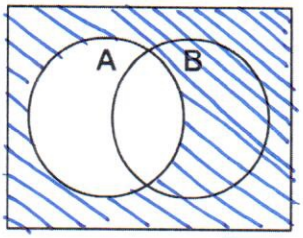
Secondary Math 2 **Unit 11 Review** **Name:** Key **Per:** ___ **Date:**_____

1. Event A: Students who like Pizza Pie Café and Event B: students who like Costa Vida

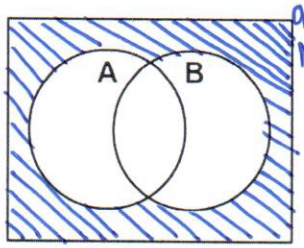
Shade event A^c: NOT A



What does this mean in words?

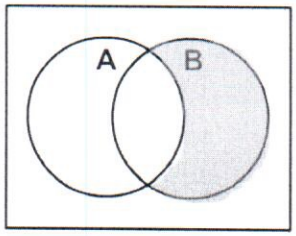
Students who do NOT like Pizza Pie Cafe.

Shade event $A^c \cap B^c$: NOT A and NOT B.



What does this mean in words?

Students who don't like either restaurant.

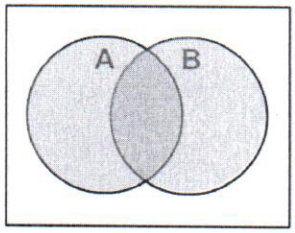


Write this event in symbols:

$B \cap A^c$

What does this mean in words?

Students who only like Costa Vida.



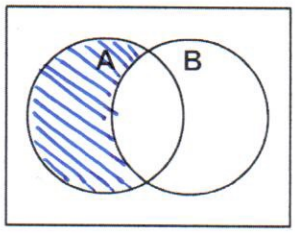
Write this event in symbols:

$A \cup B$

What does this mean in words?

Students who like P.P.C. or Costa Vida or both.

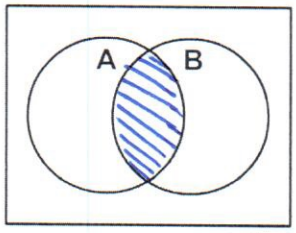
Shade: Students who only like Pizza Pie Cafe



Write this event in symbols:

$A \cap B^c$

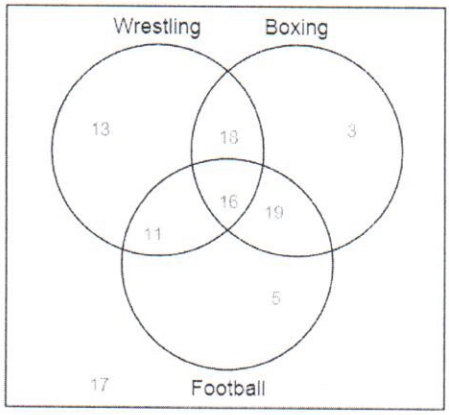
Shade: Students who like both restaurants



Write this event in symbols:

$A \cap B$

2.



102 Total

a) How many students like both football and boxing?

19+16

35

b) How many students only like wrestling?

13

c) How many students like Boxing or Wrestling, but not Football?

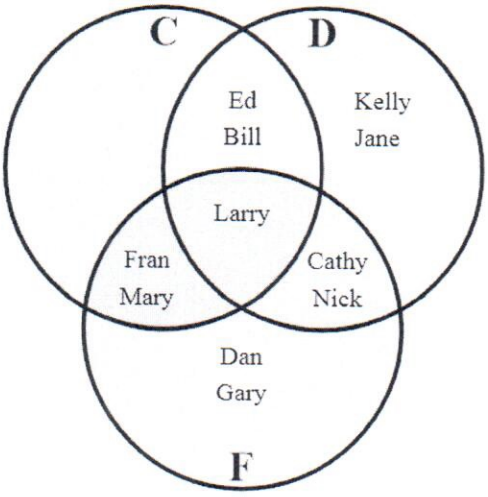
13+18+3

34

d) What is the probability of choosing a student who likes all three?

