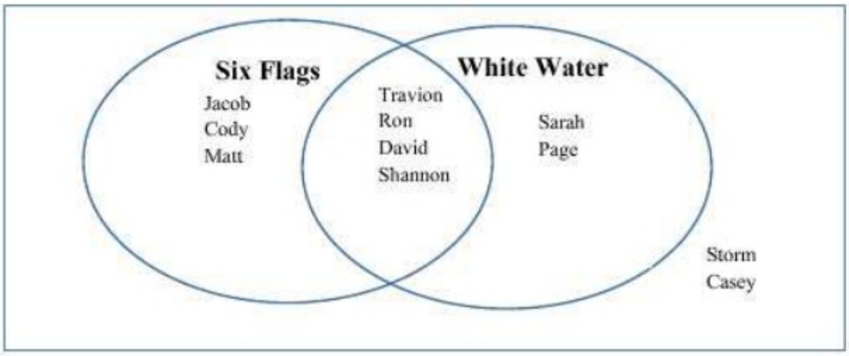
Station 1

This Venn diagram shows the name of students in Ms. Avery's class that like Six Flags and White Water.



Use the information in the Venn diagram above for questions 1 -3.

1. Find P($Six\ Flags\ \cup White\ Water$). 9/11
2. Find the P($Six\ Flags\ \cap White\ Water$). 4/11
3. Find P(Six Flags ∩ White Water') 3/11
4. Find P(Six Flags ∩ White Water)' 7/11

Station 2

1. If P(A) is the probability that an event will occur, which of the following must be <u>false</u>? **Can be more than one answer** 0-1

   A. $\frac{5}{3}$ B. 0   C. $-\frac{1}{4}$ D. $\frac{1}{5}$

2. Write in set notation: P(A or B) = $P(A \cup B)$

3. The complement of the intersection of sets A and B. $P(A \cap B)'$

4. At Pizza City, Peperoni is a popular topping. If set P represent the number of peperoni pizza ordered and S represents the number of Sausage pizza ordered, **write the set notation of the intersection of the total pizzas topped with Peperoni and those topped with Sausage.** $P(P \cap S)$

   "∩"

Station 3

7 8R 7B 3G : 18 / 17

1. A bag contains eight red marbles, seven blue marbles, and three green marbles. You randomly pick a marble and then pick a second marble **without returning** the marbles to the bag. What is the probability the first marble is ~~red and the~~ second is blue?

$P(R \cap B) = \frac{8}{18} \cdot \frac{7}{17} = \frac{56}{306} = \frac{28}{153}$

2. P(J) = 0.32   P(K) = 0.6

Given that these are independent events, estimate P(J and K).

$.32 * .6 = 0.192$

3. Which of the following events are independent given P(A), P(B), and P(A and B)?
(Can be more than one answer.)

a. $P(A) = \frac{1}{2}$ $P(B) = \frac{1}{2}$ $P(A \text{ and } B) = \frac{11}{40}$ X

$\frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$ ≠ Dep.

b. $P(A) = \frac{1}{5}$ $P(B) = \frac{3}{10}$ $P(A \text{ and } B) = \frac{3}{50}$ ✓

$\frac{1}{5} \cdot \frac{3}{10} = \frac{3}{50}$ Ind.

c. $P(A) = 0.4$ $P(B) = 0.6$ $P(A \cap B) = 0.18$

$.4 \cdot .6 = .24$ X Dep

d. $P(A) = 0.3$ $P(B) = 0.4$ $P(A \cap B) = 0.12$

$.3 * .4 = .12$ ✓ Ind.

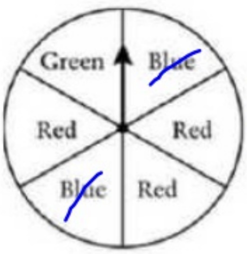
e. $P(A) = \frac{3}{5}$ $P(B) = \frac{7}{10}$ $P(A \text{ and } B) = \frac{21}{50}$

$\frac{3}{5} \cdot \frac{7}{10} = \frac{21}{50}$ ✓ Ind.

f. $P(A) = 0.2$ $P(B) = 0.45$ $P(A \cap B) = 0.09$

$.2 * .45 = .09$ ✓ Ind.

4. If a card is drawn and the spinner below is spun once, what is the probability of drawing a "j" and spinning a blue?



$\frac{2}{6}$

j	j	p	f	p	j
f	p	j	f	j	p

$\frac{5}{12}$

$P(j \cap blue) = \frac{5}{12} \cdot \frac{2}{6} = \frac{10}{72} = \frac{5}{36}$

Station 4

1. The letters that spell **HIPPOPOTAMUS** are put into a bag. What is the probability of selecting a vowel and then, **without replacing,** selecting a P? $:\cancel{12}$ 11

$P(\text{vowel} \cap P) : 5/12 \cdot 3/11 = 15/132 = \frac{5}{44}$

2. A bag contains four Falcons hats, 3 Hawks hats, and five Braves hats. You randomly pick a hat and then **return it** to the bag before picking another. What is the probability of picking a Braves hat the first time and a Falcons hat the second?

$4F, 3H, 5B : 12 \qquad \frac{5}{12} \cdot \frac{4}{12} = \frac{20}{144} = \frac{5}{36}$

3. Your flip a coin three times. What is the probability that the first flip lands heads-up, the second flip lands heads-up, and the third flip lands on tails?

H T $\qquad \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{8}$

Station 5

1. In families that own more than one vehicle, 46% of them have a car and an SUV and 58% have an SUV. What percentage of families have car **given** that they have an SUV?

$\frac{\text{both}}{\text{2nd event}} = \frac{.46}{.58} = .7931 = 79\%$

2. Of 750 people surveyed, 345 like Arby's, 405 like Zaxby's, and 286 like Arby's and Zaxby's. What is the probability that a person chosen at random likes Arby's **given** that they like Zaxby's?

$P(A|Z) = \frac{P(A \cap Z)}{P(Z)} = \frac{286}{405}$

3. When looking at the association between the events "speaking Spanish" and "speaking French", if the events are **independent**, then the probability:

$P(\textit{speaking Spanish}|\textit{speaking French})$ is equal to P(Speaking Spanish).

↓

1st event

Station 6

	Sport Utility Vehicle (SUV)	Sports Car	Totals
male	21	39	60
female	135	45	180
Totals	156	84	240

MathBits.com

1. P(SUV I female) $\frac{P(\text{Suv} \cap \text{female})}{P(\text{female})} = \frac{135}{180} = \frac{3}{4}$
2. P(Sports Car I Male) $\frac{P(SC \cap M)}{P(M)} = \frac{39}{60} = \frac{13}{20}$
3. P(female I sports car) $\frac{P(F \cap SC)}{P(SC)} = \frac{45}{84} = 15/28$

	High School Diploma	Bachelor's Degree	Master's/ Doctoral Degree	Total
Male	16	46	3	65
Female	12	51	3	66
Total	28	97	6	131

$28 - 16 = 12$ $46 + 51 = 97$ $6 - 3 = 3$ $51 + 12 + 3 = 66$

4. Fill in the table above
5. P(High School Diploma I Female) $\frac{P(HSD \cap F)}{P(F)} = \frac{12}{66} = \frac{2}{11}$
6. P(Bachelor's Degree I Male)

$\frac{P(BD \cap M)}{P(M)} = \frac{46}{65}$