**Lesson 4.4 – Two-Way Frequency Tables**

**Introduction**

****A \_\_\_\_\_-\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_ is a table of data that compares two variables (\_\_\_\_\_\_\_\_\_\_\_). It separates responses by a characteristic of the respondents.

**Example 1:**

**Vocabulary**

A \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ is the number of responses for a given characteristic.

* The \_\_\_\_\_\_\_ \_\_\_ \_\_\_\_ \_\_\_\_\_\_ of a two-way frequency table are joint frequencies.
* In our table above, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ are each joint frequencies.

A \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ is the total number of times a response was given, or the total number of respondents with a given characteristic.

* This is the \_\_\_\_\_\_\_ of either a \_\_\_\_\_ or a \_\_\_\_\_\_\_\_\_\_ in a two-way frequency table.
* In our table above, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ are all marginal frequencies.

A \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ expresses a number of responses as a percentage of the total number of responses.

* It allows a \_\_\_\_\_\_\_\_\_\_\_\_ to be made for multiple responses in a single row, single column, or table.
* They are found by \_\_\_\_\_\_\_\_ the number of responses by the total number of responses.

 C.R. Freq. - Service

 C.R. Freq. - Gender



 C.R. Freq. – Total People



**Example 2:**

Abigail surveys students in different grades,

and asks each student which pet they prefer.

Their responses are in the table to the right.

1. How many 9th graders preferred fish? \_\_\_\_\_\_\_\_\_
2. What does the joint frequency 7 represent? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What is the joint frequency of 9th graders who preferred cats? \_\_\_\_\_\_\_\_\_
4. Which pet was the most popular among all the students surveyed? \_\_\_\_\_\_\_\_\_\_\_
5. Complete the marginal frequencies for each type of pet and for each grade level. Which one is the smallest? \_\_\_\_\_\_\_\_\_\_
6. How many students are represented in the survey? \_\_\_\_\_\_\_\_\_
7. What would the conditional relative frequency be for 9th graders who preferred cats (with respect to 9th graders)? \_\_\_\_\_\_\_\_\_\_\_\_
8. What would the conditional relative frequency be for fish (with respect to everyone surveyed)? \_\_\_\_\_\_\_\_\_\_\_\_\_

**Example 3:**

Deshaun surveyed the seniors at his high

school to find out who eats and doesn’t

eat breakfast regularly. Their responses

are in the table at the right.

1. How many females “eat breakfast regularly”? \_\_\_\_\_\_\_\_

 This is a \_\_\_\_\_\_\_\_\_\_\_\_ frequency

1. 275 is a \_\_\_\_\_\_\_\_\_\_\_\_\_ frequency. It represents \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 3. How many people were included in this survey? \_\_\_\_\_\_\_\_

1. Complete the table by calculating the conditional relative frequencies with respect to

gender.

1. What can you conclude about the breakfast habits of males and females?

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**You Try:**

Use the Two-Way Frequency table to the right

to answer the following questions.

1. Looking at just the marginal frequencies (row & column totals) what can we conclude about the 3 activities?

A. Dance is way more

 interesting.

B. They have roughly equal

 appeal.

C. Sports is the least chosen

 activity.

D. TV is the preferred activity.

 2. Looking at the joint frequencies we see that women show a strong preference for which

 activity? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What are the conditional relative frequencies (for both gender and hobby) for men who showed a preference for Sports?

C.R. Freq. for Gender: \_\_\_\_\_\_\_\_\_\_\_\_\_ C.R. Freq. for Hobby: \_\_\_\_\_\_\_\_\_\_\_\_