

# Two-way Frequency Table Worksheet

Name: Key

1. The two-way frequency table, shown below, displays the data collected from a random group of high school students regarding whether they "liked" snowboards and/or "liked" skateboards. Answer the questions below, regarding this table.

	Likes Skateboards	Do not like Skateboards	Total
Likes Snowboards	15	12	27
Do not like Snowboards	23	18	41
Total	38	30	68

- How many students participated in the survey? **68**
- How many students said they like snowboards? What type of frequency is this? **marginal 27**
- How many students like snowboards, but do not like skateboards? What type of frequency is this? **joint 12**

2. A public opinion survey explored the relationship between age and support for increasing the minimum wage. The results are found in the following two-way frequency table.

	For	Against	No Opinion	TOTAL
Ages 21-40	<b>25</b>	20	5	50
Ages 41-60	30	<b>30</b>	15	<b>75</b>
Over 60	50	20	<b>5</b>	75
TOTAL	<b>105</b>	70	25	200

- Fill in the missing data to the table above.
- Create a two-way relative frequency table that summarizes the data from the table.

	For	Against	No Opinion	TOTAL
Ages 21-40	<b>12.5%</b>	<b>10%</b>	<b>2.5%</b>	<b>25%</b>
Ages 41-60	<b>15%</b>	<b>15%</b>	<b>7.5%</b>	<b>37.5%</b>
Over 60	<b>25%</b>	<b>10%</b>	<b>2.5%</b>	<b>37.5%</b>
TOTAL	<b>52.5%</b>	<b>35%</b>	<b>12.5%</b>	<b>100%</b>

Use the two-way frequency table and the relative frequency table to answer the following questions:

- Out of the people that have no opinion, what percentage is over 60 years old?  
**37.5%**
- What percentage of people want to increase minimum wage?  
**52.5%**
- How many people over 60 are against increasing the minimum wage?  
**20**
- For ages 21-60 how many were for increasing the minimum wage?  
**55**
- What percent of people over 60 are against or have no opinion?  
 **$\frac{25}{75} = 33\%$**

3. Ursula interviewed 75 people to see if they liked reading comic books. Of the people surveyed, 15 were males. In all, 32 females liked comic books, and 9 males liked comic books.

a. Construct a frequency table to organize her data.

	Likes comic books	Do not like comic books	Total
Male	9	6	15
Female	32	28	60
Total	41	34	75

b. What is the conditional frequency that a person does not like comic books given that the person is a male?

$$\frac{6}{15} = 40\%$$

4.

Age in years	Do they recycle?		Total
	Yes	No	
21–35	56	10	66
36–50	85	21	106
51–65	45	40	85
Total	186	71	257

a. What is the approximate joint frequency that a person was 21–35 and did not recycle?

10

b. What is the approximate frequency that a person surveyed was 51–65 years old given that he or she recycles?

$$\frac{45}{186} = 24\%$$

c. Based on this survey, is it more likely that a 21–35 year old recycles or a 51–65 year old recycles? Use conditional frequencies to justify your answer.

21-35 yr old

5. Complete the following frequency table. Is it more likely that people who have a job have a savings account?

Have a savings account	Have a job		Total
	Yes	No	
Yes	134	66	200
No	16	84	100
Total	150	150	300

6. Is each of the following an example of qualitative (categorical) data?

- A years of education       Yes     No
- B type of pet                 Yes     No
- C color of car                 Yes     No
- D price of gas                 Yes     No