

7.1 Frequency Tables

ALGEBRA

Write your questions here!



What is your favorite soft drink?

Categorical Data

TWO WAY FREQUENCY TABLE

| | Coke | Dr Pepper | Sprite | Mountain Dew |
|---------------|------|-----------|--------|--------------|
| High School | 18 | 12 | 4 | 13 |
| Middle School | 12 | 10 | 6 | 28 |

Which Wednesday afterschool activity are you involved in?

TWO WAY FREQUENCY TABLE

| | | ACTIVITY | | | | Total |
|--------|--------|------------|-----------|------|--------------|-------|
| | | Basketball | Math Club | Band | Not Involved | |
| GENDER | Male | 30 | | | 50 | 98 |
| | Female | | 26 | 14 | 30 | |
| Total | | 42 | | 22 | | |

How many students are surveyed?

How many students are in math club?

RELATIVE FREQUENCY TABLE

| | | ACTIVITY | | | | Total |
|--------|--------|------------|-----------|------|--------------|-------|
| | | Basketball | Math Club | Band | Not Involved | |
| GENDER | Male | | | | | |
| | Female | | | | | |
| Total | | | | | | |

What percent of students surveyed are Male?

What percent of students surveyed are Females in Basketball?

TWO WAY FREQUENCY TABLE

| | | AGE | | | | Total |
|------------------|-----|-------|-------|-------|-------|-------|
| | | 12-13 | 14-15 | 16-17 | 18-19 | |
| Share a Computer | Yes | 40 | 47 | 42 | 22 | 151 |
| | No | 10 | 25 | 36 | 34 | 105 |
| Total | | 50 | 72 | 78 | 56 | |

ASSOCIATION

CONDITIONAL RELATIVE FREQUENCY TABLE

Given a student's age, find the conditional relative frequency the student shares a computer.

| | | AGE | | | | Total |
|------------------|-----|-------|-------|-------|-------|-------|
| | | 12-13 | 14-15 | 16-17 | 18-19 | |
| Share a Computer | Yes | | | | | |
| | No | | | | | |
| Total | | | | | | |

Suppose you select a person at random, if the person is 15 years old, do you think that they share a computer?

SMP #2

CONDITIONAL RELATIVE FREQUENCY TABLE

Given a student shares a computer, find the conditional relative frequency of the student's age.

| | | AGE | | | | Total |
|------------------|-----|-------|-------|-------|-------|-------|
| | | 12-13 | 14-15 | 16-17 | 18-19 | |
| Share a Computer | Yes | | | | | |
| | No | | | | | |
| Total | | | | | | |

Suppose you select a person at random, if the student shares a computer, how likely are they to be 16-17 years old?

SUMMARY:

Now,
summarize
your notes
here!

5.1 Frequency Tables

Use the survey results to make a two table. Include marginal frequency.

1. Bob asked students what grade they got on a math test and did they study for the math test?

Students with an A: 17 studied and 4 did not

Students with a B: 14 studied and 8 did not

Students with a C: 9 studied and 13 did not

Students with a D: 2 studied and 6 did not

Students with a F: 1 studied and 3 did not

| | | | | | | | |
|-------|--|--|--|--|--|--|-------|
| | | | | | | | |
| | | | | | | | Total |
| | | | | | | | |
| | | | | | | | |
| Total | | | | | | | |

2. Sarah inventoried the cars on a dealership's lot.

Hondas: 14 new and 12 used

Fords: 12 new and 4 used

Chryslers: 8 new and 4 used

BMW: 12 new and 1 used

Fill in the missing cells of the two way frequency tables.

3.

| | | Favorite Cafeteria Food | | | |
|--------|----------|-------------------------|------|--------|-------|
| | | Pizza | Taco | Burger | Total |
| People | Teachers | 12 | | 21 | 65 |
| | Students | | 66 | | 220 |
| | Total | 132 | | | |

4.

| | | Color of hair | | | |
|-----------------|--------|---------------|--------|-----|-------|
| | | Brown | Blonde | Red | Total |
| Hand Preference | Left | 30 | 16 | | 50 |
| | Right | | 118 | 2 | 230 |
| | Either | 10 | | 2 | |
| | Total | | | 8 | 300 |

Convert the two way frequency tables from above into relative frequency tables.

5.

| | | Favorite Cafeteria Food | | | |
|--------|----------|-------------------------|------|--------|-------|
| | | Pizza | Taco | Burger | Total |
| People | Teachers | | | | |
| | Students | | | | |
| | Total | | | | |

6.

| | | Color of hair | | | |
|-----------------|--------|---------------|--------|-----|-------|
| | | Brown | Blonde | Red | Total |
| Hand Preference | Left | | | | |
| | Right | | | | |
| | Either | | | | |
| | Total | | | | |

- How many people were surveyed?
- What percent prefer Tacos?
- What cafeteria food do students prefer?

- What percent are left handed?
- What hand do Blondes prefer?

Use the two way frequency table to answer the following.

7.

