

Name: _____

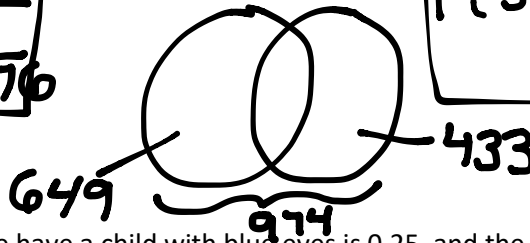
Probability Practice

- 1) A suburban high school has a population of 1376 students. The number of students who participate in sports is 649. The number of students who participate in music is 433. If the probability that a student participates in either sports or music is $\frac{974}{1376}$, what is the probability that a student participates in both sports and music?

	S	NS	T
M			433
NS			
T	649		1376

$$649 + 433 - P(S \text{ and } M) = 974$$

$$P(S \text{ and } M) = \frac{108}{1376}$$



- 2) The probability that Gary and Jane have a child with blue eyes is 0.25, and the probability that they have a child with blond hair is 0.5. The probability that they have a child with both blue eyes and blond hair is 0.125. Given this information, the events blue eyes and blond hair are

~~I: dependent~~

II: independent ✓

~~III: mutually exclusive~~

a. I, only

b. II, only

c. I and II

d. II and III

	BE	NBE	Total
BH	.125		.5
NBH			.5
Total	.25	.75	1

$$\frac{.125}{.5} = \frac{.25}{1} \quad ?$$

$$.25 = .25 \quad \checkmark$$

- 3) The set of data in the table below shows the results of a survey on the number of messages that people of different ages text on their cell phones each month.

Age Group	Text Messages per Month		
	0-10	11-50	Over 50
15-18	4	37	68
19-22	6	25	87
23-60	25	47	157

→ 229

If a person from this survey is selected at random, what is the probability that the person texts over 50 messages per month given that the person is between the ages of 23 and 60.

- a. $\frac{157}{229}$
- b. $\frac{157}{312}$
- c. $\frac{157}{384}$
- d. $\frac{157}{456}$

$$\frac{157}{229}$$

- 4) A study was designed to test the effectiveness of a new drug. Half of the volunteers received the drug. The other half received a sugar pill. The probability of a volunteer receiving the drug and getting well was 40%. What is the probability of a volunteer getting well, given that the volunteer received the drug?

	D	ND	
W	.4		
NW	.1		
	.5	.5	1

$$\frac{.4}{.5} = \boxed{.80}$$

- 5) Sean's team has a baseball game tomorrow. He pitches 50% of the games. There is a 40% chance of rain during the game tomorrow. If the probability that it rains given that Sean pitches is 40%, it can be concluded that these two events are

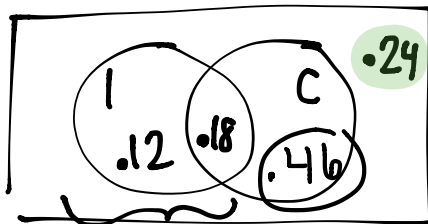
- a. independent
 b. dependent
 c. mutually exclusive
 d. complements

	P	NP	
R	X		.4
NR			.6
	.5	.5	1

$$\frac{X}{.5} = .4$$

$$X = .2$$

- 6) In a school, 30% of the employees have access to the internet, 18% have access to the internet and have cable, and 24% have access to neither the internet nor have cable. Suppose that a student will be selected at random. Using a Venn diagram, calculate the probability that the randomly selected student will not have access to the internet. Explain how you used the Venn diagram to determine your answer.



$$1 - (.12 + .18 + .24)$$

$$= .46$$

$$P(\text{Not } I) = .46 + .24$$

$$P(\text{Not } I) = \boxed{.70}$$

I found $P(C \text{ and not } I)$ by adding $P(\text{not } I \text{ and not } C)$ and $P(I)$ and subtracting from 1. I then added $P(C \text{ and not } I)$ and $P(\text{not } I \text{ and Not } C)$ to find $P(\text{not } I)$.