**STUDY QUESTIONS**

1. Variables that take on values at every point over a given interval are called

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ variables.

2. If the set of all possible values of a variable is at most finite or a countably infinite number of possible values, then the variable is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ variable.

3. An experiment in which a die is rolled six times will likely produce values of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ random variable.

4. An experiment in which a researcher counts the number of customers arriving at a

supermarket checkout counter every two minutes produces values of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

random variable.

5. An experiment in which the time it takes to assemble a product is measured is likely to produce values of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ random variable.

6. A binomial distribution is an example of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ distribution.

7. The normal distribution is an example of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ distribution.

8. The long-run average of a discrete distribution is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Use the following discrete distribution to answer 9 and 10 *x* *P*(*x*)

1 .435

2 .241

3 .216

4 .108

9. The mean of the discrete distribution above is \_\_\_\_\_\_\_\_\_\_\_\_.

10. The variance of the discrete distribution above is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

11. On any one trial of a binomial experiment, there can be only \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ possible

outcomes.

12. Suppose the probability that a given part is defective is .10. If four such parts are randomly

drawn from a large population, the probability that exactly two parts are defective is

\_\_\_\_\_\_\_\_.

13. Suppose the probability that a given part is defective is .04. If thirteen such parts are randomly drawn from a large population, the expected value or mean of the binomial distribution that describes this experiment is \_\_\_\_\_\_\_\_.

14. Suppose a binomial experiment is conducted by randomly selecting 20 items where *p* = .30. The standard deviation of the binomial distribution is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

15. Suppose forty-seven percent of the workers in a large corporation are under thirty-five years of age. If fifteen workers are randomly selected from this corporation, the probability of selecting exactly ten who are under thirty-five years of age is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

16. Suppose that twenty-three percent of all adult Americans fly at least once a year. If twelve adult Americans are randomly selected, the probability that exactly four have flown at least once last year is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

17. Suppose that sixty percent of all voters support the President of the United States at this time. If twenty voters are randomly selected, the probability that at least eleven support the President is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

18. The Poisson distribution was named after the French mathematician \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

19. The Poisson distribution focuses on the number of discrete occurrences per \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

20. The Poisson distribution tends to describe \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occurrences.

21. The long-run average or mean of a Poisson distribution is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

22. The variance of a Poisson distribution is equal to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

23. If Lambda is 2.6 occurrences over an interval of five minutes, the probability of getting six occurrences over one five minute interval is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

24. Suppose that in the long-run a company determines that there are 1.2 flaws per every twenty pages of typing paper produced. If ten pages of typing paper are randomly selected, the probability that more than two flaws are found is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

25. If Lambda is 1.8 for a four minute interval, an adjusted new Lambda of \_\_\_\_\_\_\_ would be used to analyze the number of occurrences for a twelve minute interval.

26. Suppose a binomial distribution problem has an *n* = 200 and a *p* = .03. If this problem is worked using the Poisson distribution, the value of Lambda is \_\_\_\_\_\_\_\_.

27. The hypergeometric distribution should be used when a binomial type experiment is being conducted without replacement and the sample size is greater than or equal to \_\_\_\_\_\_\_\_% of the population.

28. Suppose a population contains sixteen items of which seven are X and nine are Y. If a random sample of five of these population items is selected, the probability that exactly three of the five are X is \_\_\_\_\_\_\_\_.

29. Suppose a population contains twenty people of which eight are members of the Catholic church. If a sample of four of the population is taken, the probability that at least three of the four are members of the Catholic church is \_\_\_\_\_\_\_\_.

30. Suppose a lot of fifteen personal computer printers contains two defective printers. If three of the fifteen printers are randomly selected for testing, the probability that no defective printers are selected is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**ANSWERS TO STUDY QUESTIONS**

1. Continuous Random 16. .1712

2. Discrete Random 17. .755

3. Discrete 18. Poisson

4. Discrete 19. Interval

5. Continuous 20. Rare

6. Discrete 21. Lambda

7. Continuous 22. Lambda

8. Mean, Expected Value 23. .0319

9. 1.997 24. .0232

10. 1.083 25. 5.4

11. Two 26. 6.0

12. .0486 27. 5

13. 0.52 28. .2885

14. 2.049 29. .1531

15. .0661 30. .6286