

6.4 Two-Way Frequency Tables

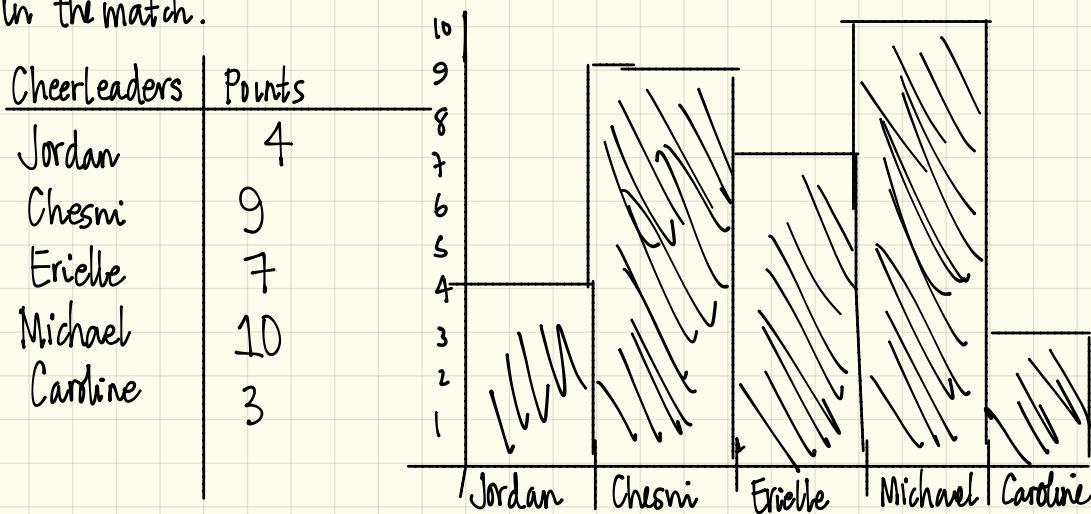
Standard:

S.ID.5



Old 1-variable data representation

Let's consider the Freshman on the Cheerleading Squad. They are hosting an individual competition meet & the following cheerleaders scored points in the match.



But what about comparing categorical data to categorical data?

New 2-way Frequency Tables

What is a 2-way Frequency Table?

A table that shows frequency counts of 2 sets of categorical variables. This is an useful tool for examining relationships between different categorical data. → A way to compare categorical data to categorical data.

Let's consider the students in Mr. Lee's classroom. Let's split the room by gender (girls & boys) and answer a question of who is more **democratic** or a **republican**?

Boys Democratic - 7
Boys Republican - 5

Girls - Democratic - 9
Girls - Republican - 1

Gender

	Boys	Girls	Total
Party			
Democratic	7	9	16
Republican	6	1	7
Total	13	10	23

Question:
What can we say
about this data when
we read this
representation?

Measures of reading 2-way Frequencies:

Joint Frequencies

The "joining" of 2 or more categories' frequency counts in a 2-way frequency table.

[Examples]

- ① What is the joint frequency of boys & democrats? 7
- ② What is the joint frequency of girls & democrats? 1

Marginal Frequencies

The "total" frequency counts of 2-way frequency tables.

[Examples]

- ① The total number of democrats? 16
- ② What is the marginal frequency of girls? 10
- ③ Which marginal frequency is the smallest? Republican

[Example 2] Complete the table of missing information on the 2-way Frequency table regarding the LSTS soccer team.

	Home Matches	Away Matches	Total
Won	5		7
Tie		6	10
Lost	4		
Total	13	13	

Solution

	Home Matches	Away Matches	Total
Won	5	2	7
Tie	4	6	10
Lost	4	5	9
Total	13	13	26

[Example 3] Use the Frequency table to answer the questions presented.

	Pop Music: Yes	Pop Music: No
Rap Music: yes	12	31
Rap Music: No	26	15

① What is the joint frequency of kids who listen to Pop Music & rap music?
12

② What is the marginal frequency of kids who listen to Pop Music? 38

③ What marginal frequency is the largest?
Pop Music: No

④ What is the joint frequency of kids who listen to pop music? 26

⑤ What is the joint frequency of kids who don't listen to music? 15

[Example 4] Use the frequency table to answer questions.

	Pop Music: Yes	Pop Music: No	
Rap Music: yes	12	31	43
Rap Music: No	26	15	41
	38	46	84

① What percent of kids listen to pop music & rap music?

$$\frac{\text{Selected amount}}{\text{total amount}} = \frac{12}{84} \approx .14$$

② What percent is the marginal frequency who listen to Pop Music?

$$\frac{38}{84} = .45$$