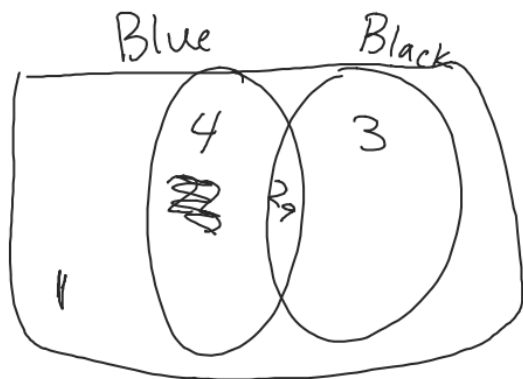


Vocabulary

Definition	Picture
<p><b>Bivariate Data:</b> Data where there are two variables for each observation</p>	
<p><b>Two Way Frequency Table:</b> Useful tool to examine data</p>	
<p><b>Relative Frequency:</b> How often an event occurs divided by the total events.</p>	
<p><b>Venn Diagram:</b> a useful tool</p>	



Example 1:

Felipe surveyed 134 students at his school. He found that 104 students own a cell phone and 70 students have a TV in their room. There are 16 students that do not own a cell phone nor have a TV in their room. Construct a two-way table summarizing the data.


1. What fraction of all students own a phone and have a TV in their room?
2. What fraction of the students that own a phone also have a TV in their room?
3. What percent of all students own a phone and have a TV in their room?
4. What percent of students that have a TV in their room also have a phone?

**Example 2:**

As each person entered the movie theater, Sarah counted how many of the 120 people had popcorn and how many had a drink. She found that out of 79 people that had popcorn, only 5 did not have a drink. Six people walked in without popcorn or a drink. Construct a two-way table summarizing the data.

	Drinks	No Drinks	Total
Popcorn	74	5	79
No Popcorn	35	6	41
Total	109	11	120

79-5  
120-79

1. Compare the percentage of people who got popcorn and also got a drink to the percentage of the people who got a drink and also got popcorn.

$$\frac{74}{79} = 93.7\%$$

$$\frac{74}{109} = 67.9\%$$

2. Which is more likely to happen?

**Example 3:**

Students' Favorite Ice Cream Flavors

	Girls	Boys	Total
Chocolate	12	15	27
Vanilla	8	5	13
Cookies and Cream	6	12	18
Cookie Dough	4	8	12
Total	30	40	70

1. What is the probability that a student will like vanilla?  
 $\frac{13}{70} = 18.6\%$
2. What is the probability that a girl will like cookies and cream?  
 $\frac{6}{30} = 20\%$
3. What is the probability that a boy will like chocolate?  
 $\frac{15}{40} = 37.5\%$
4. What is the probability that a student who likes vanilla is a girl?
5. What is the probability that a boy likes cookie dough?
6. What is the probability that a student does not like vanilla or chocolate?  
 $\frac{18+12}{70} = \frac{30}{70} = 42.9\%$
7. What is the probability that a boy likes cookies and cream or cookie dough?
8. What is the probability that a student who likes cookie dough will be a boy?

**Example 4:** Mrs. Mattice did a survey of students to ask them if they liked English Class and if they liked Math Class. The following two-way table summarizes the results.

	Likes English	Doesn't like English	Total
Likes Math	55	120	175
Doesn't like Math	5	70	75
Total	60	190	250

Create a relative frequency table by rows...

$$\frac{55}{175} = .315$$

	Likes English	Doesn't like English
Likes Math	$\frac{55}{175} = 31.4\%$	$\frac{120}{175} = 68.6\%$
Doesn't like Math	$\frac{5}{75} = 6.7\%$	$\frac{70}{75} = 93.3\%$

Create a relative frequency table by column...

	Likes English	Doesn't like English
Likes Math	$\frac{55}{60} =$	$\frac{120}{190}$
Doesn't like Math	$\frac{5}{60}$	$\frac{70}{190}$