Name:_____

Math 30-2 Probability

Multiple Choice/Numerical Response

Use the following information to answer the following question

The following probabilities were calculated:

$P(A) = 0.2$; $P(B) = \frac{1}{6}$; $P(C) = 0.3$; $P(D) = \frac{1}{3}$

1.which event is most likely to occur?

A. A
B. B
C. C
D. D

2.Which expression correctly describes the probability, P, of event X occurring, where $n(X)$ is the number of favorable outcomes to the event and $n(T)$ is the number of total outcomes in the sample space?

A. $P(X) \cdot n(X) = n(T)$
B. $n(T) = \frac{P(X)}{n(X)}$
C. $P(X) = n(X) + n(T)$
D. $P(X) = \frac{n(X)}{n(T)}$

3. Three outcomes, A, B, and C, are all equally likely. If there are no other possible outcomes, which of the following statements is true?

A. $P(A) = 0$
B. $P(B) = \frac{1}{3}$
C. $P(C) = 1$
D. $P(A) = 3$

NR 1. A contestant in a game must draw a single cube from a bag containing 5 red cubes, 4 blue cubes, and 2 white cubes.
The odds against the contestant drawing a white cube are a:b.

Enter the value of 'a' in the first position in the numeric response sheet and the value of 'b' in the second position in the numeric response sheet

4. The odds in favor of Macy passing her driver's test on the first try are 7 : 4. Determine the probability that she will pass her driver's test on the first try.

A. 0.226
B. 0.364
C. 0.571
D. 0.636

5. Tia notices that yogurt is on sale at a local grocery store. The last eight times that yogurt was on sale it was available only three times. Determine the probability of yogurt being available this time.

A. 0.220
B. 0.375
C. 0.460
D. 0.625

NR 2. Raymond has 12 coins in his pocket, and 9 of these coins are quarters. He reaches into his pocket and pulls out a coin at random. The probability of the coin being a quarter, to the nearest humdredth, is _____

Use the following information to answer the next TWO questions

Julie draws one card at random from a standard deck of 52 playing cards.

NR 3. The probability of the card being a diamond to the nearest percent is _____%
Record the answer on the numerical response answer sheet

6. The probability that the card is a diamond or a face card is
A. 0.058
B. 0.077
C. 0.423
D. 0.481

Use the following information to answer the next two questions

Yvonne tosses three coins (a penny, a dime, and a quarter)

7. Determine the probability that at all coins will show as tails

A. 0.125
B. 0.375
C. 0.625
D. 0.875

NR. 4 Determine the probability, to the nearest hundredth, that Yvonne will see at least one head

NR 5. How many of the following events are independent

* Drawing a card from a standard deck of 52 playing cards and then drawing another card, without replacing the first card.
* Rolling a pair of six-sided dice and recording the outcome
* Rolling a die and tossing a coin
* Randomly selecting a book from a shelf, replacing it and then selecting another book from the shelf

Record your answer on the numerical response sheet

8. The names of 25 students, including Adam and Erika, are entered into a draw for 2 different prizes. Names will be randomly drawn without replacement to determine the winners. Which of the following expressions can be used to determine the probability that Adam and Erika are the two winners?

A. $\frac{1}{25} \times \frac{1}{24}$
B. $\frac{1}{25} \times \frac{1}{25}$
C. $\frac{2}{25} \times \frac{1}{24}$
D. $\frac{1}{25} \times \frac{1}{25}$

9. Rashid goes to the gym and does two different cardio workouts each day. He always goes early in the morning so that all equipment is available and randomly chooses between using a treadmill, a stepper, a stationary bike, an elliptical walker, and running the track. Determine the probability that the next time Rashid goes to the gym he will use the stepper **and then** run the track.

A. 1%
B. 5%
C. 8%
D. 14%

NR 6. Anthony has three loonies, four toonies, and seven quarters in his pocket. He needs two toonies for a parking meter. He reaches into his pocket and pulls out two coins at random. Determine the probability, to the nearest whole percent, that both coins are toonies.

Record your answer on the numerical response sheet

10. There are 20 cards, numbered 1 to 20, in a box. One card is selected and its value is recorded. The card is then replaced and another card is then drawn. Determine the probability of drawing an even number then drawing a number that is a multiple of 4.

A. 8.8%
B. 9.3%
C. 10.7%
D. 12.5%

*Use the information below to answer the next **three** questions*

Jake and Agnes are playing a board game where you roll two six-sided dice.
One of the dice is red and the other is black
They drew a chart to show the possible results of the rolls

11. If a player rolls a sum greater than 9 or a multiple of 6, the player gets a bonus of 50 points. Determine the probability of getting the 50 point bonus on the next roll.

A. $\frac{1}{18}$

B. $\frac{2}{9}$

C. $\frac{1}{6}$

D. $\frac{11}{36}$

12. Let A represent rolling a sum greater than 7. Let B represent doubles.. Determine the correct statement that shows the probability of rolling a sum that is greater than 7 and doubles.

A. $P(A \cap B) = \frac{1}{12}$

B. $P(A \cup B) = \frac{1}{12}$

C. $P(A \cap B) = \frac{5}{72}$

D. $P(A \cup B) = \frac{5}{72}$

13. On the next roll, if the red die lands on 5 and the sum of the two dice is **greater than** 9, Jake wins a point. Determine the probability that Jake will win this point.

A. $\frac{1}{18}$

B. $\frac{1}{3}$

C. $\frac{2}{5}$

D. $\frac{1}{2}$

Written Response:

1. A high school football coach is trying to decide which quarterback he should start in next week's game. He examines the win: $loss$ ratio for the two quarterbacks. Which one should he start? (no marks for this question if work is not shown)

Player	**Wins**	**Losses**
Germaine	8	5
Gabriel	7	4

2. The probability that Alvins' mother will serve rice with dinner is 0.78. The probablility that she will serve carrots is with dinner is 0.30. The probability that she will serve neither rice nor carrots is 0.14.

a) Draw a Venn diagram to illustrate the situation.

b) Determine the probability that Alvin's mother will serve **both** rice and carrots.

3. Jessica is playing a game of solitaire, using a well-shuffled deck of 52 cards. If she lays out 7 cards face-up, determine the probability that they will all be spades.

4. A child randomly arranges 10 different books on her bookshelf. What is the probability that *The Cat in the Hat*, *Green Eggs and Ham*, and *Horton Hears a Who!* will be together on the shelf?

5. Liam has seven red marbles and five blue marbles in a bag. He draws two marbles, one after the other, without replacing the first one.

a) Determine the probability that both marbles are red

b) Determine the probability that both marbles are blue.

c) Explain how we can use the results from a) & b) to determine the probability that he draws out one marble of each color

6. Logan walks his dog every day. They walk by the river 5 days a week and they walk around the block two days a week. When they walk by the river, they see a dog 85% of the time. When they walk around the block, they see other dogs 30% of the time.

a) Draw a tree diagram to represent this situation. (which way do they walk? Do they see a dog?)

b) Determine the probability that Logan and his dog will see another dog on their walk tomorrow.