

(Choose 1 answer)

Those methods involving the collection, presentation, and characterization of a set of data in order to properly describe the various features of that set of data are called _____

- A. statistical inference.
- B. descriptive statistics.
- C. sampling.
- D. the scientific method.



(Choose 1 answer)

Casualty data from the great flu epidemic of 1918 were collected for a study. This represents what type of study?

- A. Observational study
- B. An experiment.
- C. Retrospective study.
- D. None of them.

(Choose 1 answer)

The outcome of an experiment is the number of resulting tails when a nickel, a penny, and a dime are flipped simultaneously. What is the number of possible outcomes in this experiment?

- A. 3
- B. 4
- C. 6
- D. 8
- E. None of the other choices is correct

(Choose 1 answer)

A single six-sided die is rolled. Find the probability of rolling a number at most 5.

- A. 0.333
- B. 0.667
- C. 0.833
- D. 0.5
- E. None of the other choices is correct

(Choose 1 answer)

(See picture)

- A. 0.56
- B. 0.44
- C. 0.69
- D. 0.6

In a telephone survey of 1000 adults, respondents were asked about the expense of a college education and the relative necessity of some form of financial assistance. The respondents were classified according to whether they currently had a child in college and whether they thought the loan burden for most college students is too high, the right amount, or too little. The proportions responding in each category are shown in following table. Suppose one respondent is chosen at random from this group

	too high (A)	right amount (B)	too little (C)
Child in College (D)	0.35	0.08	0.01
No Child in College (E)	0.25	0.2	0.11

What is the probability that the respondent has a child in college or thinks that the loan burden is too high?

In a group of kids, if one is selected at random the probability that he/she likes oranges is 0.8, the probability that he/she likes oranges and apples is 0.2. If a kid, who likes oranges, is selected at random, what is the probability that he/she also likes apples?

- A. 0.25
- B. 0.5
- C. 0.2
- D. 0.3

The probability is 2% 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 10%. If 80% of the connectors are kept dry and 20% are wet, what proportion of connectors fail during the warranty period?

- A. 0.6
- B. 0.08
- C. 0.036
- D. 0.014
- E. None of the other choices is correct

(Choose 1 answer)

(See picture)

- A. disjoint but not independent.
- B. complementary.
- C. both disjoint and independent.
- D. neither disjoint nor independent.

For two events A and B with

$$P(A) = 0.4, P(B) = 0.3, \text{ and } P(A \cap B) = 0,$$

it follows that A and B are...

Kizspy | Question: 9
(Choose 1 answer)

A person uses his car 50% of the time, walks 20% of the time and rides the bus 30% of the time as he goes to work. He is late 10% of the time when he walks; he is late 3% of the time when he drives; and he is late 7% of the time he takes the bus. What is the probability he took the bus if he was late?

- A. 0.375
- B. 0.191
- C. 0.296
- D. 0.625

(Choose 1 answer)

Identify the given variable as being discrete or continuous.

X = The amount of sugar in an apple.

- A. Continuous
- B. Discrete

(Choose 1 answer)

Which of the following is a discrete random variable?

- A. The number of lines in use in a voice communication system at a particular time.
- B. The number of minutes in a hour.
- C. Daily temperature of a city in one year.
- D. The weight of students at FPT university.
- E. The calories that a person gains from eating in one day.

(Choose 1 answer)

Let $f(x) = (ax+1)/20$ be the probability mass function of some discrete random variable $X=\{1, 2, 3, 4\}$. Compute $P(X=1)$.

- A. 0.03
- B. 0.13
- C. 0.23
- D. 0.33
- E. None of the other choices is correct

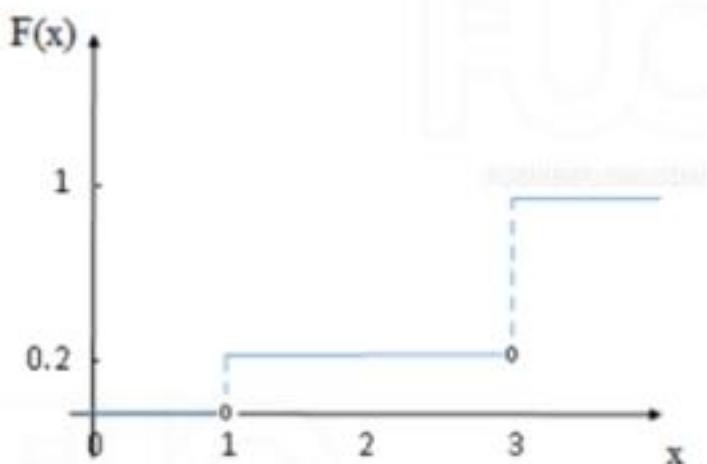
(Choose 1 answer)

(See picture)

- A. 0.2
- B. 0.4
- C. 0.6
- D. 0.8

E. None of the other choices is correct

The *cumulative distribution function* of some discrete random variable X is given by the following graph.



