Name_____ Course Number:_____ Section Number:_____

Directions: Circle the correct choice for each response set. If required, show calculations in the blank spaces near the problems.

Find the indicated probability.

1) A sample space consists of 146 separate events that are equally likely. What is the probability of each?

A) 146   B) 0   C) 1   D) $\frac{1}{146}$

2) A bag contains 4 red marbles, 3 blue marbles, and 7 green marbles. If a marble is randomly selected from the bag, what is the probability that it is blue?

A) $\frac{1}{11}$ B) $\frac{3}{14}$ C) $\frac{1}{7}$ D) $\frac{1}{3}$

Estimate the probability of the event.

3) Of 1735 people who came into a blood bank to give blood, 373 people had high blood pressure. Estimate the probability that the next person who comes in to give blood will have high blood pressure.

A) 0.183   B) 0.215   C) 0.134   D) 0.266

Answer the question, considering an event to be "unusual" if its probability is less than or equal to 0.05.

4) A multiple choice question has 17 possible answers, only one of which is correct. Is it "unusual" to answer a question correctly if a random guess is made?

A) Yes   B) No

Answer the question.

5) Find the odds against correctly guessing the answer to a multiple choice question with 7 possible answers.

A) 7 : 1   B) 7 : 6   C) 6 : 7   D) 6 : 1

Find the indicated complement.

6) If a person is randomly selected, find the probability that his or her birthday is not in December. Ignore leap years.
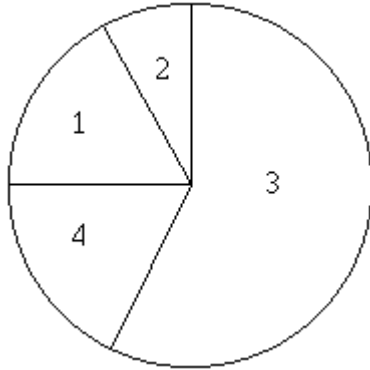
A) $\frac{334}{365}$ B) $\frac{31}{365}$ C) $\frac{11}{12}$ D) $\frac{31}{334}$

Find the indicated probability.

7) A study of consumer smoking habits includes 196 people in the 18–22 age bracket (43 of whom smoke), 148 people in the 23–30 age bracket (37 of whom smoke), and 96 people in the 31–40 age bracket (23 of whom smoke). If one person is randomly selected from this sample, find the probability of getting someone who is age 23–30 or smokes.

A) 0.57   B) 0.25   C) 0.486   D) 0.084

8) 100 employees of a company are asked how they get to work and whether they work full time or part time. The figure below shows the results. If one of the 100 employees is randomly selected, find the probability that the person drives alone or cycles to work.

1. Public transportation: 7 full time, 8 part time
2. Bicycle: 4 full time, 4 part time
3. Drive alone: 30 full time, 29 part time
4. Carpool: 8 full time, 10 part time

   A) 0.67   B) 0.34   C) 0.63   D) 0.59

9) A batch consists of 12 defective coils and 88 good ones. Find the probability of getting two good coils when two coils are randomly selected if the first selection is replaced before the second is made.

   A) 0.7744   B) 0.0144   C) 0.176   D) 0.7733

10) A sample of 4 different calculators is randomly selected from a group containing 41 that are defective and 22 that have no defects. What is the probability that all four of the calculators selected are defective? Round to four decimal places.

   A) 0.1794   B) 0.1700   C) 13.8442   D) 0.0829

Provide a written description of the complement of the given event.

11) Of ten adults, at least one of them has high blood pressure.

   A) All of the adults have high blood pressure.

   B) None of the adults have high blood pressure.

   C) Nine of the adults have high blood pressure.

   D) At most one of the adults has high blood pressure.

Find the indicated probability. Round to the nearest thousandth.

12) A study conducted at a certain college shows that 52% of the school's graduates find a job in their chosen field within a year after graduation. Find the probability that among 8 randomly selected graduates, at least one finds a job in his or her chosen field within a year of graduating.

   A) 0.125   B) 0.995   C) 0.520   D) 0.997

Find the indicated probability. Express your answer as a simplified fraction unless otherwise noted.

13) The table below shows the soft drinks preferences of people in three age groups.

	cola	root beer	lemon–lime
under 21 years of age	40	25	20
between 21 and 40	35	20	30
over 40 years of age	20	30	35

If one of the 255 subjects is randomly selected, find the probability that the person is over 40 years of age given that they drink root beer.

A) $\dfrac{6}{17}$

B) $\dfrac{5}{17}$

C) $\dfrac{2}{5}$

D) None of the above is correct.

14) The following table contains data from a study of two airlines which fly to Small Town, USA.

	Number of flights which were on time	Number of flights which were late
Podunk Airlines	33	6
Upstate Airlines	43	5

If one of the 87 flights is randomly selected, find the probability that the flight selected arrived on time given that it was an Upstate Airlines flight.

A) $\dfrac{43}{48}$

B) $\dfrac{11}{76}$

C) $\dfrac{43}{87}$

D) None of the above is correct.

Solve the problem.

15) A firm uses trend projection and seasonal factors to simulate sales for a given time period. It assigns "0" if sales fall, "1" if sales are steady, "2" if sales rise moderately, and "3" if sales rise a lot. The simulator generates the following output.

0 1 1 2 0 0 1 1 0 0 2 1 0 1 0 2 1 2 0 1 2 0 2 0 3 1 0 2 1 0 1

Estimate the probability that sales will remain steady.

A) 0.125   B) 0.419   C) 0.412   D) 0.355

Evaluate the expression.

16) $10P3$

A) 27   B) 720   C) 120   D) 7

Solve the problem.

17) There are 13 members on a board of directors. If they must form a subcommittee of 6 members, how many different subcommittees are possible?

    A) 720   B) 1,235,520   C) 4,826,809   D) 1716

18) A state lottery involves the random selection of six different numbers between 1 and 27. If you select one six number combination, what is the probability that it will be the winning combination?

    A) $\dfrac{1}{296,010}$ B) $\dfrac{1}{720}$ C) $\dfrac{1}{387,420,489}$ D) $\dfrac{1}{213,127,200}$

19) A musician plans to perform 6 selections. In how many ways can she arrange the musical selections?

    A) 5040   B) 36   C) 6   D) 720

20) A class has 8 students who are to be assigned seating by lot. What is the probability that the students will be arranged in order from shortest to tallest? (Assume that no two students are the same height.)

    A) 0.1000   B) 0.0000248   C) 0.00019841   D) 0.00024802

1) D
2) B
3) B
4) B
5) D
6) A
7) C
8) A
9) A
10) B
11) B
12) D
13) C
14) A
15) D
16) B
17) D
18) A
19) D
20) B