

Relative frequencies are the ratios of each value compared with the total in that row or column.

Example 1 Your eighth grade class went to a water park. Out of the 65 students who went to the park, 17 swam in the wave pool. There were a total of 46 students who rode down the water slide and 16 of those also swam in the wave pool. Construct a two way table to summarize the data

| | | WAVE POOL | | Total |
|-------------|----------------|-----------|--------------|-------|
| | | WAVE POOL | NO WAVE POOL | |
| WATER SLIDE | WATER SLIDE | 16 | 30 | 46 |
| | NO WATER SLIDE | 1 | 18 | 19 |
| | Total | 17 | 48 | 65 |

Calculate the relative frequencies by row. Write them as a decimal rounded to the nearest hundredth. What do you notice about them?

a. What percentage of the total students went in the wave pool?

$$\frac{17}{65} = 26\%$$

b. What fraction of the students that went in the wave pool also went down the water slide?

$$\frac{16}{17}$$

c. What percentage of total students did not go in the wave pool or down the water slide?

$$\frac{18}{65} = 28\%$$

d. What percentage of students that went down the water slide did not go in the wave pool?

$$\frac{30}{46} = 65\%$$

Notes 5-2

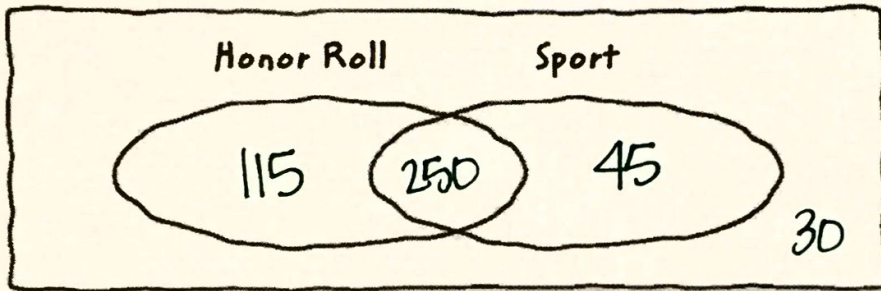
Int 2

Relative Frequency in Two-Way Tables

Unit 5

Example 2 The data from a survey of 440 students are shown in the table. The students were asked whether or not they were on the honor roll and whether or not they played a sport.

Complete the Venn diagram to represent the data.



| Student Athlete Survey | |
|--|-----|
| Only on the honor roll | 115 |
| Only play a sport | 45 |
| Play a sport and are on the honor roll | 250 |
| + | 410 |

a. Find and interpret the relative frequencies by row



| | Honor Roll | Not on Honor Roll | |
|----------------------|--------------------------------|------------------------------|-----|
| Plays a Sport | 250 ; $\frac{250}{295} = 85\%$ | 45 ; $\frac{45}{295} = 15\%$ | 295 |
| Doesn't Play a Sport | 115 ; $\frac{115}{365} = 32\%$ | 30 ; $\frac{30}{365} = 8\%$ | 145 |
| | 365 | 75 | 440 |

b. Find and interpret the relative frequencies by column



| | Honor Roll | Not on Honor Roll | |
|----------------------|--------------------------------|-----------------------------|-----|
| Plays a Sport | 250 ; $\frac{250}{365} = 68\%$ | 45 ; $\frac{45}{75} = 60\%$ | 295 |
| Doesn't Play a Sport | 115 ; $\frac{115}{365} = 32\%$ | 30 ; $\frac{30}{75} = 40\%$ | 145 |
| | 365 | 75 | 440 |

Example 3: Felipe surveyed students at his school. He found that 78 students own a cell phone and 57 of those students own an MP3 player. There are 13 students that do not own a cell phone, but own an MP3 player. Nine students do not own either device. Construct a two-way table summarizing the data.