

NAME: _____

UNIT 4 • DESCRIBING DATA

Lesson 2: Working with Two Categorical and Quantitative Variables

Practice 4.2.1: Summarizing Data Using Two-Way Frequency Tables

Dylan asked his classmates about their favorite school subject, and wanted to see if there was any difference in the classes preferred by boys and girls. His data is recorded below. Use the data to answer the questions that follow.

Student	Gender	Favorite subject	Student	Gender	Favorite subject
1	Boy	English	21	Boy	Social studies
2	Girl	Math	22	Boy	Science
3	Girl	Math	23	Girl	Social studies
4	Boy	English	24	Girl	Social studies
5	Boy	Science	25	Boy	Social studies
6	Girl	Social studies	26	Boy	English
7	Boy	Math	27	Boy	Science
8	Girl	Math	28	Boy	Science
9	Girl	Social studies	29	Girl	English
10	Girl	Math	30	Boy	English
11	Girl	Math	31	Girl	Science
12	Boy	Science	32	Girl	Math
13	Boy	Social studies	33	Girl	English
14	Girl	Social studies	34	Girl	English
15	Boy	Math	35	Boy	Science
16	Girl	Social studies	36	Girl	Science
17	Boy	English	37	Boy	Social studies
18	Boy	English	38	Boy	English
19	Boy	Science	39	Girl	Math
20	Girl	Science	40	Girl	Math

1. Create a two-way frequency table showing the subjects preferred by students of each gender.
2. Find the marginal frequencies for each gender and for each subject. Include the marginal frequencies in the table.
3. What are the conditional frequencies relative to the total number of people surveyed? Include the values in a table.
4. What are the conditional frequencies relative to the total number of boys and the total number of girls?
5. Describe any trends in the subjects preferred by all students and the subjects preferred by boys versus girls.

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To better understand which type of cell phones people will purchase, a cell phone company collects information about its customers. Customers could select three of the following ages: under 25, 25–35, and over 35. Each customer indicated whether they used a basic phone or a smartphone. The information is recorded below. Use the data to answer the questions that follow.

Customer	Age range	Type of cell phone used	Customer	Age range	Type of cell phone used
1	25–35	smartphone	26	over 35	smartphone
2	under 25	smartphone	27	under 25	smartphone
3	under 25	smartphone	28	25–35	smartphone
4	25–35	smartphone	29	25–35	smartphone
5	25–35	smartphone	30	25–35	smartphone
6	under 25	smartphone	31	over 35	basic phone
7	over 35	smartphone	32	25–35	smartphone
8	over 35	basic phone	33	under 25	smartphone
9	25–35	smartphone	34	under 25	basic phone
10	25–35	basic phone	35	over 35	smartphone
11	under 25	smartphone	36	under 25	smartphone
12	over 35	basic phone	37	25–35	basic phone
13	25–35	smartphone	38	25–35	basic phone
14	over 35	smartphone	39	over 35	basic phone
15	under 25	smartphone	40	under 25	smartphone
16	under 25	smartphone	41	over 35	smartphone
17	under 25	basic phone	42	under 25	basic phone
18	under 25	smartphone	43	under 25	smartphone
19	25–35	smartphone	44	25–35	basic phone
20	25–35	smartphone	45	over 35	basic phone
21	25–35	basic phone	46	25–35	smartphone
22	25–35	smartphone	47	over 35	basic phone
23	25–35	smartphone	48	25–35	smartphone
24	under 25	smartphone	49	under 25	smartphone
25	over 35	basic phone	50	over 35	smartphone

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6. Create a two-way frequency table showing the phones used by customers of each age group.

7. Find the marginal frequencies for each age and for each phone type. Include the marginal frequencies in the table.

8. What are the conditional frequencies relative to the types of phones? Include the values in a table.

9. What are the conditional frequencies relative to all customers surveyed?

10. The cell phone company is thinking of creating a new phone. It wants to sell the cell phone type that is most popular to the age group that is most popular. Which type of cell phone should the company make, and to whom should the company sell it?