GENDER

| | | Male | Female | Total |
|------------|---------|------|--------|-------|
| MUSIC TYPE | Punk | 24 | 10 | 34 |
| | Techno | 4 | 1 | 5 |
| | Classic | 18 | 12 | 30 |
| | Metal | 9 | 8 | 17 |
| | Total | 55 | 31 | 86 |

- What type of music do females like most?
- What is the most popular type of music among men and women?
- What is the least favorite music for men?
- How many people were surveyed?
- For which gender was the response greater?
- What percent of the participants were female?

Finish converting the two way frequency table above into a conditional frequency table described below.

8. Given a person's gender find the conditional relative frequency of the person's music type.

| | | Gender | | Total |
|------------|---------|------------------------|--------|------------------------|
| | | Male | Female | Total |
| Music Type | Punk | $\frac{24}{55} = .436$ | | |
| | Techno | | | |
| | Classic | | | $\frac{30}{86} = .348$ |
| | Metal | | | |
| | Total | $\frac{55}{55} = 1$ | | |

- What percent of Male's prefer Metal?
- What percent of Female's prefer Punk?

9. Given a person's music type find the conditional relative frequency of the person's gender.

| | | Gender | | Total |
|------------|---------|--------|---------------------|-------|
| | | Male | Female | Total |
| Music Type | Punk | | | |
| | Techno | | $\frac{1}{5} = 0.2$ | |
| | Classic | | | |
| | Metal | | | |
| | Total | | | |

- Given a person prefers Punk music, what percent are Male?
- If you randomly selected a person that prefers Classic music, what is the probability the person is female?

10. Is there an association between gender and music preference? Construct a viable argument to support.

SMP #2

Use the two way frequency table to answer the following.

11. A school newspaper surveyed the student body for an article about club membership. The table below shows the students' club membership by grade level.

| | | # of clubs involved in | | | |
|-------------|------------------|------------------------|--------|---------|-----------|
| | | 0 clubs | 1 club | 2 clubs | 3 or more |
| Grade Level | 9 th | 52 | 16 | 8 | 2 |
| | 10 th | 34 | 26 | 12 | 4 |
| | 11 th | 28 | 21 | 14 | 9 |
| | 12 th | 22 | 28 | 16 | 16 |

- What percent of freshmen are in 1 or more clubs?
- What percent of the school body is involved in 2 clubs?
- Given a student is involved in 3 or more clubs, what percent are in 12th grade?

Solve the following.

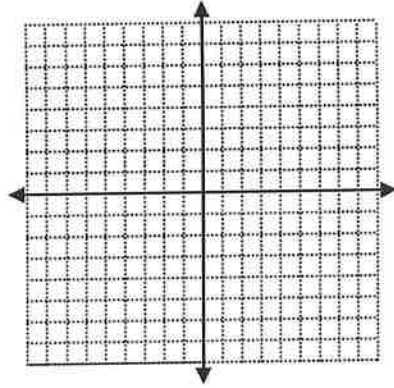
12. $4y - 2(y + 1) = 10$

13. $\frac{10}{3x} = 2$

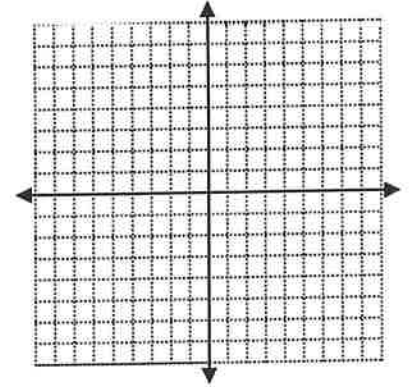
14. $2x - 3y = 12$
 $x = y + 1$

Graph the following.

15. $y > \frac{x}{2} - 3$



16. $2x - 3y = 12$
 $x = 3$



5.1 Frequency Tables

WRAP UP

1. 182 Freshmen were surveyed on whether they participate in a sport. 110 said yes, 40 boys said no, 90 girls were in the survey.

a. Create a two way frequency table and include marginal frequency.

b. What is the relative frequency of girls that play sports?

2. A random sample of 200 teenagers participated in a taste test. Each teenager sampled four choice of fruit drink (labeled A, B, C, and D) and then were asked to pick a favorite. The table shows the results of this taste test.

| | A | B | C | D | Total |
|-------|----|----|----|----|-------|
| Boys | 45 | 25 | 30 | 20 | 120 |
| Girls | 25 | 10 | 30 | 15 | 80 |
| Total | 70 | 35 | 60 | 35 | 200 |

Based on the information given, which of the given statements are true?

Select **ALL** that apply.

- A. 40% of the participants were girls.
- B. 70% of the participants preferred A.
- C. $\frac{20}{120}$ of the boys preferred D.
- D. $\frac{10}{35}$ of the participants who preferred B were girls.
- E. The proportion of boys who preferred C is equal to the proportion of girls who preferred C

EXIT TICKET

Your birthday is coming up and you want to throw the best party ever. You decide to survey your friends to find out their favorite type of party.

| | | Gender | | |
|------------|---------|--------|--------|-------|
| | | Male | Female | Total |
| Party Type | Bowling | 6 | 2 | 8 |
| | Skating | 3 | 11 | 14 |
| | Dancing | 1 | 3 | 4 |
| | Total | 10 | 16 | 26 |

SMP #3

What type of party should you plan? Construct a viable argument to support.