

Lesson Summary

- *Categorical data* are data that take on values that are categories rather than numbers. Examples include male or female for the categorical variable of gender or the five superpower categories for the categorical variable of superpower qualities.
- A *two-way frequency table* is used to summarize bivariate categorical data.
- The number in a two-way frequency table at the intersection of a row and column of the response to two categorical variables represents a *joint frequency*.
- The total number of responses for each value of a categorical variable in the table represents the *marginal frequency* for that value.

Several students at Rufus King High School were debating whether males or females were more involved in after-school activities. There are three organized activities in the after-school program—intramural basketball, chess club, and jazz band. Due to budget constraints, a student can only select one of these activities. The students were not able to ask every student in the school whether they participated in the after-school program or what activity they selected if they were involved.

1. Write questions that could be included in the survey to investigate the question the students are debating. Questions that could be used for this study include the following:
2. Rufus King High School has approximately 1,500 students. Sam suggested that the first 100 students entering the cafeteria for lunch would provide a random sample to analyze. Janet suggested that they pick 100 students based on a school identification number. Who has a better strategy for selecting a random sample? How do you think 100 students could be randomly selected to complete the survey?
3. Consider the following results from 100 randomly selected students:
 - Of the 60 female students selected, 20 of them played intramural basketball, 10 played chess, and 10 were in the jazz band. The rest of them did not participate in the after-school program.
 - Of the male students, 10 did not participate in the after-school program, 20 played intramural basketball, 8 played in the jazz band, and the rest played chess.

A two-way frequency table to summarize the survey data was started. What label is needed in the table cell identified with a “???”

	Intramural Basketball	Chess Club	Jazz Band	???	Total
Female					
Male					
Total					

4. Complete the above table for the 100 students who were surveyed.
5. The table shows the responses to the after-school activity question for males and females. Do you think there is a difference in the responses of males and females? Explain your answer.