Question 1: Which of the following is not an element of descriptive statistical problems?

Select one:

a. information revealed in a data set is summarized

b. data are displayed visually in graphs

c. patterns in a data set are identified

d. predictions are made about a larger set of data

Question 2

If sample points A, B, C, and D are the only possible outcomes of an experiment, find the probability of D using the table below.



Select one:

a. 1/4

b. 2/5

c. 1/5

d. 3/5

Question 3

For two events A and B, P(A) = 0.8, P(B) = 0.2, and P(A and B) = 0.16. It follows that A and B are

Select one:

a. disjoint but not independent.

b. both disjoint and independent.

c. independent but not disjoint.

d. neither disjoint nor independent.

Question 4

A survey of senior citizens at a doctor's office shows that 65% take blood pressure-lowering medication, 38% take cholesterol-lowering medication, and 7% take both medications. What is the probability that a senior citizen takes either blood pressure-lowering or cholesterol-lowering medication?

Select one:

a. 0.96

b. 0.90

c. 0.85

d. 0.14

Question 5

After completing an inventory of three warehouses, a golf club shaft manufacturer described its stock of 14,542 shafts with the percentages given in the table. Suppose a shaft is selected at random from the 14,542 currently in stock, and the warehouse number and type of shaft are observed.

Type of Shaft



Given that the shaft is produced in warehouse 2, find the probability it has an stiff shaft.

Select one:

a. 0.356

b. 0.219

c. 0.721

d. 0.344

Question 6

The probability is 5% that an electrical connector that is kept dry fails during the warranty period of a portable computer. If the connector is ever wet, the probability of a failure during the warranty period is 20%. If 90% of the connectors are kept dry and 10% are wet, what proportion of connectors fail during the warranty period?

Select one:

a. 0.086

b. 0.625

c. 0.036

d. 0.065

Question 7

If P(A) = 0.72, P(B) = 0.11, and A and B are independent, find P(A|B).

Select one:

a. 0.72

b. 0.83

c. 0.0792

d. 0.11

Question 8

In a study of pleas and prison sentences, it is found that 35% of the subjects studied were sent to prison. Among those sent to prison, 30% chose to plead guilty. Among those not sent to prison, 50% chose to plead guilty.

If a study subject is randomly selected and it is then found that the subject entered a guilty plea, find the probability that this person was not sent to prison.

Select one:

a. None of the other choices is true

b. 0.756

c. 0.863

d. 0.347

Question 9

An airline reports that it has been experiencing a 12% rate of no-shows on advanced reservations. Among 100 advanced reservations, find the probability that there will be fewer than 15 no-shows.

Select one:

a. 0.7840

b. 0.251

c. 0.7549

d. 0.3187

Question 10

The following table is the probability distribution of the number of golf balls ordered by customers



Find the mean of the this probability distribution.

Select one:

a. 9.39

b. 9.3

c. 6.63

d. 8.22

Question 11

Suppose that X has a discrete uniform distribution on the integers 2 to 8. Which of the following are true?

(i) E(4X) = 20

(ii) σ(X) = 4

Select one:

a. Both (i) and (ii)

b. (i) only

c. (ii) only

d. None of the other choices is correct

Question 12

Find the mean for the binomial distribution which has the stated values of n = 20 and p = 3/5. Round answer to the nearest tenth.

Select one:

a. 11.5

b. 12.7

c. 12.3

d. 12.0

Question 13

A tennis player makes a successful first serve 53% of the time. If she serves 6 times, what is the probability that she gets exactly 3 first serves in? Assume that each serve is independent of the others.

Select one:

a. 0.3091

b. 0.7069

c. 0.4062

d. 0.2031

Question 14

The probability of a successful optical alignment in

the assembly of an optical data storage product is 0.7. Assume

the trials are independent. What is the probability that the first successful alignment requires exactly 4 trials?

Select one:

a. 0.072

b. 0.019

c. 0.006

d. 0.103

Question 15

A batch contains 36 bacteria cells, in which 12 are not capable of cellular replication. Suppose you examine 7 bacteria cells selected at random, without replacement. What is the probability that exactly 3 of them are not capable of cellular replication?

Select one:

a. 0.28

b. 0.83

c. 0.17

d. 0.72

Question 16

The number of calls to an Internet service provider during the hour between 6:00 and 7:00 p.m. is described by a Poisson distribution with mean equal to 15. Given this information, what is the expected number of calls in the first 30 minutes?

