MATH 1332
CHAPTER 11 POSTTEST

Name_____

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

Solve the problem by applying the Fundamental Counting Principle with two groups of items.

1) You are taking a multiple-choice test that has 7 questions. Each of the questions has 3 choices, with one correct choice per question. If you select one of these options per question and leave nothing blank, in how many ways can you answer the questions?

A) 343 B) 10 C) 21 D) 2187

2) A restaurant offers a choice of 5 salads, 7 main courses, and 4 desserts. How many possible 3-course meals are there?

A) 35 possible meals B) 280 possible meals C) 16 possible meals D) 140 possible meals

3) An apartment complex offers apartments with four different options, designated by A through D.

A = number of bedrooms (one through four)
B = number of bathrooms (one through three)
C = floor (first through fifth)
D = outdoor additions (balcony or no balcony)

How many apartment options are available?

A) 120 B) 240 C) 14 D) 16

4) License plates in a particular state display 3 letters followed by 3 numbers. How many different license plates can be manufactured? (Repetitions are allowed.)

A) 9 B) 17,576,000 C) 260 D) 36

Evaluate the factorial expression.

5) $\frac{10!}{8!}$

A) 10 B) 2! C) 90 D) $\frac{10}{8}$

Use the formula for ${}_nP_r$ to evaluate the expression.

6) ${}_9P_5$

A) 72,576 B) 3024 C) 15,120 D) 362,880

Use the formula for ${}_nP_r$ to solve.

7) In a contest in which 7 contestants are entered, in how many ways can the 4 distinct prizes be awarded?

A) 210 B) 420 C) 70 D) 840

In the following exercises, does the problem involve permutations or combinations? Explain your answer. It is not necessary to solve the problem.

8) One hundred people purchase lottery tickets. Three winning tickets will be selected at random. If first prize is $100, second prize is $50, and third prize is $25, in how many different ways can the prizes be awarded?

A) Permutations, because the order of the prizes awarded matters.

B) Combinations, because the order of the prizes awarded does not matter.

9) Five of a sample of 100 computers will be selected and tested. How many ways are there to make this selection?

A) Combinations, because the order of the computers selected does not matter.

B) Permutations, because the order of the computers selected does matter.

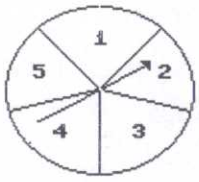
Use the formula for ${}_nC_r$ to evaluate the expression.

10) ${}_{10}C_5$

A) 30,240 B) 240 C) 252 D) 15,120

Use the theoretical probability formula to solve the problem. Express the probability as a fraction reduced to lowest terms.

11) Use the spinner below to answer the question. Assume that it is equally probable that the pointer will land on any one of the five numbered spaces. If the pointer lands on a borderline, spin again.



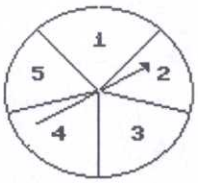
Find the probability that the arrow will land on 2 or 1.

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

12) A die is rolled. The set of equally likely outcomes is {1, 2, 3, 4, 5, 6}. Find the probability of getting a 9.

A) 0 B) $\frac{9}{6}$ C) 1 D) 9

13) Use the spinner below to answer the question. Assume that it is equally probable that the pointer will land on any one of the five numbered spaces. If the pointer lands on a borderline, spin again.



Find the probability that the arrow will land on an odd number.

A) $\frac{3}{5}$ B) 0 C) 1 D) $\frac{2}{5}$

Solve the problem.

14) A group consists of 6 men and 5 women. Three people are selected to attend a conference. In how many ways can 3 people be selected from this group of 11? In how many ways can 3 men be selected from the 6 men? Find the probability that the selected group will consist of all men.

A) 165; 20; $\frac{1}{5940}$ B) 165; 20; $\frac{4}{33}$ C) 990; 120; $\frac{4}{33}$ D) 165; 20; $\frac{1}{4838400}$

15) If you are dealt 6 cards from a shuffled deck of 52 cards, find the probability of getting 3 jacks and 3 aces.

A) $\frac{1}{1017926}$ B) $\frac{3}{26}$ C) $\frac{2}{2544815}$ D) $\frac{2}{13}$

16) A committee consisting of 6 people is to be selected from eight parents and four teachers. Find the probability of selecting three parents and three teachers.

A) $\frac{2}{33}$ B) $\frac{100}{231}$ C) $\frac{8}{33}$ D) $\frac{10}{11}$

You are dealt one card from a 52-card deck. Find the probability that you are not dealt:

17) a 3.

A) $\frac{1}{10}$ B) $\frac{9}{10}$ C) $\frac{12}{13}$ D) $\frac{1}{13}$

One card is randomly selected from a deck of cards. Find the odds:

18) against getting a red queen.

A) 25 to 26 B) 1 to 25 C) 25 to 1 D) 26 to 25

The chart shows the probability of a certain disease for men by age. Use the information to solve the problem. Express all probabilities as decimals, estimated to two decimal places.

Age	Probability of Disease X
20–24	less than 0.008
25–34	0.009
35–44	0.14
45–54	0.39
55–64	0.42
65–74	0.67
75+	0.79

19) What is the probability that a randomly selected man between the ages of 55 and 64 does not have this disease?

A) 0.42 B) 0.39 C) 0.58 D) 0.61

Solve the problem involving probabilities with independent events.

20) The probability that a region prone to hurricanes will be hit by a hurricane in any single year is $\frac{1}{5}$. What is the probability of a hurricane at least once in the next 5 years?

A) 0.99968 B) 0.67232 C) 0.00032 D) 1

Numbered disks are placed in a box and one disk is selected at random.

21) If there are 7 red disks numbered 1 through 7, and 5 yellow disks numbered 8 through 12, find the probability of selecting a disk numbered 3, given that a red disk is selected.

A) $\frac{7}{12}$ B) $\frac{1}{12}$ C) $\frac{1}{7}$ D) $\frac{5}{12}$

Solve the problem involving probabilities with independent events.

22) A spinner is used for which it is equally probable that the pointer will land on any one of six regions. Three of the regions are colored red, two are colored green, and one is colored yellow. If the pointer is spun once, find the probability it will land on green and then yellow.

A) $\frac{1}{9}$ B) $\frac{1}{3}$ C) $\frac{1}{6}$ D) $\frac{1}{18}$

Solve the problem.

23) A 25 year old can purchase a one-year life insurance policy for $10,000 at a cost of $100. Past history indicates that the probability of a person dying at age 25 is 0.0025. Determine the company's expected gain per policy.

A) 25 B) 975 C) 75 D) 125

24) An architect is considering bidding for the design of a new shopping mall. The cost of drawing plans and submitting a model is $10,000. The probability of being awarded the bid is 0.06, and anticipated profits are $100,000, resulting in a possible gain of this amount minus the $10,000 cost for plans and a model. What is the expected value in this situation?

A) $6000 B) $5400 C) $5000 D) -$4000

25) A mining company is considering two sites on which to dig, described as follows:

Site A: Profit if diamonds are found: $80 million.
Loss if no diamonds are found: $20 million.
Probability of finding diamonds: 0.2

Site B: Profit if diamonds are found $100 million.
Loss if no diamonds are found $22 million.
Probability of finding diamonds: 0.1

What is the expected profit for each site?

A) site A: $0 million: site B: -$9.8 million
B) site A: $16 million: site B: $10 million
C) site A: $0 million: site B: $10 million
D) site A: $16 million: site B: -$9.8 million