

Name: \_\_\_\_\_

Period: \_\_\_\_\_

Math 8 - Chapter 6

HW #6 - Two Way Table WS

1. Construct a two-way table summarizing each set of data.

There are 195 male and 126 female students at McGuffey Junior High. A survey showed that 110 males and 84 females ride the bus.

	Bus	Not Bus	Total
Males			
Females			
Total			

2. The two-way table shows the enrollment in language classes at Carson Middle School.

	Spanish	Not Spanish
Chinese	30	65
Not Chinese	20	5

(a) How many people speak both Chinese and Spanish? \_\_\_\_\_

(b) How many people speak Chinese and not Spanish? \_\_\_\_\_

(c) How many people speak Chinese? \_\_\_\_\_

(d) How many people are represented in the diagram? \_\_\_\_\_

3. The two-way table shows how some people get their news.

	TV	Internet	Total
7 <sup>th</sup> Graders	13	49	
8 <sup>th</sup> Graders	20	68	
Total			

(a) Fill in the total columns for the table.

(b) What is the proportion of students who get their news from TV?

(c) What is the proportion of 7<sup>th</sup> graders who get their news from the Internet?

(d) What is the proportion of 8<sup>th</sup> graders who get their news from the Internet?

**Lesson 7**  
**Making a 2 Way Frequency Tables**

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**Vocabulary:**

**Two-Way Table:**

**The Frequency:**

**Relative Frequency Table:**

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**Examples: Two-Way Frequency Table (Bivariate data)**

1) You survey friends about the type of party they enjoy most.

		Gender		
Party Type		Male	Female	Total
	Bowling	6	2	8
	Skating	3	11	14
	Dancing	1	3	4
	Total	10	16	26

What type of party would you plan for them? Explain.

Write a valid conclusion from the graph. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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2) Eighth grade students were asked whether they participate in an after-school activity.  
Complete the two-way frequency table below.

		After-school Activity		
Gender		Yes	No	Total
	Male		40	
	Female			95
	Total	102		187



- 3) Sagamore students were polled about whether or not they owned an I-POD. The results of the **Relative Percentage** are shown below in percentage form. Complete the chart below.

I-POD

Grade	Yes	No	Total
7 <sup>th</sup>	42%		75%
8 <sup>th</sup>			
Total	55%		100%

- a. Did more students have I-Pods or not?

\*\*\* CHALLENGE \*\*\*

- b. If there were a total of 88 students, how many were 8<sup>th</sup> Graders?

- 4) The chart below represents the **Relative Frequency** of people who own an I-Pod. Complete the two-way frequency table.

I-POD

	Yes	No	Total
Students	.51		.70
Adults	.27		
Total			1.00

Creating a **Relative Frequency** table based on TOTAL people.

- 5) Below is a table of people in the park and the activities that they do. Complete the relative frequency table below, based on the total participants. First, complete the table.

Activity	Jog	Fly Kites	Picnic	Total
Male	9	4	10	
Female	11	1		
Total			25	50

To create a relative-frequency two-way table for **all 50 people**, divide each number in each cell by 50

Topping	Jog	Fly Kites	Picnic	Total
Male				
Female				
Total				

## Try These:

Type of Rock	Gender		Total
	Male	Female	
Punk	26	10	36
Soft	1	4	5
Classic	18	12	30
Metal	9	8	17
Total	54	34	88

- What is the most popular type of rock among men and woman? \_\_\_\_\_
- What type of rock do females like the most? \_\_\_\_\_
- What is the least favorite rock for men? \_\_\_\_\_
- How many people were surveyed? \_\_\_\_\_
- For which gender was the response greater? \_\_\_\_\_

- You go to a dance and help clean up afterwards. To help, you collect the soda cans, Coca-Cola and Sprite, and organize them. Some cans were on the table and some were in the garbage. Seventy-two total cans were found. 42 total cans were found in the garbage and fifty total cans were Coca-Cola. 14 Sprite cans were found on the table. Complete the two-way frequency chart.

	Coca-Cola	Sprite	Total
Party Type			
Table			
Garbage			
Total			

- Now, complete a relative frequency table based on the TOTAL number of cans.

	Coca-Cola	Sprite	Total
Table			
Garbage			
Total			

- Below is a partial list of the relative frequency table of the results of a classroom poll. Complete the chart.

