Name_____

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You may use your calculator and the provided copy of the textbook formula card. No other notes are permited. Please carefully and completely show your work to receive full credit. This exam is worth 15% of your final grade.

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1) In 1999 the stock market took big swings up and down. A survey of 983 adult investors asked how often they tracked their portfolio. The table shows the investor responses. What is the probability that an adult investor tracks his or her portfolio daily? Express your answer as a simplified fraction.

How frequently?	Response
Daily	240
Weekly	262
Monthly	281
Couple times a year	149
Don't track	51

A) $\dfrac{262}{983}$

B) $\dfrac{149}{983}$

C) $\dfrac{240}{983}$

D) $\dfrac{281}{983}$

2) If sample data are taken from a population that is normally distributed, a normal probability plot of the observed data values versus the expected z scores will

A) have a correlation coefficient near 0.
B) look exponential in nature.
C) be approximately linear.
D) have no discernable pattern.

3) If you flip a fair coin and get heads 5 times in a row, what is the chance of getting tails on the next flip?

    A) Greater than 50%
    B) 50%
    C) Less than 50%

4) Determine whether the following normal probability plot indicates that the sample data could have come from a population that is normally distributed.
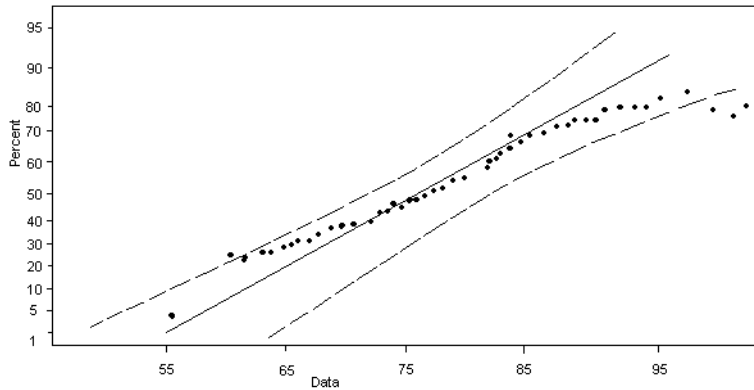
    A) not normally distributed
    B) normally distributed

5) If the occurance of one event does not influence the outcome of another event, then two events are:

    A) conditional.
    B) disjoint.
    C) independent.
    D) interdependent.

6) A study conducted at a certain college shows that 58% of the school's graduates move to a different state after graduating. Find the probability that among 7 randomly selected graduates, at least one moves to a different state after graduating.

  A) 0.998
  B) 0.143
  C) 0.978
  D) 0.580

7) A physics exam consists of 9 multiple-choice questions and 6 open-ended problems in which all work must be shown. If an examinee must answer 6 of the multiple-choice questions and 3 of the open-ended problems, in how many ways can the questions and problems be chosen?

  A) 261,273,600
  B) 1680
  C) 972
  D) 7,257,600

8) Decide whether the experiment is a binomial experiment. If it is, show clearly that it meets each of the requirements. If it is not, clearly explain why it fails to meet the requirements.

Survey 150 college students see whether they are enrolled as a new student. The random variable represents the number of students enrolled as new students.

9) Assume that male and female births are equally likely and that the birth of any child does not affect the probability of the gender of any other children. Suppose that 400 couples each have a baby; find the mean and standard deviation for the number of boys in the 400 babies.

10) Suppose that combined verbal and math SAT scores follow a normal distribution with mean 896 and standard deviation 174. Suppose further that Peter finds out that he scored in the top 3% of SAT scores. Determine how high Peter's score must have been, rounding to the nearest whole number.

11) You roll 2 fair six-sided dice. Which of the following outcomes is most likely to occur on the next roll?

     A. Getting double 3.
     B. Getting a 3 and a 4.
     C. They are equally likely

Circle your answer and carefully explain your choice.

12) Sixty-five percent of men consider themselves knowledgeable soccer fans. If 11 men are randomly selected, find the probability that exactly seven of them will consider themselves knowledgeable fans.

13) A study of ninth grade students was done to see how many years of school they eventually completed. The random variable X represents the highest year of school that a randomly chosen ninth grader completes. This probability distribution was created based on data gathered in the study:

Years of school: X	9	10	11	12
Probability	0.05	0.10	0.10	0.75

Show that this distribution satisfies both properties of a probability distribution.

Find the probability that a randomly selected ninth grader finishes 11th or 12th grade.

14) Find the area under the standard normal curve between z = 1.5 and z = 2.5. Include a sketch of an appropriately labeled density curve that represents this problem.

15) True or False: The area under the normal curve drawn with regard to the population parameters is the same as the probability that a randomly selected individual of a population has these characteristics.

   A) False
   B) True

16) Heights of adult women in the United States are approximately normally distributed with a population mean of 63.5 inches and a population standard deviation of 2.5 inches. A medical researcher is planning to select a large random sample of adult women to participate in a future study. What percentage of the women in the researcher's sample would you expect to have a height of 68.5 inches or less?

   To receive full credit, write the percentage, clearly label the graph with the z-value, and shade in the area that corresponds to the percentage.
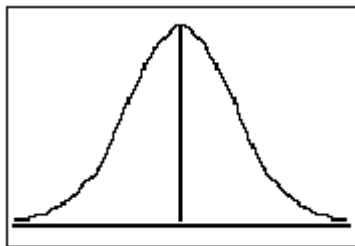
17) One hundred people were asked, "Do you favor stronger laws on gun control?" Of the 33 that answered "yes" to the question, 14 were male. Of the 67 that answered "no" to the question, six were male. If one person is selected at random, what is the probability that this person answered "yes" or was a male?

18) On one busy holiday weekend, a national airline has many requests for standby flights at half of the usual one-way air fare. However, past experience has shown that these passengers have only about a 1 in 5 chance of getting on the standby flight. When they fail to get on a flight as a standby, their only other choice is to fly first class on the next flight out. Suppose that the usual one-way air fare to a certain city is $194 (so the standby cost is half that), and the cost of flying first class is $520. Should a passenger who wishes to fly to this city opt to fly as a standby? [Hint: Find the expected cost of the trip for a person flying standby.]

Extra Credit: Worth 4 addtitional points on this exam if correct.
   19) How many distinct arrangements can be formed from all the letters of the word "students"?