Practice(chapter3)

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the problem.

1) If sample points *A*, *B*, *C*, and *D* are the only possible outcomes of an experiment, find the probability of *D* using the table below. 1) _____

Sample Point	*A*	*B*	*C*	*D*
Probability	1/5	1/5	1/5	

A) $\frac{3}{5}$ B) $\frac{2}{5}$ C) $\frac{1}{5}$ D) $\frac{1}{4}$

2) Which number could be the probability of an event that is almost certain to occur? 2) _____

A) .01 B) .99 C) 1.01 D) .51

3) A hospital reports that two patients have been admitted who have contracted Crohn's disease. Suppose our experiment consists of observing whether each patient survives or dies as a result of the disease. The simple events and probabilities of their occurrences are shown in the table (where *S* in the first position means that patient 1 survives, *D* in the first position means that patient 1 dies, etc.). 3) _____

Simple Events	Probabilities
SS	0.59
SD	0.10
DS	0.16
DD	0.15

Find the probability that at least one of the patients does not survive.

A) 0.26 B) 0.15 C) 0.10 D) 0.41

4) Evaluate $\binom{8}{2}$. 4) _____

A) 28 B) 16 C) 4 D) 56

5) Evaluate $\binom{6}{0}$. 5) _____

A) 0 B) undefined C) 1 D) 6

6) Evaluate $\binom{7}{7}$. 6) _____

A) 7 B) 1 C) 14 D) 49

Provide an appropriate response.

7) The distribution of blood types for 100 Americans is listed in the table. If one donor is selected at random, find the probability of selecting a person with blood type A+ or A−. 7) _____

Blood Type	O+	O−	A+	A−	B+	B−	AB+	AB−
Number	37	6	34	6	10	2	4	1

A) 0.02 B) 0.06 C) 0.34 D) 0.4

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Solve the problem.

8) A college has 85 male and 75 female fulltime faculty members. Suppose one fulltime faculty member is selected at random and the faculty member's gender is observed. 8) _____

a. List the sample points for this experiment.
b. Assign probabilities to the sample points.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

9) Kim submitted a list of 12 movies to an online movie rental company. The company will choose 3 of the movies and ship them to her. If all movies are equally likely to be chosen, what is the probability that Kim will receive the three movies that she most wants to watch? 9) _____

A) $\frac{1}{1320}$ B) $\frac{1}{4}$ C) $\frac{1}{220}$ D) $\frac{1}{1728}$

Use the fundamental counting principle to solve the problem.

10) A shirt company has 4 designs each of which can be made with short or long sleeves. There are 5 color patterns available. How many different shirts are available from this company? 10) _____

A) 40 B) 20 C) 11 D) 9

11) How many license plates can be made consisting of 3 letters followed by 2 digits? 11) _____

A) 175,760 B) 100,000 C) 11,881,376 D) 1,757,600

Solve the problem.

12) Four hundred accidents that occurred on a Saturday night were analyzed. The number of vehicles involved and whether alcohol played a role in the accident were recorded. The results are shown below: 12) _____

	Number of Vehicles Involved			
Did Alcohol Play a Role?	1	2	3 or more	Totals
Yes	57	92	21	170
No	24	172	34	230
Totals	81	264	55	400

Suppose that one of the 400 accidents is chosen at random. What is the probability that the accident involved more than a single vehicle?

A) $\frac{81}{400}$ B) $\frac{319}{400}$ C) $\frac{11}{80}$ D) $\frac{21}{400}$

13) The table shows the political affiliations and types of jobs for workers in a particular state. Suppose a worker is selected at random within the state and the worker's political affiliation and type of job are noted. 13) _____

		Political Affiliation		
		Republican	Democrat	Independent
Type of job	White collar	10%	17%	12%
	Blue Collar	16%	18%	27%

Find the probability that the worker is a white collar worker affiliated with the Democratic Party.