Use this graph to find $P(0.5 < X < 3)$.

(Choose 1 answer)

The accompanying table shows the probability distribution for x , the number that shows up when a loaded die is rolled. Find the variance for the probability distribution.

X P(X)

1 0.16
2 0.19
3 0.22
4 0.21
5 0.12
6 0.10

- A. 2.03
- B. 2.36
- C. 12.86
- D. 9.62
- E. None of the other choices is correct

(Choose 1 answer)

(See picture)

A. 0

B. 1/10

C. 1/11

D. 1/20

E. None of the other choices is true

Suppose that a random variable X has the discrete uniform distribution on the integers $10, \dots, 20$. Find $P(X = 7)$.

(Choose 1 answer)

According to a college survey, 22% of all students work full time. Find the mean for the random variable X , the number of students who work full time in samples of size 16.

- A. 4.00
- B. 0.22
- C. 2.75
- D. 3.52
- E. None of the other choices is correct

Assume that each of your calls to a popular radio station has a probability of 0.02 of connecting, that is, of not obtaining a busy signal. Assume that your calls are independent. What is the probability that your first call that connects is your tenth call?

- A. 0.0167
- B. 0.1670
- C. 0.8320
- D. 0.9833

A batch of parts contains 100 parts from a local supplier of tubing and 200 parts from a supplier in the next state. If two parts are selected randomly and without replacement, what is the probability they are all from the local supplier?

- A. 0.11
- B. 0.50
- C. 0.33
- D. 0.22
- E. None of the other choices is correct

A statistics professor finds that when he schedules an office hour at the 10:30 a.m. time slot, an average of three students arrive. Use the Poisson distribution to find the probability that in a randomly selected office hour in the 10:30 a.m. time slot exactly five students will arrive.

- A. 0.0070
- B. 0.1008
- C. 0.0519
- D. 0.0137
- E. None of the other choices is correct

(Choose 1 answer)

The time between customer arrivals at a furniture store has an approximate exponential distribution with mean = 8.5 minutes. If a customer just arrived, find the probability that the next customer will not arrive for at least 20 minutes.

- A. 0.095089
- B. 0.904911
- C. 0.653770
- D. 0.346230
- E. None of the other choices is correct

(Choose 1 answer)

(See picture)

A. 0

B. 1

C. 1/2018

D. None of the others

The probability density function of the time to failure of an electronic component is

$$f(x) = \frac{1}{x^2}, x > 1.$$

Find $P(X = 2018)$.

(Choose 1 answer)

(See picture)

- A. 0.9817
- B. 0.0183
- C. 0.5655
- D. 0.4345
- E. None of the other choices is correct

Let X be a continuous random variable that has the cumulative distribution function given by

$$F(x) = \begin{cases} 0, & x \leq 0 \\ 1 - e^{-4x}, & x > 0 \end{cases}$$

Determine $P(-1 < X < 1)$.

(Choose 1 answer)

(See picture)

- A. 0
- B. 90
- C. 110
- D. 50
- E. None of the others

Let X be a continuous random variable with $E(X) = 10$ and $E(X^2) = 100$. Find $V(X)$.

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 9.5 to 13.5 gallons per minute. Find the variance of the distribution.

- A. 8.33
- B. 1.33
- C. 44.08
- D. 0.75
- E. None of the other choices is correct

Kizspy | Question: 25
(Choose 1 answer)

In one region, the September energy consumption levels for single-family homes are normally distributed with a mean of 1050 kWh and a standard deviation of 218 kWh. For a randomly selected home, find the probability that the September energy consumption level is between 1100 kWh and 1225 kWh.

Let $P(Z < -1.3) = 0.0968$, $P(Z < -0.3) = 0.3821$, $P(Z < 0.23) = 0.5910$ and $P(Z < 0.8) = 0.7881$.

- A. 0.1971
- B. 0.0910
- C. 0.2881
- D. 0.3791
- E. None of the other choices is correct

(Choose 1 answer)

Assume that Z has standard normal distribution. If $P(-a < Z < a) = 0.4314$, find a .

Let $P(Z < -0.18) = 0.4296$, $P(Z < 0.33) = 0.6293$, $P(Z < 0.57) = 0.7157$ and $P(Z < 1.49) = 0.9319$.

- A. 0.33
- B. -0.18
- C. 1.49
- D. 0.57
- E. None of the other choices is correct

(Choose 1 answer)

An engineering professional body estimates that 70% of the students taking undergraduate engineering courses are in favour of studying statistics as part of their studies. If this estimate is correct, use the normal formula for Binomial distributions to approximate the probability that more than 700 undergraduate engineers out of a random sample of 1000 will be in favour of studying statistics.

