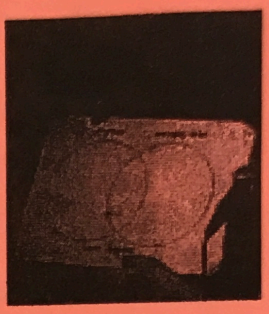
Mutually Exclusive = two events that can't occur together.

9.4 Visualizing with Venn

A Solidify Understanding Task



One of the attributes of Venn diagram's is that it can be easy to see the relationships within the data. In this task, we will create multiple Venn diagrams using data and determine the events that create diagrams to either have an intersection or for them to be mutually exclusive.

1. The following data represents the number of men and women passengers aboard the titanic and whether or not they survived.

	Survived	Did not survive	Total
Men	146	659	805
Women	296	106	402
Total	442	765	1207

2. Create three Venn diagrams with this data.
   a. Men vs Women Back Page
   b. Women vs Survived Back Page
   c. You choose the conditions Back Page
3. Create two probability statements using each of your Venn diagrams from question 2.
   Back Page
4. Create and label three different Venn diagrams using this data. Create at least one that is mutually exclusive and at least one that has an intersection. Back Page

   Sample size: 100

   $P(\text{girl}) = \frac{42}{100}$

   $P(\text{girl or art}) = (\frac{42}{100} + \frac{30}{100}) - \frac{12}{100}$

   $P(\text{art}) = \frac{30}{100}$

   $P(\text{not art}) = \frac{70}{100}$

   $P(\text{boy}) = \frac{58}{100}$

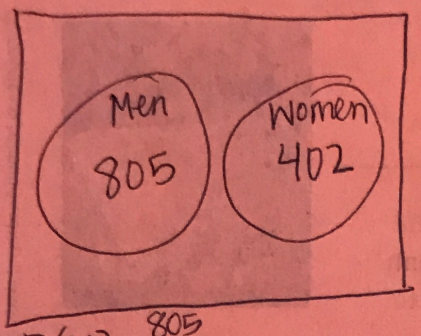
	girl	boy	total
Art	12	18	30
Not Art	30	40	70
total	42	58	100

5. Describe the conditions that create mutually exclusive Venn diagrams and those that create intersections. M.E = events can't happen together, Intersection = events can happen together
6. What conjecture can you make regarding the best way to create a Venn diagram from data to highlight probabilities?

To get the most information (not mutually exclusive), choose one option from each type of category.

2. mutually exclusive

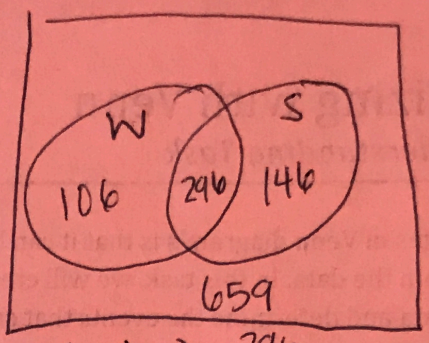
a.



$P(M) = \frac{805}{1207}$

$P(W) = \frac{402}{1207}$

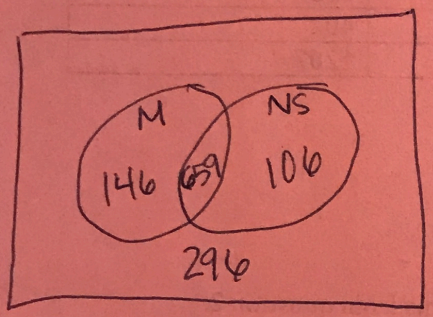
b.



$P(W|S) = \frac{296}{442} =$

$P(W \cap S) = \frac{296}{1207} =$

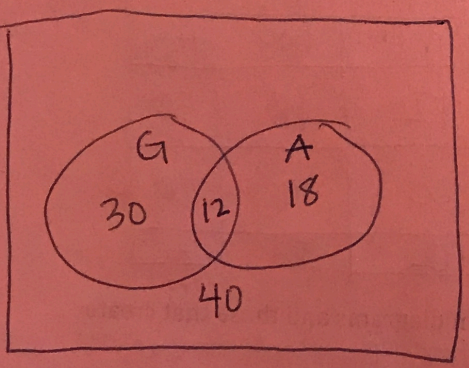
c.

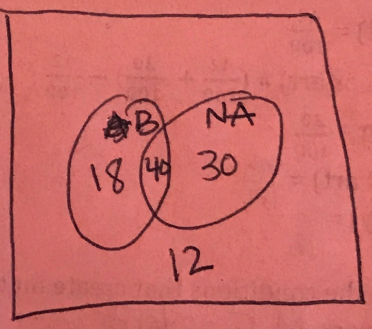


$P(M|NS) = \frac{659}{765} =$

$P(M \cap NS) = \frac{659}{1207} =$

4.





mutually exclusive