$\frac{16}{102}$

3.



a) What is the sample space?
S = {Ed, Bill, Kelly, Jane, Larry, Cathy, Nick, Fran, Mary, Dan, Gary}

b) List all the outcomes for C.
C = {Ed, Bill, Larry, Fran, Mary}

c) What names make up the event D^c?
Fran, Mary, Dan, Gary

d) What names make up the event $C \cap F$? C and F overlap
Larry, Fran, Mary

e) What names make up the event $C \cap D^c$? C and NOT D overlap
Fran, Mary

4. You roll two dice. Fill in the table by calculating the sum of the two dice. Calculate the following probabilities.

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

36 Total

a) P(5) $= \frac{4}{36}$

b) P(less than 7) $= \frac{15}{36}$

c) $P(18) = \frac{0}{36}$

d) P(even or 10)
P(even) + P(10) − P(even and 10)
$\frac{18}{36} + \frac{3}{36} - \frac{3}{36} = \boxed{\frac{18}{36}}$

e) P(prime) $= \frac{15}{36}$

f) P(sum greater than 3 and less than 8) at the same time
$= \frac{18}{36}$

5. Decide whether each of the following events are mutually exclusive or not and then calculate each probability.

a) A box of chocolates contains six milk chocolates and four dark chocolates. Two of the milk chocolates and three of the dark chocolates have peanuts inside. You randomly select and eat a chocolate. It is a milk chocolate or has no peanuts inside.

10 Total

P(milk or NO peanuts)

NOT MUTUALLY EXCLUSIVE

P(m) + P(NO peanuts) − P(milk AND NO peanuts)

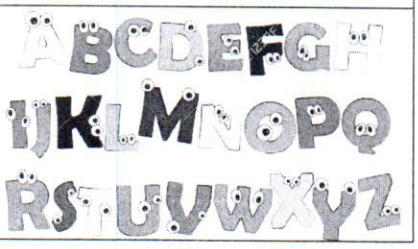
$\frac{6}{10} + \frac{5}{10} - \frac{4}{10} = \boxed{\frac{7}{10}}$

b) You roll an 8 sided die once. It lands on a number less than 4 (1,2,3) or a number greater than 7 (8).

MUTUALLY EXCLUSIVE

P(<4 or >7) $= \frac{3}{8} + \frac{1}{8} - 0 = \boxed{\frac{4}{8}}$

c) One tile with each letter of the alphabet is placed in a bag, and one is drawn at random. It is a vowel (a, e, i, o, u) or a letter from the word *equation* (e, u, a, i, o). 26 Total



NOT MUTUALLY EXCLUSIVE

P(vowel or "equation") $= \frac{5}{26} + \frac{8}{26} - \frac{5}{26} = \boxed{\frac{8}{26}}$

6. Calculate each probability. Pay careful attention to whether the situation is with or without replacement.

a) Two letters are chosen, without replacement, from the English alphabet. If y is considered to be a consonant, find the probability that both letters are vowels.

26 Total

P(both vowel)

$= P(\text{vowel}) \cdot P(\text{vowel})$

$= \frac{5}{26} \cdot \frac{4}{25} = \frac{20}{650}$

b) Jayne has 2 quarters, 1 dime, 3 nickels, and 8 pennies in her pocket. She reaches in twice to throw a coin in a fountain. What is the probability that she threw a quarter and then a penny? 14 Total W/O Replacement

P(Q then P)

$= P(Q) \cdot P(P) = \frac{2}{14} \cdot \frac{8}{13} = \frac{16}{182}$

c) There are 12 red, 13 blue, and 20 green marbles in a jar. What is the probability that you draw three marbles, with replacement, and get a red, then blue, then green?

45 Total

P(R then B then G)

$= \frac{12}{45} \cdot \frac{13}{45} \cdot \frac{20}{45} = \frac{3120}{91125}$

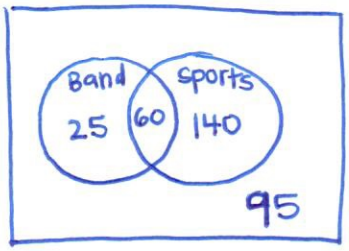
d) Same marble situation from part c. What is the probability that you draw three marbles, without replacement, and get two reds and then a green?