Select one:

a. 15

b. 225

c. 7.5

d. 3.87

Question 17

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. 3/2

b. 2/3

c. 3

d. 2

Question 18

Let X be a uniform random variable over the interval [0, 8] . What is the probability that the random variable X has a value greater than 3?

Select one:

a. 0.500

b. 0.625

c. 0.575

d. 0.750

Question 19

A new phone system was installed last year to help reduce the expense of personal calls that were being made by employees. Before the new system was installed, the amount being spent on personal calls followed a normal distribution with an average of $1000 per month and a standard deviation of $65 per month. Refer to such expenses as PCE's (personal call expenses). Using the distribution above, what is the probability that a randomly selected month had a PCE of between $875 and $1010?

Select one:

a. 0.9999

b. 0.1428

c. 0.9579

d. 0.5339

Question 20

Find z if the normal curve area between 0 and z is 0.4756.

Select one:

a. 1.9703

b. -2.9703

c. -1.9703

d. 2.9703

Question 21

The tread life of a particular brand of tire is a random variable best described by a normal distribution with a mean of 65,000 miles and a standard deviation of 1500 miles. What warranty should the company use if they want 95% of the tires to outlast the warranty?

Select one:

a. 57,900 miles

b. 62,533 miles

c. 65, 550 miles

d. 67,467 miles

Question 22

Let X represent the amount of time it takes a student to park in the library parking lot at the university. If we know that the distribution of parking times can be modeled using an exponential distribution with a mean of 4.8 minutes, find the probability that it will take a randomly selected student more than 9 minutes to park in the library lot.

Select one:

a. 0.153355

b. 0.329680

c. 0.660321

d. 0.917915

Question 23

A manufacturer records the number of errors each work station makes during the week. The data are as follows.

6 3 2 3 5 2 0 2 5 4 2 0 1

Construct the dot plot for the given data.

Select one:



Question 26

Find the mode(s) for the given sample data

11, 13, 11, 23, 22, 24, 56, 22, 72, 15, 27

Select one:

a. 11 and 22

b. 11

c. 15

d. 24

Question 27

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. 1987.406

b. 422.940

c. 2217.644

d. 4003.428

Question 28

Use the data to create a stemplot.

The following data show the number of laps run by each participant in a marathon.

46 65 55 43 51 48 57 30 43 49 32 56



Question 30

Sample variance is

Select one:

a. a statistic.

b. both parameter and statistic.

c. neither parameter nor statistic.

d. a parameter.

Question 31

The amount of time required for an oil and filter change on an automobile is normally distributed with a mean of 48 minutes and a standard deviation of 10 minutes. A random sample of 36 cars is selected. What is the probability that the sample mean will be between 39 and 48 minutes?

Select one:

a. 0.8767

b. 0.3376

c. 0.500

d. 0.8151

Question 32

The time for a worker to assemble a component is normally distributed with mean 15 minutes and variance 4. Denote the mean assembly times of 16 day-shift workers and 9 night-shift workers by \bar{X} and \bar{Y} , respectively. Assume that the assembly times of the workers are mutually independent. Compute P(\bar{X} - \bar{Y} < -1.5) is

Select one:

a. 0.0668

b. 0.0559

c. 0.0294

d. 0.0359

Question 33

In order to set rates, an insurance company is trying to estimate the number of sick days that full time workers at an auto repair shop take per year. A previous study indicated that the standard deviation was 3.2 days. How large a sample must be selected if the company wants to be 95% confident that the true mean differs from the sample mean by no more than 2 day? Let z0.05 = 1.96.

Select one:

a. 10

b. 31

c. 9

d. 141

Question 34

A researcher wishes to estimate the number of households with two cars. How large a sample is needed in order to be 98% confident that the sample proportion will not differ from the true proportion by more than 6%? A previous study indicates that the proportion of households with two cars is 25%.

Select one:

a. 779

b. 1448

c. 283

d. 1101

Question 35

If you were constructing a 99% confidence interval of the population mean based on a sample of n = 12 where the standard deviation of the sample s = 3.25, the critical value of t will be

Select one:

a. 2.7874.

b. 3.1058

c. 2.7969.

d. 2.4922.

Question 36

Construct a 96% confidence interval for the population mean, μ. Assume the population has a normal distribution. A study of 31 bowlers showed that their average score was 187 with a standard deviation of 8.

