

Name _____

MAFS.912.S-ID.2.5 – Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data. Recognize possible associations and trends in the data.

Two-Way Frequency Table:

How do you determine which gender likes country music more?

1. Complete the marginal frequencies for the two-way frequency table.

	Like country music	Dislike country music	Total
Male students	21	8	
Female students	24	13	
Total			

2. Calculate and complete the two-way relative frequency table.

	Like country music	Dislike country music	Total
Male students			
Female students			
Total			

3. Find the conditional frequency of students surveyed who are (a) male and prefer country music; (b) female and prefer country music.
4. Who is more likely to like country music, male students or female students? Justify your answer.
5. Give a clear summary of (a) a two-way frequency table and (b) the relative frequency.

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ANSWER KEY

Two-Way Frequency Table:

How do you determine which gender likes country music more?

1. Complete the marginal frequencies for the two-way frequency table.

	Like country music	Dislike country music	Total
Male students	21	8	29
Female students	24	13	37
Total	45	21	66

2. Calculate and complete the two-way relative frequency table.

	Like country music	Dislike country music	Total
Male students	$21/66=31.8\%$	$8/66=12.1\%$	$29/66=43.9\%$
Female students	$24/66=36.4\%$	$13/66=19.7\%$	$37/66=56.1\%$
Total	$45/66=68.2\%$	$21/66=31.8\%$	100%

3. Find the conditional frequency of students surveyed who are (a) male and prefer country music; (b) female and prefer country music.

a. Males who prefer country music = $21/66 = 31.8\%$

b. Females who prefer country music = $24/66 = 36.4\%$

4. Who is more likely to like country music, male students or female students? Justify your answer.

Answers may vary. Example answer (1): Based on the data collected, females are more likely to prefer country music than males. 24/66 females like country music compared to 21/66 males.

Example answer (2): The percentage of liking country music vs disliking country music for males is a greater difference than for females, therefore males are more likely to like country music.

5. Give a clear summary of (a) a two-way frequency table and (b) the relative frequency.

- a. A **two-way frequency table** is a powerful tool for examining the relationships between categorical variables. Two-way tables represent a table of counts. The entries in the body of the table are the **joint frequencies**. The entries in the "total" row and the "total" column are the **marginal frequencies**.
- b. The **relative frequency** is used when we want to compare the different classes and the classes to the entire data set. The relative frequencies in the body of the table are called the **conditional frequencies**. The conditional frequencies can show relative frequency for the whole table, for the rows, or for the columns. In this lesson, we calculated conditional frequency for the whole table.