Question 1: Let X be a continuous random variable with probability density function defined by



What value must k take for this to be a valid density?

Select one:

a. 2 b. 3 c. 3/2 d. 2/3

Question 2: The diameter of ball bearings produced in a manufacturing process can be explained using a uniform distribution over the interval 4.5 to 6.5 millimeters. What is the probability that a randomly selected ball bearing has a diameter greater than 5.85 millimeters?

Select one:

a. 0.472 b. 0.650 c. 0.805 d. 0.325x

Question 3: The weekly salaries of elementary school teachers in one state are normally distributed with a mean of $595 and a standard deviation of $43. What is the probability that a randomly selected elementary school teacher earns more than $555 a week?

Select one:

a. 0.8239x b. 0.2823 c. 0.7123 d. 0.2177

Question 4: Let Z is a standard normal variable, find P(-0.73 < Z < 2.27).

Select one:

a. 0.4884 b. 0.7557x c. 1.54 d. 0.2211

Question 5: Assume that z scores are normally distributed with a mean of 0 and a standard deviation of 1. If P(Z > c) = 0.1093, find c.

Select one:

a. -1.23 b. 1.23x c. 0.27 d. 0.4562

Question 6: Patients arriving at an outpatient clinic follow an exponential distribution with mean 22 minutes. What is the average number of arrivals per minute?

Select one:

a. 0.0718 b. 0.0417 c. 0.0667 d. 0.0455x

Question 7: A bin of 40 semiconductor chips contains 10 that are defective. Two are selected randomly, without replacement, from the bin. What is the probability that the second one selected is defective given that the first one was defective?

* 10/39 B. 9/40 C. 8/39 D. 9/39x

Question 8: A card is drawn from a deck. Find the conditional probability of 𝑃(a queen | a face card)?

* 1/4 B. 1/3x C. 1/2 D. 2/3

Question 9: Your neighbor has 2 children. You learn that he has a son, Joe. What is the probability that Joe’s sibling is a brother?

* 1/4 B. 1/3 C. 1/2 D. 2/3x

Question 10. Consider a family of three children. Find the probabilities *P*(two boys | first born is a boy)

* 1/4 B. 1/3 C. 1/2x D. 2/3

Question 11. A math teacher gave her class two tests. 25% of the class passed both tests and 42% of the class passed the first test. What percent of those who passed the first test also passed the second test?

* 40% B. 50% C. 60%x D. 55%

Question 12. 80% of people attend their primary care physician regularly; 35% of those people have no health problems crop up during the following year. Out of the 20% of people who don’t see their doctor regularly, only 5% have no health issues during the following year. What is the probability a random person will have no health problems in the following year?

* 0.28 B. 0.01 C. 0.29x D. 0.71

Question 13. You have a cowboy hat, a top hat, and an Indonesian hat called a songkok. You also have four shirts: white, black, green, and pink. If you choose one hat and one shirt at random, what is the probability that you choose the songkok and the black shirt?

* 1/3 B. 1/4 C. 3/4 D. 1/12x

Question 14. Suppose you have a box with 3 blue marbles, 2 red marbles, and 4 yellow marbles. You are going to pull out one marble, record its color, put it back in the box and draw another marble. What is the [probability](javascript:def('/Glossary/glossaryterm.aspx%3Fword=Probability',%20500,%20500);) of pulling out a red marble followed by a blue marble?

* 2/9 B. 3/9 C. 2/27x D. 1/3

Question 15. There are three bags that each contain 100 marbles: Bag 1 has 75 red and 25 blue marbles; Bag 2 has 60 red and 40 blue marbles; Bag 3 has 45 red and 55 blue marbles. One person choose one of the bags at random and then pick a marble from the chosen bag, also at random. What is the probability that the chosen marble is red?

* 0.45 B. 0.75 C. 0.6x D. 0.5

Question 16. There is a 60% probability of launching a new project. If a company launches the project, there is a 75% probability that its stock price will increase. If a company does not launch the project, there is a 30% probability that its stock price will increase. Find the probability that the company’s stock price will increase?

* 0.45 B. 0.12 C. 0.57x D. 0.33

Question 7: Attendance records at a school show the number of days each student was absent during the year. The days absent for each student were as follows.

0 2 3 4 2 3 4 6 7 2 3 4 6 9 8

Construct the dot plot for the given data.



Select one: B



Question 8 Use the given paired data to construct a scatter plot.

x -6 7 7 7 5 6 2 -1 -6

y 2 7 11 8 9 11 6 3 2

Select one:D

|  |  |
| --- | --- |
|  |  |

Question 9: During one recent year, U.S. consumers redeemed 6.79 billion manufacturers' coupons and saved themselves $2.52 billion. Calculate and interpret the mean savings per coupon.

Select one:

a.X Theaverage savings was $0.37 per coupon.

b. Half of all coupons were worth more than $0.26 in savings.

c. The average savings was $0.26 per coupon.

d. Half of all coupons were worth more than $0.37 in savings.