Select one:

a. (186.3, 197.7)

b. (115.4, 158.8)

c. (183.9, 190.1)

d. (222.3, 256.1)

Question 37

The waiting times (in minutes) of customers at the TienPhong Bank, where customers enter a single waiting line that feeds three teller windows, are normally distributed. A random sample of 6 has mean of 7.07 and standard deviation of 0.53.

Construct a 94% upper confidence bound for the population standard deviation. Let \chi^2\_{0.06,5}=10.596 and \chi^2\_{0.94,5}=1.250.

Select one:

a. 1.06

b. None of the other choices is correct

c. 2.35

d. 1.35

Question 38

The fraction of defective integrated circuits produced in a photolithography process is being studied. A random sample of 200 circuits is tested, revealing 8 defectives. Find a 95% two-sided confidence interval on the fraction of defective circuits produced by this particular tool.

Select one:

a. (0.003, 0.085)

b. (0.003, 0.067)

c. (0.013, 0.085)

d. (0.013, 0.067)

Question 39

The owner of a football team claims that the average attendance at games is over 67,000, and he is therefore justified in moving the team to a city with a larger stadium. Assume that a hypothesis test of the given claim will be conducted. Identify the type I error for the test.

Select one:

a. The error of failing to reject the claim that the mean attendance is at most 67,000, when it is actually greater than 67,000.

b. None of the other choices is true

c. The error of rejecting the claim that the mean attendance is at most 67,000, when it really is at most 67,000.

d. The error of rejecting the claim that the mean attendance is more than 67,000, when it is actually less than 67,000.

Feedback

The correct answer is: The error of rejecting the claim that the mean attendance is at most 67,000,

Question 40

Assume that the data has a normal distribution and the number of observations is greater than fifty. Find the critical z value used to test a null hypothesis.

α = 0.01 for a two-tailed test.

Select one:

a. ±1.645

b. ±2.575

c. ±1.764

d. None of the other choices is true

e. ±1.96

Question 41

You wish to test the claim that μ = 1200 at a level of significance of α = 0.01 and sample statistics are given n = 37, s =80, \bar x = 1207 . Compute the value of the test statistic. Round your answer to two decimal places.

Select one:

a. -2.16

b. -5.18

c. 4.67

d. 0.53

e. None of the other choices is true

Question 42

The Graduate Record Examination (GRE) is a test required for admission to many U.S. graduate schools. Students’ scores on the verbal reasoning portion of the GRE follow a normal distribution with a standard deviation of 108. Suppose a random sample of 21 students took the test, and the standard deviation of their scores is 115. What is the test statistic for the test H1: σ ≠ 108.

Select one:

a. 22.68

b. 11.02

c. 21.30

d. 15.88

Question 43

The FPT university claims that 20% of its graduates are women. In a graduating class of 250 students, 60 were women. At \alpha = 0.05, does this suggest that the school is believable? Let z0.025 = 1.96 and z0.05 = 1.65.

Select one:

a. Yes, because |z0| = 1.52 < z0.05

b. No, because z0 = 2.31 > -z0.05

c. Yes, because |z0| = 1.58 < z0.025

d. No, because z0 = 1.12 < z0.05

Question 44

Given the least squares regression line \hat y = -2.88 - 1.77x and a coefficient of determination of 0.64, the coefficient of correlation is:

Select one:

a. -0.90

b. -0.8

c. +0.90

d. +0.8

Question 46

Two separate tests are designed to measure a student's ability to solve problems. Several students are randomly selected to take both tests and the results are shown below.



Find the value of the linear correlation coefficient r.

Select one:

a. -0.58

b. -0.22

c. 0.58

d. 0.22

e. 0.69

Question 47

The data below are the final exam scores of 10 randomly selected statistics students and the number of hours they studied for the exam.



Find the equation of the regression line for the given data.

Select one:

a. \hat y= -0.24+ 78.31x

b. \hat y= 0.24+ 78.31x

c. \hat y= -0.24x + 78.31

d. \hat y= 0.24x + 78.31

Question 48

Suppose we have the following information from a simple regression: beta\_0 = 107.4, beta\_1 = -14.30, se(beta}\_0)= 2.8, se({beta}\_1)= 2.4, n = 200.

What is the value of the test statistic for testing H0: \beta\_1=0 ?

Select one:

a. -3.25

b. -5.96

c. -1.071

d. None of the other choices is true

e. -4.38