Name:	Date:

Assignment 2: Theoretical Probability

Expectations

Assessment	KU:	APP:	T/PS:	COMM:

Through this assignment, you will have the opportunity to…

_____determine the theoretical probability of all outcomes of a discrete sample space

_____determine and solve problems involving the complement of an event

_____determine whether two or more events are mutually or non-mutually exclusive and solve related problems

_____identify and solve problems involving independent, dependent, and conditional events

Instructions

Part A-Knowledge & Understanding (KU)
Answer each of the problems that follow. The communication aspect of your solution will be assessed using the criteria at the end of the assignment. If using Onenote Classroom Notebook, answer between each problem; if completing by hand, do so on lined paper and hand in your assignment sheet with your completed assignment. Check the success criteria, below this problem set, for hints as to what you should try to emphasize in your solutions.

1. Each of the letters of the word PROBABILITY are placed in a hat. If one letter is drawn randomly, what is the probability that a vowel is pulled out?

2. A spinner is divided into twelve equal sectors, numbered 1 through 12. An event space is defined as spinning a number divisible by 3. Determine the value of $P(A')$.

_____3. If A and B are mutually exclusive events, then

$P(A) + P(B) = 1$
$P(A \cup B) = P(A) + P(B)$
c. $P(A \cap B) = P(A) + P(B)$
d. $P(A \cup B) = 1$

4. A class is surveyed to determine whether they prefer Mathematics or English. The table below shows the results. State *P* (prefers English|Female).

Gender	Mathematics	English
Males	4	9
Females	7	8

5. A bag contains 3 nickels, 5 dimes, and 6 quarters. If a nickel is taken out and not replaced, state the probability that the next coin drawn will be a dime.

Part A-Success Criteria

Before submitting your completed assignment, ensure that you have considered the following:

Did I …

	Category	**Criteria**			
#1	KU, COMM	Calculate probability, showing and describing (explanation, using math conventions) all work?	*Approaching*	*On Target*	*Working to Exceed*
#2	KU, COMM	Also define what A' represents as the event in the problem? Describe the outcome(s) being sought?	*Approaching*	*On Target*	*Working to Exceed*
#3	KU, COMM	Describe what is meant by mutual exclusion?	*Approaching*	*On Target*	*Working to Exceed*
#4	KU, COMM	Create an opportunity to demonstrate some math conventions when answering?	*Approaching*	*On Target*	*Working to Exceed*
#5	KU, COMM	Aside from providing the probability, describe that this problem contains dependent events (that is, how I know it does)?	*Approaching*	*On Target*	*Working to Exceed*

Part B-Application (APP)

Answer each of the problems that follow. The communication aspect of your solution will be assessed using the criteria at the end of the assignment. If using Onenote Classroom Notebook, answer between each problem; if completing by hand, do so on lined paper and hand in your assignment sheet with your completed assignment. Check the success criteria, below this problem set, for hints as to what you should try to emphasize in your solutions.

Problems

1. Of 1200 students at a high school, 600 went to the athletic banquet and 350 went to the athletic banquet and the winter formal. If 400 students went to neither event, determine the probability that a student only went to the winter formal.

2. A student completing an assignment with 4 true/false questions. The student wants to know the theoretical probability of guessing *at least* 2 or more of the questions correctly. Determine this probability.

3. A group of 200 candidates apply for a job. Only 10 will be given interviews and only 3 of those candidates will be given second interviews. If the selection process is completely random, what is the probability of being given a second interview?

Part B-Success Criteria

Before submitting your completed assignment, ensure that you have considered the following:

Did I …

	Category	**Criteria**			
#1	APP, COMM	Consider the use of a Venn diagram to represent my thinking? Use the Additive Principle for Probabilities? Incorporate mathematical conventions for writing solutions (including introducing events)?	*Approaching*	*On Target*	*Working to Exceed*
#2	APP, COMM	Use an appropriate strategy (visual, graphic) to model my thinking? Consider if the events of guessing are independent or dependent events? Incorporate mathematical conventions for writing solutions (including introducing events)?	*Approaching*	*On Target*	*Working to Exceed*
#3	APP, COMM	Define both events? Considered if the events are independent or dependent? Incorporate mathematical conventions for writing solutions?	*Approaching*	*On Target*	*Working to Exceed*

Part C-Thinking & Problem Solving (T/PS)
Answer ANY TWO of the problems that follow. If using Onenote Classroom Notebook, answer between each problem; if completing by hand, do so on lined paper and hand in your assignment sheet with your completed assignment.

Problems

1. Find the probability that choosing a number between 1 and 300 is even or divisible by 5.

2. A box has a group of 24 blocks in it. Some are red, some are yellow, and some are a mixture of the two colours. The probability of drawing a red block is $\frac{1}{3}$. The probability of drawing a red and yellow block is $\frac{1}{12}$. Determine the number of balls with yellow on them.

3. Create and solve a probability question where the probability of a second event happening given a first event happening is $\frac{2}{3}$, and the probability of the first event happening is $\frac{1}{2}$.

C-Success Criteria

Before submitting your completed assignment, ensure that you have considered the following criteria:

Did I …

	Category	**Criteria**			
#1	T/PS	-Show a complete solution process? -Identify everything that's important to solving the problem? -Show my full understanding of how important parts of the problem relate to one another? -Provide an appropriate conclusion to the problem?	*Approaching*	*On Target*	*Working to Exceed*
#2	T/PS	-Show a complete solution process? -Identify everything that's important to solving the problem? -Show my full understanding of how important parts of the problem relate to one another? -Provide an appropriate conclusion to the problem?	*Approaching*	*On Target*	*Working to Exceed*
#3	T/PS	-Show a complete solution process? -Identify everything that's important to solving the problem? -Show my full understanding of how important parts of the problem relate to one another? -Provide an appropriate conclusion to the problem?	*Approaching*	*On Target*	*Working to Exceed*

Communication Criteria	Name:

Did I …

Criteria			
Interpret information correctly and make reasonable statements?	*Approaching*	*On Target*	*Working to Exceed*
Consistently use mathematical conventions correctly—use of symbols, key terms, labels, solutions written from top to bottom of page	*Approaching*	*On Target*	*Working to Exceed*
Include and integrate both mathematical forms and narrative (i.e., descriptive, explanatory) forms	*Approaching*	*On Target*	*Working to Exceed*
Provide explanations and justifications that would be clear for a range of audiences (e.g., peers and teacher)	*Approaching*	*On Target*	*Working to Exceed*

Current Assessment

KU	Approaching	On Target	Working to Exceed
APP	Approaching	On Target	Working to Exceed
T/PS	Approaching	On Target	Working to Exceed
COMM	Approaching	On Target	Working to Exceed