### STUDY FOR THE TEST

	Yes	No	Maybe	Total
Boys	.25	.15		.56
Girls			.09	
Total	.52	.16		1.00

- If there were a total of 50 students, how many said YES, they will study for the test. \_\_\_\_\_
- If there were a total of 50 students, how many GIRLS said MAYBE? \_\_\_\_\_



## Lesson 7: Classwork/Homework

- 1) Eighth grade students were asked whether they participate in an after-school activity. Complete the two-way frequency table below.

		After-school Activity		
Gender		Yes	No	Total
	Male		40	
	Female			95
	Total	102		187

- 2) Eighty students at Sagamore Middle school were surveyed whether they own an I-Pod. Half of the 50 eighth graders said yes, and 28 of the seventh graders said yes. Complete the two-way frequency table.

	Yes	No	Total
7 <sup>th</sup> Grade			
8 <sup>th</sup> Grade			
Total			

- 3) The table shows the results of a survey about what the engineers said their favorite subject was in middle school.

	Math	Science	Total
Electrical	85	90	175
Chemical	80	91	171
Mechanical	89	81	170
Total	254	262	516

- a) How many chemical engineers chose science? \_\_\_\_\_
- b) How many engineers chose math? \_\_\_\_\_
- c) Overall, what was the favorite subject of all engineers? \_\_\_\_\_

- 4) A survey of students in a homeroom class explored the relationship between gender and participation in the school band.

	Boys	Girls	Total
In Band	4	8	12
Not in Band	9	5	14
Total	13	13	26

Which is a reasonable conclusion to draw from these data?

- A) There are more band members in the class than non-band members.
- B) There are more boys in the class than girls.
- C) Among the boys, there are more boys in the band than Not in the band.
- D) More than one-half of the band members in the class are girls.

- 5) A survey of randomly selected Sagamore students explored the relationship between gender and video game play. Which is not a reasonable interpretation of the data?

	Boys	Girls	Total
Play Daily	45	12	57
Do Not Play Daily	5	38	43
Total	50	50	100

- A) More boys surveyed play video game daily than girls.  
 B) Ignoring gender, a little more than half of the students surveyed play video games daily  
 C) Of the boys surveyed, 5% do not play video games daily  
 D) Of the girls surveyed, exactly 24% play video games daily

- 6) The following two-way table shows the number of students who voted for each of the two candidates for class president, by grade.

Candidate	Grade 7	Grade 8	Grade 9
Zoe	45	20	65
Alessandro	30	60	90
Total	75	80	155

How many more 8<sup>th</sup> graders voted for Alessandro than Zoe?

- A) 15      B) 20      C) 40      D) 80

- 7) The following two-way table shows the number of different color cars and SUV's at an auto dealership.

Color	Car	SUV	Total
Red	25	15	40
White	15	10	25
Blue	40	20	60
Green	20	5	25
Total	100	50	150

What color is the least popular car in the dealership?

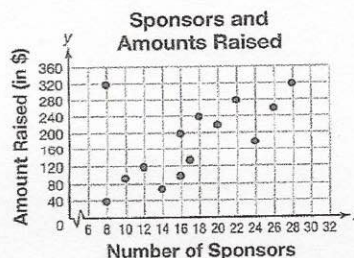
- A) White      B) Red      C) Green      D) Blue

### Review Work:

- 8) A farmer charges for his coffee beans using the equation  $C = 3.95p$ , where  $C$  is the cost of the coffee beans and  $p$  is the number of pounds of coffee beans. What is the slope? \_\_\_\_\_

- 9) Which best describes the association, if any, that is shown?

- A) positive association      C) no association  
 B) negative association      D) non-linear association





## Lesson 8

### 2 Way Relative Frequency Tables

#### Vocabulary:

Relative Frequency Table – \_\_\_\_\_

Relative Frequency Tables can be created: 1) \_\_\_\_\_  
 2) \_\_\_\_\_  
 3) \_\_\_\_\_

#### Examples:

- 1) Fifty students in the 8<sup>th</sup> grade class were asked what kind of ice-cream they like (vanilla or chocolate) and what kind of toppings they like (sprinkles, m & m's, or nothing). Identify any trends in the data.

Topping	Sprinkles	m & m's	Nothing	Total
Vanilla	9	8	13	30
Chocolate	7	9	4	20
Total	16	17	17	50

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- 2) To create a relative-frequency two way table for the **rows**, divide each number in each row by the total in that row.

