Name: _____ Class: _____ Date: _____ ID: B

5.1 and 5.2 Quick Quiz (1/4 Test - may use HW)

Show work clearly. You will be graded on the correctness of your methods as well as on the accuracy and completeness of your results. ***For probability questions, provide (1) a probability statement, (2) clearly show numbers used, and (3) show probabilities in decimal form. Rounded to 3-decimals.***

1. A school's debate club has 10 members, 6 females and 4 males. If the team decides to pick two members randomly to participate in a debate, what is the probability that both of the chosen members are female? Then use the random number table to carry out 10 trials of your simulation to estimate the probability. **CLEARLY describe the simulation procedure below**:

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① ASSIGN Females (0-5) and Males (6-9)
② Choose 2 Numbers from the random digits, IGNORING REPEATS.
③ DETERMINE THE GENDERS OF THE 2 CLUB MEMBERS
④ REPEAT THIS 10 TIMES
⑤ CALCULATE THE PROBABILITY BOTH MEMBERS ARE FEMALE

Mark above each line of the table so that someone can clearly follow your method.

10

	MM MM MF	FM MF FF	MF FM	MF FF		
141	96767	35964	23822	96012	94591	65194
142	72829	50232	97892	63408	77919	44575

Finally, estimate the probability.

6

P(BOTH Female) = 2/10 = .2

2. Last Saturday at Pasquale's Pizzas and Wings, 60 customers were served over the course of the evening. Fifty-two customers ordered pizza and 16 ordered buffalo wings. Twelve of these customers ordered both pizza and wings. Suppose we select a customer from last Saturday at random. ***(a) Draw a Venn diagram below so that it describes the chance process involved here. Let P = the event "ordered pizza" and W = the event "ordered wings."***

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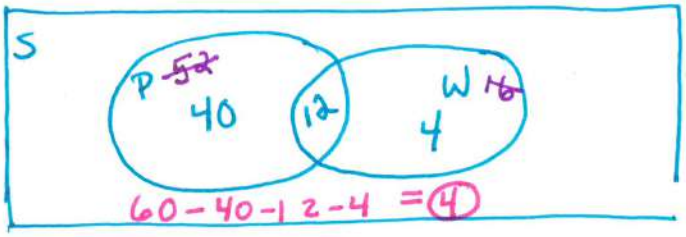


P(P) = 52/60

P(W) = 16/60

(b)What is the probability that a randomly-chosen customer did not order wings or pizza? Justify you answer with appropriate calculations.

8

P(Neither P or W) OR 1 − P(P or W) or $P(P^c \text{ and } W^c)$

4/60 = .067

3. Suppose you toss one coin and roll one six-sided die. For probablities use the number of occurances from the samlple space.

(a) List the outcomes in the sample space.

12 OUTCOMES — 8

H1, H2, H3, H4, H5, H6

T1, T2, T3, T4, T5, T6

P(·) stmt 2pts
numbers 4 pts
Probability 2pts

(b) Find the probability of getting a 6.

8 $P(6) = 2/12 = .167$

(c) Find the probability of getting a 1, 2, 3, 4 on the die.

8 $P(1, 2, 3, 4) = 8/12$ .667

(d) Find the probability of getting a head or a five.

8 $P(H \text{ or } 5) = P(5) + P(H) - P(H \text{ and } 5)$

$2/12 + 6/12 - 1/12 = 7/12 = .583$

4. The table below gives the counts (in thousands) of earned degrees in the United States in a recent year, classified by level and by the gender of the degree recipient.

	Degree (MS)		(P)	(D)	
	Bachelor's	Master's	Professional	Doctoral	Total
(F) Female	616	194	30	16	856
Male	529	171	44	26	770
Total	1145	365	74	42	1626

Suppose one degree recipient from this group is selected randomly.

(a) What is the probability that the person selected is Female and earned a Master's degree?

8 $P(F \text{ and Masters}) = \frac{194}{1626} = .119$

(c) What is the probability that the person selected earned a Professional or Doctoral degree?