A) 0.57 B) 0.39 C) 0.35 D) 0.17

14) At a community college with 500 students, 120 students are age 30 or older. Find the probability that a randomly selected student is less than 30 years old. 14) _____

A) .24 B) .30 C) .12 D) .76

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

15) Suppose that 62% of the employees at a company are male and that 35% of the employees just received merit raises. If 20% of the employees are male and received a merit raise, what is the probability that a randomly chosen employee is male or received a merit raise? 15) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

16) Suppose that for a certain experiment $P(A) = .33$ and $P(B) = .29$. If A and B are mutually exclusive events, find $P(A \text{ or } B)$. 16) _____

A) .03 B) .31 C) .38 D) .62

17) Suppose that for a certain experiment $P(A) = .6$ and $P(B) = .3$. If A and B are independent events, find $P(A \text{ and } B)$. 17) _____

A) .90 B) .18 C) .30 D) .50

18) Classify the events as dependent or independent. Events A and B where 18) _____
P(A) = 0.8, P(B) = 0.2, and P(A and B) = 0.16

A) dependent B) independent

19) A group of students were asked if they carry a credit card. The responses are listed in the table. 19) _____

Class	Credit Card Carrier	Not a Credit Card Carrier	Total
Freshman	40	20	60
Sophomore	25	15	40
Total	65	35	100

If a student is selected at random, find the probability that he or she owns a credit card **given** that the student is a freshman. Round your answer to three decimal places.

A) 0.615 B) 0.333 C) 0.667 D) 0.400

Provide an appropriate response.

20) A group of students were asked if they carry a credit card. The responses are listed in the table. 20) _____

Class	Credit Card Carrier	Not a Credit Card Carrier	Total
Freshman	21	39	60
Sophomore	18	22	40
Total	39	61	100

If a student is selected at random, find the probability that he or she is a sophomore **given** that the student owns a credit card. Round your answers to three decimal places.

A) 0.462 B) 0.975 C) 0.180 D) 0.538

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

21) A human gene carries a certain disease from a mother to her child with a probability rate of 0.60. That is, there is a 60% chance that the child becomes infected with the disease. Suppose a female carrier of the gene has four children. Assume that the infections, or lack thereof, are independent of one another. Find the probability that none of the children get the disease from their mother. 21) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

22) You are dealt two cards successively **without replacement** from a standard deck of 52 playing cards. Find the probability that the first card is a two and the second card is a ten. 22) _____

A) 0.994 B) 0.250 C) 0.500 D) 0.006

23) Four hundred accidents that occurred on a Saturday night were analyzed. The number of vehicles involved and whether alcohol played a role in the accident were recorded. The results are shown below: 23) _____

	Number of Vehicles Involved			
Did Alcohol Play a Role?	1	2	3 or more	Totals
Yes	54	96	20	170
No	24	177	29	230
Totals	78	273	49	400

Suppose that one of the 400 accidents is chosen at random. What is the probability that the accident involved alcohol or a single car?

A) $\frac{27}{200}$ B) $\frac{97}{200}$ C) $\frac{17}{40}$ D) $\frac{39}{200}$

24) A card is drawn from a standard deck of 52 playing cards. Find the probability that the card is an ace or a king. 24) _____

A) $\frac{4}{13}$ B) $\frac{8}{13}$ C) $\frac{1}{13}$ D) $\frac{2}{13}$

25) A card is drawn from a standard deck of 52 playing cards. Find the probability that the card is an ace or a heart. 25) _____

A) $\frac{4}{13}$ B) $\frac{3}{13}$ C) $\frac{7}{52}$ D) $\frac{17}{52}$

1) B
2) B
3) D
4) A
5) C
6) B
7) D
8) a. {male, female}
   b. $P(\text{male}) = \frac{85}{160} = .53125$; $P(\text{female}) = \frac{75}{160} = .46875$
9) C
10) A
11) D
12) B
13) D
14) D
15) Using the Additive Rule, the probability is .62 + .35 – .20 = .77.
16) D
17) B
18) B
19) C
20) A
21) Let D be the event of a single child getting the disease.

$P(\text{none get the disease}) = P(D^c \cap D^c \cap D^c \cap D^c) = P(D^c)P(D^c)P(D^c)P(D^c)$
$= (0.4)(0.4)(0.4)(0.4) = \ = 0.0256$
22) D
23) B
24) D
25) A