P(R then R then G)

$= \frac{12}{45} \cdot \frac{11}{44} \cdot \frac{20}{43} = \frac{2640}{85140}$

7. Draw a Venn Diagram, and then use your Venn diagram to help you answer the following questions.

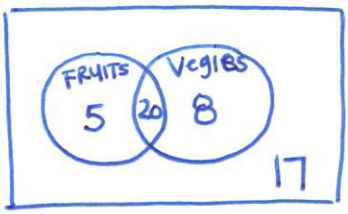
a) In a school of 320 students, 85 students are in the band, 200 students are on sports teams, and 60 students participate in both activities. What is the probability of picking a student who is not involved in either of those activities?



P(Not Band and Not Sports)

$= \frac{95}{320}$

b) Fifty people were surveyed and only 20 people said that they eat both fruits and vegetables every day. 25 people said that they eat fruit and 28 said that they eat vegetables. How many people do not eat any fruits or vegetables?



17 people

8. Calculate each probability and circle the one that has the greatest probability.

	Favorite Color				
	Red	**Blue**	**Green**	**Purple**	**Total**
Boys	.11	.20	.10	.09	**.50**
Girls	.13	.11	.08	.18	**.50**
Total	**.24**	**.31**	**.18**	**.27**	**1**

a) A boy is chosen given that the student likes red. ← GREATEST PROBABILITY

$P(\text{boy} \mid \text{red}) = \frac{0.11}{0.24}$ → 45.8%

b) A girl is chosen given that the student likes green.

$P(\text{Girl} \mid \text{Green}) = \frac{0.08}{0.18}$ → 44.4%

c) A student is chosen who likes blue given that the student is a boy.

$P(\text{Blue} \mid \text{Boy}) = \frac{0.20}{0.50}$ → 40%

9. The table below shows the counts of each gender of student and which Disney movie is their favorite. Calculate the totals and then use the table to calculate the probabilities.

	Aladdin	Lion King	Tangled	Total
Male	214	152	90	456
Female	103	157	276	536
Total	317	309	366	992

a) $P(Aladdin \mid Male) = \frac{214}{456}$

b) $P(Tangeld \mid Female) = \frac{276}{536}$

c) $P(Not\ Female \mid Aladdin)$ (male) $= \frac{214}{317}$

d) $P(Male \mid Not\ Lion\ King) = \frac{304}{683}$

e) What is the probability that Susie likes Lion King?

$P(\text{Lion King} \mid \text{Female}) = \frac{157}{536}$

f) Jordan likes Aladdin. What is the probability that Jordan is female?

$P(\text{Female} \mid \text{Aladdin}) = \frac{103}{317}$

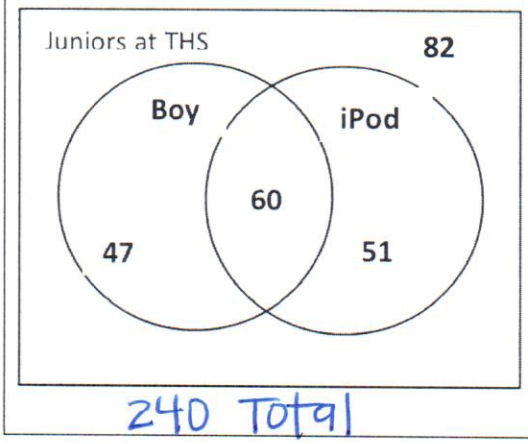
g) What is the probability that Steven doesn't like Tangled?

$P(\text{Not tangled} \mid \text{Male}) = \frac{366}{456}$

h) Taylor likes Lion King. What is the probability that Taylor is male?

$P(\text{male} \mid \text{Lion King}) = \frac{152}{309}$

10. Use the Venn diagram to answer the following questions.



240 Total

a) $P(Boy \mid iPod) = \frac{60}{111}$

b) $P(Boy \cap iPod) =$ and $= \frac{60}{240}$

c) $P(iPod \mid Girl) = \frac{51}{133}$

d) What is the probability that Jared does not have an iPod?

$P(\text{NO iPod} \mid \text{boy}) = \frac{47}{107}$