Topping	Sprinkles	m & m's	Nothing	Total
Vanilla				
Chocolate				

- 3) To create a relative-frequency two way table for the **columns**, divide each number in each column by the total in that column.

Topping	Sprinkles	m & m's	Nothing
Vanilla			
Chocolate			
Total			

- 4) To create a relative-frequency two way table with **percents**, use the total number of students.

Topping	Sprinkles	m & m's	Nothing	Total
Vanilla				
Chocolate				
Total				

### Try These:

- 1) Jeremy asked a sample of 40 8<sup>th</sup> grade students whether or not they had a curfew. He then asked if they had a set bedtime for school nights. He recorded his data in this two-way frequency table. Create a two-way relative frequency table for these data.

	Bedtime	No Bedtime	Total
Curfew	21	4	25
No Curfew	3	12	15
Total	24	16	40

	Bedtime	No Bedtime	Total
Curfew			
No Curfew			

- 2) The table shows the grade levels and primary home languages for all the students at Martin Middle School.

	6 <sup>th</sup> Grade	7 <sup>th</sup> Grade	8 <sup>th</sup> Grade	Total
English	104	99	116	319
Other	56	81	84	221
Total	160	180	200	540

Use the grid below to create a two-way relative frequency table.

	6 <sup>th</sup> Grade	7 <sup>th</sup> Grade	8 <sup>th</sup> Grade
English			
Other			
Total			

- 3) A recent poll asked whether customers like a restaurant's new lunch menu. Complete the corresponding relative frequency table with respect to the total population.

**Frequency Table**  
New Menu

	Yes	No	Total
Male	13	15	28
Female	18	25	43
Total	31	40	71

**Total Relative Frequency Table**  
New Menu

	Yes	No	Total
Male			
Female			
Total			

- 4) Lucia asked 50 eighth-grade students if they agreed or disagreed with a proposed plan to start the school day at a later time. She also recorded whether each student responding was a boy or girl. Make several observations about the data. Create a two-way relative frequency table for these data:

	Boys	Girls	Total
Agree	14	12	26
Disagree	6	18	24
Total	20	30	50

	Boys	Girls	Total
Agree			100%
Disagree			100%



## Lesson 7: Classwork/Homework

- 1) Circle the table that will be more helpful in finding whether male or female teenagers are more likely to own a car.

**Frequency Table**

Car Ownership

	Yes	No	Total
Male	49	126	175
Female	48	102	150
Total	97	228	325

**Total Relative Frequency Table**

Car Ownership

	Yes	No	Total
Male	28%	72%	100%
Female	32%	68%	100%
Total	29.8%	70.2%	100%

Justify your answer: \_\_\_\_\_

\_\_\_\_\_

- 2) Fifty moviegoers were surveyed about their favorite movie types.

- 13 men and 6 women chose "Action" as their favorite type.
- 8 men and 8 women chose "Drama" as their favorite type.
- 5 men and 4 women chose "Comedy" as their favorite type.
- 4 men and 2 women chose "Animated" as their favorite type.

Draw a two-way frequency table using the above data. Use the table to determine the most popular type of movie in the survey.

	Action	Drama	Comedy	Animated	Total
Men					
Women					
Total					

Which type of movie surveyed is most popular? \_\_\_\_\_

- 3) The frequency table shows the hair and eye color of 25 students. Is there evidence that blue eyes are more common for students with blond hair than those with black hair?

Write a valid conclusion. \_\_\_\_\_

	Blond	Black	Brown	Total
Blue	3	1	2	6
Brown	2	7	6	15
Green	1	1	2	4
Total	6	9	10	25

	Blond	Black	Brown	Total
Blue				
Brown				
Green				

4) Complete the table.

	Football	Baseball	Total
Coaches	5	7	12
Players		6	
Total	12		

5) How many coaches participated in the survey?

6) How many players participated in the survey?

7) Which sport is more popular among the coaches?

8) Which sport is more popular among the players?

9) Twenty students were surveyed about their favorite subject. Below are the results.

- 3 boys and 4 girls chose Math
- 2 boys and 3 girls chose Science
- 1 boys and 2 girls chose ELA
- 3 boys and 2 girls chose History

Construct a two-way frequency table for the data.

