GSE Algebra I

Name _____

Bivariate Data Task

A. A survey of 20 adults asked "which of the following is your favorite type of car: SUV, Sedan, or Truck?" Each adult's gender and response is recorded in the table below.

TYPE OF CAR	GENDER
SEDAN	FEMALE
SUV	FEMALE
TRUCK	MALE
SUV	FEMALE
SUV	FEMALE
SEDAN	FEMALE
SUV	MALE
TRUCK	MALE
TRUCK	FEMALE
SEDAN	MALE
SUV	MALE
SEDAN	FEMALE
TRUCK	MALE
SUV	FEMALE
SUV	FEMALE
SEDAN	MALE
SUV	MALE
SEDAN	FEMALE
TRUCK	MALE
SEDAN	FEMALE

A. Fill in this frequency table with numbers of responses.

	Sedan	SUV	Truck	TOTAL
Male	2	3	4	9
Female	5	5	1	11
TOTAL	7	8	5	20

B. Convert the responses to a relative frequency table

	Sedan	SUV	Truck	TOTAL
Male	10%	15%	20%	45%
Female	25%	25%	5%	55%
TOTAL	35%	40%	25%	100%

1. How many males drove SUVs? 3

2. What percent of people were female? What kind of frequency is that? marginal

   55%

3. What percent of the male drivers drove SUVs? What kind of frequency is that? conditional

   $\frac{15\%}{45\%}$ or $\frac{3}{9} = 33.3\%$

4. What percent of people were truck-driving males? What kind of frequency is that? joint

   20%

5. What percent of the sedan drivers were females? What kind of frequency is that? conditional

   $\frac{25\%}{35\%}$ or $\frac{5}{7} = 71.4\%$

B. A survey of 18 people asked "of Spring, Summer, Fall, and Winter, which is your favorite season?" Each person's occupation and response is listed below.

SEASON	OCCUPATION
SPRING	ARCHITECT
SUMMER	TEACHER
WINTER	PHARMACIST
SPRING	ARCHITECT
FALL	PHARMICIST
SUMMER	TEACHER
SUMMER	TEACHER
SPRING	ARCHITECT
WINTER	TEACHER
SUMMER	ARCHITECT
FALL	PHARMACIST
SPRING	PHARMACIST
FALL	PHARMACIST
SIMMER	TEACHER
WINTER	ARCHITECT
FALL	PHARMACIST
SUMMER	TEACHER
FALL	ARCHITECT

A. Fill in this frequency table with numbers of responses.

	Architect	Teacher	Pharmacist	TOTAL
WINTER	| 1	| 1	| 1	3
SPRING	||| 3	| 0	| 1	4
SUMMER	| 1	|||| 5	0	6
FALL	| 1	0	|||| 4	5
TOTAL	6	6	6	18

B. Convert the responses to a relative frequency table.

	Architect	Teacher	Pharmacist	TOTAL
WINTER	5.6%	5.6%	5.6%	16.7%
SPRING	16.7%	0.0%	5.6%	22.2%
SUMMER	5.6%	27.8%	0.0%	33.3%
FALL	5.6%	0.0%	22.2%	27.8%
TOTAL	33.3%	33.3%	33.3%	100.0%

1. How many of the respondents preferred summer? 6

2. What percent of respondents were teachers who preferred summer? What kind of frequency is that? 27.8% joint

3. What percent of teachers preferred summer? What kind of frequency is that?

$\frac{27.8}{33.3}$ or $\frac{5}{6}$ = 83.3% conditional

4. What percent of respondents preferred fall?

27.8%

5. What percent of people who preferred Fall were architects or pharmacists? What kind of frequency is that?

$\frac{27.8}{27.8}$ or $\frac{5}{5}$ = 100% conditional

6. If a respondent was an architect, what was the probability that they didn't prefer fall?

$\frac{5}{6}$ = 83.3%

C. In a survey 200 people were polled at a local shopping center about spending free time playing sports, watching a movie, or reading a book. The relative frequency table below displays the results.

	MOVIE	SPORTS	READ	TOTAL
MALE	0.25	0.30	0.10	0.65
FEMALE	0.15	0.05	0.15	0.35
TOTAL	0.40	0.35	0.25	1.00

1. How many males surveyed preferred playing sports? $.30(200) = 60$ males

2. How many more females than males preferred watching a movie?
$(.15 - .25)(200) = -20$ more males than females preferred movies

3. What percent of people surveyed preferred to read a book? Type of frequency?
25% marginal frequency

4. What percent of people surveyed were females? Type of frequency?
35% marginal frequency

D. A high school polled students for their favorite subject in school; the 3125 students participated in the survey.

	English	Math	History	Science	TOTAL
Freshmen	0.07	0.06	0.11	0.09	0.33
Sophomores	0.12	0.05	0.06	0.02	0.25
Juniors	0.05	0.10	0.02	0.03	0.20
Seniors	0.06	0.09	0.03	0.04	0.22
TOTAL	0.30	0.30	0.22	0.18	1.00

1. How many more students like English than Science? $(.30 - .18)(3125) = 375$

2. How many students were not sophomores? $(1 - .25)(3125) = 2344$

3. What percent of the polled students were seniors? Type of frequency?
22% marginal

4. What percent of the polled freshmen preferred Math or Science? Type of frequency?
$\frac{.06 + .09}{0.33} = \frac{.15}{.33} = 45.5\%$ conditional

5. Create a frequency table with the given data.

	English	Math	History	Science	TOTAL
Freshmen	219	188	344	281	1031
Sophomores	375	156	188	63	781
Juniors	156	313	63	94	625
Seniors	188	281	94	125	688
TOTAL	938	938	688	563	3125

Bivariate Data Homework

The table below represents the results of 244 responses about 9th and 10th graders' favorite pets.

1. Complete the missing information in the following relative frequency table.

	Bird	Cat	Dog	Fish	TOTAL
9th	0.012	0.200	0.217	0.090	0.519
10th	0.029	0.148	0.263	0.041	0.481
TOTAL	0.041	0.348	0.480	0.131	1.000

2. What percent of respondents preferred cats? Type of frequency?

34.8% marginal

3. What was the most popular pet? How many more people voted for that pet than the least popular pet? dog, $(.480 - .041)(244) = 107$ more people liked dogs than birds

4. What percent of the students who preferred fish were 9th graders? Type of frequency?

$\frac{.090}{.131} = 68.7\%$ conditional

5. What percent of the students were either 10th graders or preferred dogs?

10th + dogs − 10th/dog $\Rightarrow 48.1\% + 48.0\% - 26.3\%$

$= 69.8\%$

6. Create a frequency table using your information.

	Bird	Cat	Dog	Fish	TOTAL
9th	3	49	53	22	127
10th	7	36	64	10	117
TOTAL	10	85	117	32	244

7. How many 10th graders participated in the survey? 117

8. How many 9th graders preferred cats or dogs? $49 + 53 = 102$