8 $P(\text{Prof or Doc}) = \frac{74+42}{1626} = \frac{116}{1626} = .071$

(d) What is the probability that the person selected is female or earned a Master's degree?

8 $P(F \text{ or Masters}) = P(F) + P(MS) - P(F \text{ and } MS)$

$\frac{856 + 365 - 194}{1626} = \frac{1027}{1626}$

$= .632$

AP Stats – 5.1 & 5.2 Quick Quiz Bonus Questions (2pts each)	Name:

Below is the Probability Model for the sum of rolling 2 dice

x	P(x)
2	0.028
3	0.056
4	0.083
5	0.111
6	0.139
7	0.167
8	0.139
9	0.111
10	0.083
11	0.056
12	0.028
Total	1.001

Let:

Event A: rolling 2 dice with sums that is an Even number

Event B: rolling 2 dice with sums 7-10

$P(A) = .5$

$P(B) = .5$

$P(A \text{ and } B) = .222$

For each, create a VENN DIAGRAM to clearly show how you found the probability (round 3 decimals):

1. P(A U B)= P(A or B)

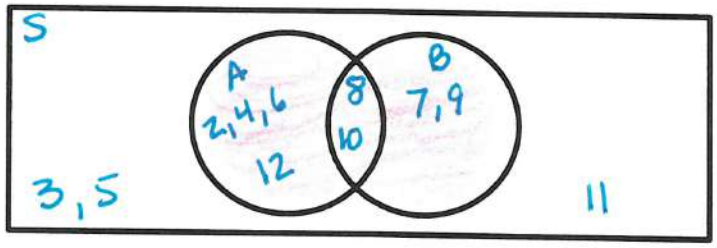
$1 - [P(3) + P(5) + P(11)]$

$1 - .056 - .111 - .056 = .777$

OR

$P(A) + P(B) - P(A \text{ and } B)$

$= .5 + .5 - .222 = .778$



2. P($A^C \cap B$)=

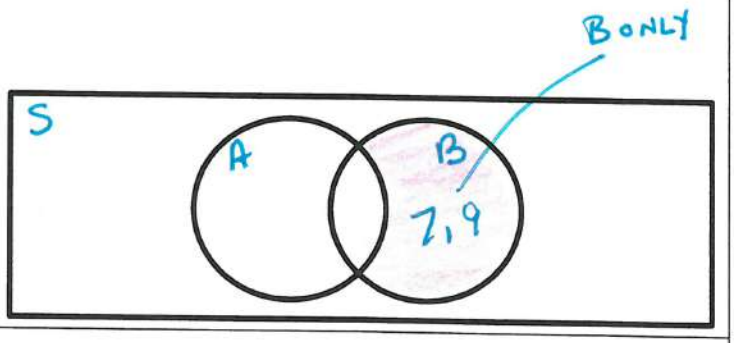
$P(7) + P(9) =$

$.167 + .111 = .278$

OR

$P(B) - P(A \text{ and } B) =$

$.5 - .222 = .278$

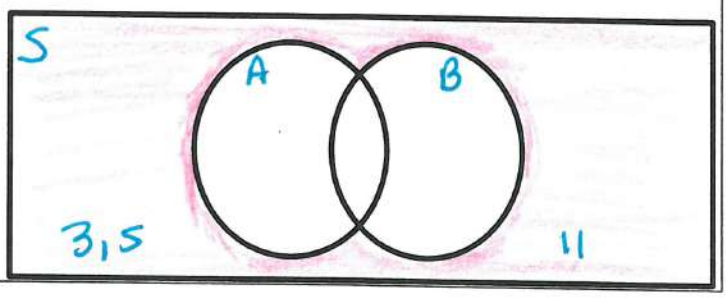


3. P($A^C \cap B^C$)=

$P(3) + P(5) + P(11) =$

$.056 + .111 + .056 =$

$.223$



Version B