	Math	Science	ELA	History	Total
Boys					
Girls					
Total					

10) According to the table, what is the least popular subject? \_\_\_\_\_

11) Construct a two way relative frequency table based on percent

	Math	Science	ELA	History
Boys				
Girls				
Total				

	For	Against	Total
Parents	.42	.07	.50
Teens	.18	.32	.50
Total	.61	.39	1.00

12) The two- way shows the results of a survey about whether students should be required to wear school uniforms. According to the table, what percent of teenagers are in favor of wearing school uniforms?

13) If 300 parents were surveyed, how many were for wearing uniforms?



## Two-Way Frequency Tables

Name \_\_\_\_\_

Date \_\_\_\_\_

1. The students in a seaside school are to have extra swimming lessons if they cannot swim. The table below gives information about the students in grades 7, 8 and 9.

	Can swim	Cannot swim	Total
Grade 7	120	60	
Grade 8	168	11	
Grade 9	172	3	
Total			

	Can swim	Cannot swim	Total
Grade 7			
Grade 8			
Grade 9			
Total			

- Complete the table
- How many students need swimming lessons?
- How many students are there in 8<sup>th</sup> grade?
- How many of the 7<sup>th</sup> grade students cannot swim?
- How many students in grades 7 and 8 can swim?
- How many students are there altogether in grades 7, 8, and 9?
- Create a two-way relative frequency table for the above data.
- What is the relative frequency of students who are in 8<sup>th</sup> grade and cannot swim?
- What percentage of 9<sup>th</sup> grade students can swim?
- What percentage of students cannot swim?
- What percentage of students are 9<sup>th</sup> graders?

2. A principal of a school with 484 students collected information about how many of the students wear glasses.

	Always wears glasses	Sometimes wears glasses	Never wears glasses	Total
Boys	40		161	
Girls	36	55	144	
Total				

- Complete the table
- How many boys sometimes wear glasses?
- How many students wear glasses some of the time?
- How many students never wear glasses?
- Are there more boys or girls in the school?
- Create a two-way relative frequency table for the above data.
- What is the relative frequency of boys who sometimes wear glasses?
- What percentage of girls never wear glasses?
- What percentage of students are boys?
- What percentage of students always wear glasses?

3. Draw your own two-way table for the given information to answer the question.

In a class of 32 students, there were 8 girls who played basketball and 5 boys who did not.

- a. How many boys played basketball if there were 15 girls in the class?
- b. Create a two-way relative frequency table for the data.
  
  
  
  
  
  
  
  
  
  
- c. What is the relative frequency of girls who played did not play basketball?
- d. What percentage of boys played basketball?
- e. What percentage of students played basketball?
- f. What percentage of students are girls?



Two-Way Frequency Tables

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Felipe surveyed students at his school. He found that 78 students own a cell phone and 57 of those students own an MP3 player. There are 13 students that do not own a cell phone, but own an MP3 player. Nine students do not own either device.

a. Construct a two-way table summarizing the data.

b. Construct a two-way relative frequency table for the data.

2. There are 150 children at summer camp and 71 signed up for swimming. There were a total of 62 children that signed up for canoeing and 28 of them also signed up for swimming.

a. Construct a two-way table summarizing the data.

b. Construct a two-way relative frequency table for the data.

3. The two-way table shows the number of students that do or do not do chores at home and whether they receive an allowance or not.

	Allowance	No Allowance
Do Chores	13	3
Do Not Do Chores	5	4

- How many total students do chores?
- What is the relative frequency of students that do chores and get an allowance to the number of students that do chores? Round to the nearest hundredth if necessary.
- What is the relative frequency of students that do not do chores nor get an allowance to the total number of students? Round to the nearest hundredth if necessary.

4. The two-way table below shows the number of students with each hair color and eye color. Create a relative frequency table out to the side of the table.

		Hair Color				
		Black	Brown	Red	Blond	Total
Eye Color	Brown	7	12	3	1	23
	Blue	2	8	2	9	21
	Hazel	2	5	1	1	9
	Green	1	3	1	2	7
	Total	12	28	7	13	60

Which is greater: the percentage of the brown-haired students with blue eyes or the percentage of the red-haired students with brown eyes?

5. 80 students each study one Science. The table shows some information about these students

a. Complete the table

	Biology	Chemistry	Physics	Total
Female	18			47
Male			19	
Total		21	33	80

- What is the probability that the student studies Physics?
- What is the probability that the student is male and does not study biology?
- What is the probability that the student is female and studies Chemistry?
- What is the probability that the student is not female?
- What is the probability that the student does not study Biology?