Question 10: Find the mode(s) for the given sample data

98, 25, 98, 13, 25, 29, 56, 98

Select one:

a. 25 b. 42.5 c. 98x d. 55.3

Question 11: Find the variance for the given data. Round your answer to one more decimals than original data: 1, 4, -5, -9, and 6

Select one:

a. 39.4x b. 31.4 c. 39.2 d. 39.3

Question 12: Find the origin data from the sterm-and-leaf plot



Select one:D



Question 13: A car dealer is deciding what kinds of vehicles he should order from the factory. He looks at his sales report for the preceding period. Choose the vertical scale so that the relative frequencies are represented.



Construct a Pareto chart to help him decide.

Select one:

|  |  |
| --- | --- |
|  |  |

Question 14: The amount of gasoline purchased per car at a large service station is normally distributed with the mean of $47 and a standard deviation of $5. A random sample of 47 is selected, describe the sampling distribution for the sample mean.

Select one:

a. Normal with a mean of $47 and a standard deviation of $0.73x

b. Normal with a mean of $1 and a standard deviation of $0.73

c. Normal with a mean of $1 and a standard deviation of $5

d. Normal with a mean of $47 and a standard deviation of $5

Question 16: To determine the difference , if any, between two brands of radial tires, 12 tires of each brand are tested. Assume that the lifetimes of both brands of tires come from the same normal distribution N(12500, 33002). Compute .

Select one:

a. 0.0314x b. 0.6860 c. 0.0686 d. 0.3140

Question 17: A machine is set to pump cleanser into a process at the rate of 10 gallons per minute. Upon inspection, it is learned that the machine actually pumps cleanser at a rate described by the uniform distribution over the interval 9.75 to 11.25 gallons per minute. What is the probability that at the time the machine is checked it is pumping more than 10.65 gallons per minute?

Select one:

a. 0.40x b. 0.66 c. 0.50 d. 0.25

Question 18: The diameters of bolts produced by a certain machine are normally distributed with a mean of 0.42 inches and a standard deviation of 0.11 inches. What percentage of bolts will have a diameter greater than 0.30 inches?

Let P(Z < -1.09) = 0.1377, P(Z < 0) = 0.5 and P(Z < 1) = 0.7421.

Select one:

a. 86.23%x b. 2.28% c. 37.45% d. 47.72%

Question 19: When considering area under the standard normal curve, decide whether the area between z = -0.2 and z = 0.2 is bigger than, smaller than, or equal to the area between z = -0.3 and z = 0.3.

Select one:

a. equal toX . bigger than c. smaller than

Question 21: Patients arriving at an outpatient clinic follow an exponential distribution with mean 22 minutes. What is the average number of arrivals per minute?

Select one:

a. 0.0718 b. 0.0417x c. 0.0455 d. 0.0667

Question 22: Elaine gets quiz grades of 67, 64, and 87. She gets a 84 on her final exam. Find the mean grade if the quizzes each count for 15% and final exam counts for 55% of the final grade.

Select one:

a. 78.3 b. 72.1 c. 75.5 d. 78.9x

Question 23: The data below represent the amount of grams of carbohydrates in a serving of breakfast cereal in a sample of 11 different servings.

11 15 23 29 19 22 21 20 15 25 17

What is the value of IQR?

Select one:

a. 9

b. 6

c. 8

d. 7x

Question 24: Each year advertisers spend billions of dollars purchasing commercial time on network television. In the first 6 months of one year, advertisers spent $1.1 billion. In a recent article, the top 10 leading spenders and how much each spent (in million of dollars) were listed:

Company A: $73.7 Company F: $26.7

Company B: $63.9 Company G: $26.4

Company C: $57.9 Company H: $22.8

Company D: $57.1 Company I: $21.1

Company E: $32 Company J: $19.8

Calculate the sample variance.

Select one:

a. 422.940x b. 2217.644 c. 4003.428 d. 1987.406

Question 25: Which of the following statements is false

i) If X1, X2,…,Xn is a random sample of size n, the sample standard deviation S is not a statistic.

ii) The probability distribution of a statistic is called a sampling distribution.

iii) A statistic is any function of the observations in a random sample.

iv) The sampling distribution of a statistic does not depend on the distribution of the population.

Select one:

a. i) only b. ii) and iii) c. i) and ii) d. i) and iv)X

Question 26: The amount of time required for an oil and filter change on an automobile is normally distributed with a mean of 46 minutes and a standard deviation of 11 minutes. A random sample of 25 cars is selected. What is the probability that the sample mean is between 43 and 52 minutes?

Select one:

a. 0.4947 b. 0.3947 c. 0.9105 d. 0.7947x

Question 27: Let \bar{X} denote the sample mean of a random sample of size n1 = 16 taken from a normal distribution N(212, 36), and let \bar{Y} denote the sample mean of a random sample of size n2 = 25 taken from a different normal distribution N(212, 9). Compute P(\bar{X} - \bar{Y}>5).

Select one:

a. 0 b. 1 c. 0.999 d. 0.001x

Q28: For a standard normal distribution, find the percentage of data that are between 3 standard deviations below the mean and 1 standard deviation above the mean.