Dear Family,

Your child is learning about categorical data in frequency tables.

This year your child has worked mostly with numerical data. Now your child will start exploring categorical data. Categorical data are described by categories, such as eye color, gender, or other attributes, and not by numbers, such as height or age.

Two-way relative frequency tables show associations between two sets of categorical data. The two-way relative frequency table below shows the results of a survey asking 20 people their favorite sport to play.

	Baseball	Basketball	Soccer	Total
Male	14%	8%	18%	40%
Female	12%	16%	32%	60%
Total	26%	24%	50%	100%

- A total of 40% of the people surveyed were males.

- A total of 26% of the people surveyed chose baseball.

- The 14% in the Baseball/Male cell shows that 14% of the people surveyed were males who chose baseball.

Consider the following situation:

Mario surveyed students in his school to see whether there is an association between gender and favorite sport to watch. Five girls and 16 boys picked basketball, 6 girls and 23 boys picked football, and 11 girls and 11 boys picked soccer.

Does his data show that the girls and boys in Mario's school equally enjoy watching soccer?

The next page shows one way your child may use frequency tables to answer this question.

NEXT

Categorical Data in Frequency Tables: Sample Solution

Mario surveyed students in his school to see whether there is an association between gender and favorite sport to watch. Five girls and 16 boys picked basketball, 6 girls and 23 boys picked football, and 11 girls and 11 boys picked soccer.

Does his data show that the girls and boys in Mario's school equally enjoy watching soccer?

First, make a two-way frequency table with the actual counts rather than percents.

- One category is gender: Male or Female.

- The other category is sport preference: Football, Basketball, or Soccer.

	Football	Basketball	Soccer	Total
Male	23	16	11	50
Female	6	5	11	22
Total	29	21	22	72

Because Mario did not survey an equal number of boys and girls, you can't just compare the number of boys and girls that picked soccer. So make a two-way relative frequency table that finds the percent of each gender that picked each sport.

	Football	Basketball	Soccer	Total
Male	$\frac{23}{50} = 46\%$	$\frac{16}{50} = 32\%$	$\frac{11}{50} = 22\%$	$\frac{50}{72} \approx 69.4\%$
Female	$\frac{6}{22} \approx 27.3\%$	$\frac{5}{22} \approx 22.7\%$	$\frac{11}{22} = 50\%$	$\frac{22}{72} \approx 30.6\%$
Total	$\frac{29}{72} \approx 40.3\%$	$\frac{21}{72} \approx 29.2\%$	$\frac{22}{72} \approx 30.6\%$	$\frac{72}{72} = 100\%$

Answer: The first table shows that 11 males and 11 females chose soccer; however, there were a different number of males and females in the survey. The relative frequency table shows that 50% of the girls picked soccer and only 22% of the boys picked soccer. So the girls and boys at Mario's school do not equally enjoy watching soccer.