frac{9}{17}$ = .529	$\frac{8}{17}$ = .47

Yes,

People surveyed that prefer Punk were predominantly Male. 70.5% to 29.4%

People surveyed that prefer Techno were predominantly Male. 80% to 20%

Both Male and Female had very few that prefered Techno. 7.2% and 3.2%

Use the two way frequency table to answer the following.

11. A school newspaper surveyed the student body for an article about club membership. The table below shows the students' club membership by grade level.

Grade Level	# of clubs involved in: 0 clubs	1 club	2 clubs	3 or more	total
9th	52	16	8	2	78
10th	34	26	12	4	76
11th	28	21	14	9	82
12th	22	28	16	16	82
total	136	91	50	31	318

a. What percent of freshmen are in 1 or more clubs?

16 + 8 + 2 = 26 out of 78 $\frac{26}{78}$ = 33.3̄%

b. What percent of the school body is involved in 2 clubs?

50 out of 318 $\frac{50}{318}$ = 15.72%

c. Given a student is involved in 3 or more clubs, what percent are in 12th grade?

There are 31 students in 3 or more clubs

16 of them are 12th grade $\frac{16}{31}$ = 51.61%

Solve the following.

12. $4y - 2(y+1) = 10$

$4y - 2y - 2 = 10$

$2y - 2 = 10$

$+2 \quad +2$

$\frac{2y}{2} = \frac{12}{2}$

$y = 6$

13. $\frac{3x}{3x}\cdot\frac{10}{6} = 2 \cdot 3x$

$\frac{10}{6} = \frac{6x}{6}$

$x = \frac{10}{6} = \frac{5}{3} = 1.6\bar{}$

14. $2x - 3y = 12$, $x = y + 1$ Substitution!

$2(y+1) - 3y = 12$

$2y + 2 - 3y = 12$

$2 - y = 12$

$-2 \quad -2$

$-y = 10$

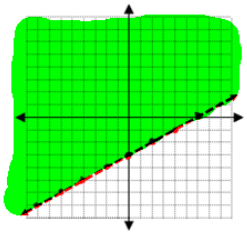
$-1 \quad -1$

$y = -10$

Graph the following.

15. $y > \frac{x}{2} - 3$

$y > \frac{1}{2}x - 3$



16. $2x - 3y = 12$, $x = 3$

$2x - 3y = 12$

$-2x \quad -2x$

$\frac{-3y}{-3} = \frac{12}{-3} - \frac{2x}{-3}$

$y = -4 + \frac{2}{3}x$