

**Data Collection**

Each student will record the following information on the board:

Gender and Preference in your free time: Reading, sports/active, TV/Video Games

**Terms:**

**Two Way Table** - a useful tool for examining relationships between categorical variables. The entries in the cells of a two-way table can be frequency counts or relative frequencies (just like a one-way table).

**Marginal Frequency** - Entries in the "Total" row and "Total" column are called marginal frequencies or the marginal distribution.

**Joint frequencies** – Entries in the body of the table.

**Class Data:**

<i>Frequency</i>	Reading	Sports	TV	Total
Men				
Women				
Total				

<i>Relative Frequency</i>	Reading	Sports	TV	Total
Men				
Women				
Total				100%

**Analysis:**

- Look only at the marginal frequencies in the Total row at the bottom. What can you conclude about the total distribution of activity?
- Look only at the marginal frequencies in the Total column at the left. What can you conclude about the total distribution of gender?
- Look only at the joint frequencies in the body. What can you conclude about the total distribution of activity and gender?

Class Data – copy down the values from the previous page to answer the questions below:

<i>Frequency</i>	<b>Reading</b>	<b>Sports</b>	<b>TV</b>	<b>Total</b>
<b>Men</b>				
<b>Women</b>				
<b>Total</b>				

Create a bar chart for the opinions of Men:

What percent of those surveyed were Women?

What percent of those surveyed were Women and favor TV?

What percent of Men favor Sports?

What percent of those who favor Reading were Women?

## HW 2 - Two Way Tables

1 – Use the two-way table to answer the questions below:

A survey was performed comparing the favorite activities of men and women.

	Dance	Sports	TV	Total
Men	2	10	8	
Women	16	6	8	
Total				

- How many men were surveyed?
- How many people prefer TV?
- How many men said sports was their favorite activity?
- What percent of people surveyed prefer dance?
- What percent of people were women?
- What percent of men prefer sports?
- What percent of people preferring sports are women?

2 – Complete the two-way table using the information below:

	Republican	Democrat	Total
Male			20
Female			
Total			

Information:

- 90 total people were surveyed
- 42 females were surveyed
- 40% of those surveyed were Democrat
- 3 out of 10 surveyed were Female and Democrat

Questions:

What percent were Male?

What percent were Male and Democrat?

What percent of republicans were male?

### Q3

A random sample of 200 teenagers participated in a taste test. Each teenager sampled four choices of fruit drink (labeled "A", "B", "C", and "D"), and then were asked to pick a favorite. The table shows the results of this taste test.

	A	B	C	D	Total
Boys	45	25	30	20	120
Girls	25	10	30	15	80
Total	70	35	60	35	200

Based on the information given, which of the given statements are true?

Select all that apply.

- A. 40% of the participants were girls.
- B. 70% of the participants preferred "A".
- C.  $\frac{20}{120}$  of the boys preferred "D".
- D.  $\frac{10}{35}$  of the participants who preferred "B" were girls.
- E. The proportion of boys who preferred "C" is equal to the proportion of girls who preferred "C".

### Data Collection

Create a two-way table comparing males vs. females and academic dishonesty (cheating).

Levels of cheating:

0 = never cheat

1 = cheat on HW not on assessments

2 = cheat on HW and assessments

Who is more likely to cheat?

4 – Use the two-way table to answer the questions below:

A survey was performed comparing the favorite music of students in grade 9 and 10.  
 Extra info: 25% of those surveyed were in grade 9. Half of 10<sup>th</sup> graders prefer country. No 9<sup>th</sup> graders prefer R&B.

	R&B	Rock	Country	Total
Grade 9			6	
Grade 10		10		
Total				80

- Complete the table.
- What percent of people surveyed prefer R&B?
- What percent of 10<sup>th</sup> graders prefer R&B?
- What percent people preferring Rock are in grade 9?

5 – Complete the two-way table using the information below:

	Soccer	Swimming	Total
Male			
Female			
Total			

Information:

- 40 total people were surveyed
- 18 of those surveyed said swimming was their favorite sport
- 30% of those surveyed were Males and favor soccer.

Questions:

What percent were Male?

What percent were Female and favor swimming?

What percent of Males favor swimming?

Q6

In 1912 the luxury liner *Titanic*, on its first voyage across the Atlantic, struck an iceberg and sank. Some passengers got off the ship in lifeboats, but many died. The two-way table below gives information about adult passengers who lived and who died, by class of travel.

Class of Travel	Survival Status	
	Survived	Died
First class	197	122
Second class	94	167
Third class	151	476

Find the marginal totals

What percent of people survived?

What percent of people were 1<sup>st</sup> class?

What percent of 1<sup>st</sup> class people survived?

Q7

Accident victims are sometimes taken by helicopter from the accident scene to a hospital. Helicopters save time. Do they also save lives? Let's compare the percents of accident victims who die with helicopter evacuation and with the usual transport to a hospital by road. Here are hypothetical data that illustrate a practical difficulty:<sup>7</sup>

	Helicopter	Road
Victim died	64	260
Victim survived	136	840

Find the marginal totals

What percent of people survived?

What percent of people were taken in a helicopter?

What percent of helicopter riders survived?

What percent of ambulance riders survived?

Which has more survivors? Explain...

20. **Smoking by students and parents** Here are data from a survey conducted at eight high schools on smoking among students and their parents:<sup>17</sup>

	Neither parent smokes	One parent smokes	Both parents smoke
Student does not smoke	1168	1823	1380
Student smokes	188	416	400

Find the percent of students where both the student AND both parents smoke?

What percent of the people who responded have at least one smoker in their family?

Are students who have parents who smoke more likely to smoke? Explain.

Exercises 27 to 32 refer to the following setting. The National Survey of Adolescent Health interviewed several thousand teens (grades 7 to 12). One question asked was "What do you think are the chances you will be married in the next ten years?" Here is a two-way table of the responses by gender.<sup>18</sup>

	Female	Male
Almost no chance	119	103
Some chance, but probably not	150	171
A 50-50 chance	447	512
A good chance	735	710
Almost certain	1174	756

27. The percent of females among the respondents was
  - (a) 2625.
  - (b) 4877.
  - (c) about 46%.
  - (d) about 54%.
  - (e) None of these.
28. Your percent from the previous exercise is part of
  - (a) the marginal distribution of females.
  - (b) the marginal distribution of gender.
  - (c) the marginal distribution of opinion about marriage.
  - (d) the conditional distribution of gender among adolescents with a given opinion.
  - (e) the conditional distribution of opinion among adolescents of a given gender.
29. What percent of females thought that they were almost certain to be married in the next ten years?
  - (a) About 16%
  - (b) About 24%
  - (c) About 40%
  - (d) About 45%
  - (e) About 61%
30. Your percent from the previous exercise is part of
  - (a) the marginal distribution of gender.
  - (b) the marginal distribution of opinion about marriage.
  - (c) the conditional distribution of gender among adolescents with a given opinion.
  - (d) the conditional distribution of opinion among adolescents of a given gender.
  - (e) the conditional distribution of "Almost certain" among females.
31. What percent of those who thought they were almost certain to be married were female?
  - (a) About 16%
  - (b) About 24%
  - (c) About 40%
  - (d) About 45%
  - (e) About 61%
32. Your percent from the previous exercise is part of
  - (a) the marginal distribution of gender.
  - (b) the marginal distribution of opinion about marriage.
  - (c) the conditional distribution of gender among adolescents with a given opinion.
  - (d) the conditional distribution of opinion among adolescents of a given gender.
  - (e) the conditional distribution of females among those who said "Almost certain."