Let $P(Z < 0.035) = 0.514$; $P(Z < 0) = 0.5$.

- A. 0.486
- B. 0.5
- C. 0.514
- D. 0.643
- E. None of the other choices is correct

(Choose 1 answer)

Consider the following sample data:

25 11 6 4 2 17 9 6

For these data the sample mean is _____.

- A. 3
- B. 10
- C. 8
- D. 7
- E. None of the other choices is correct

(Choose 1 answer)

A comparison of coffee prices at 4 randomly selected grocery stores in San Diego showed increases from the previous month of 12, 15, 17 and 20 cents for a 1 pound bag. Find the variance of this sample of price increases.

- A. $26/3$
- B. $32/3$
- C. $34/3$
- D. $28/3$
- E. None of the other choices is correct

(Choose 1 answer)

Given the data set:

1, 1, 2, 2, 3, 4, 4, 5, 6, 7, 7, 8, 9.

Determine the IQR for this data.

- A. 5
- B. 8
- C. 2
- D. 7
- E. 4
- F. None of the other choices is correct

(Choose 1 answer)

(See picture)

A. (i)

B. (ii)

C. (iii)

D. None of them

A sample of the variable x assumes the following values:

57	51	58	52	50	59	57	51	59	56
50	53	54	50	57	51	53	55	52	54

Construct a cumulative frequency distribution for this data.

(i)

x	≤ 51	≤ 53	≤ 55	≤ 57	≤ 59
Frequency	6	4	3	4	3

(ii)

x	≤ 51	≤ 53	≤ 55	≤ 57	≤ 59
Frequency	6	10	13	17	20

(iii)

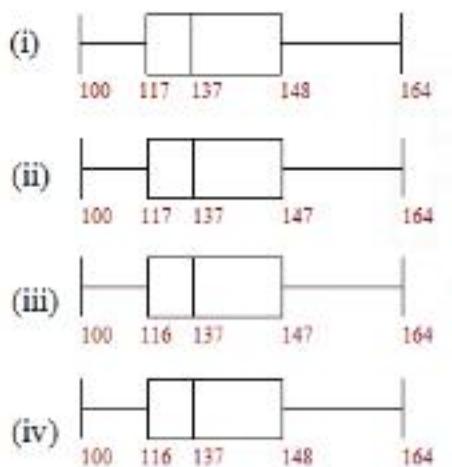
x	50-51	52-53	54-55	56-57	58-59
Frequency	6	10	13	17	20

(Choose 1 answer)

The investigation in your book involves collecting exercise pulse rates from 20 students in your class are shown below.
Construct the boxplot for the data set

100, 113, 115, 115, 116, 118, 123, 125, 136, 136,
138, 140, 142, 145, 147, 149, 150, 160, 163, 164.

- A. (i)
- B. (ii)
- C. (iii)
- D. (iv)
- E. None of the other choices is correct



(Choose 1 answer)

Assume that human body temperatures are normally distributed with a mean of 98 (degree F) and a standard deviation of 0.5(degree F). Describe the sampling distribution for the sample mean body temperature of 50 selected persons.

- A. Normal with a mean of 98(degree F) and a standard deviation of 0.07(degree F)
- B. Normal with a mean of 98(degree F) and a standard deviation of 0.01(degree F)
- C. Approximately normal with a mean of 98(degree F) and a standard deviation of 0.07(degree F)
- D. Approximately normal with a mean of 98(degree F) and a standard deviation of 0.01(degree F)
- E. None of the other choices is correct

(Choose 1 answer)

The amount of time required for an oil and filter change on an automobile is normally distributed with a mean of 45 minutes and a standard deviation of 10 minutes. A random sample of 16 cars is selected. What is the probability that the sample mean is between 45 and 52 minutes?

Let $P(Z < 0) = 0.5$, $P(Z < 2.8) = 0.9974$, $P(Z < 3.2) = 1$ and $P(Z < -1) = 0.3974$.

- A. 0.6974
- B. 0.5974
- C. 0.3974
- D. 0.4974
- E. None of the other choices is correct

(Choose 1 answer)

(See picture)

- A. 0.4562
- B. 0.5438
- C. 0.6438
- D. 1
- E. None of the others

A random sample of size $n_1 = 16$ is selected from a normal population with a mean of 75 and a standard deviation of 8. A second random sample of size $n_2 = 9$ is taken from another normal population with a mean of 70 and standard deviation 12. Let \bar{X}_1 and \bar{X}_2 be the two sample means. Find $P(\bar{X}_1 - \bar{X}_2 > 5.5)$.

Let $P(Z < 0.11) = 0.5438$.

Suppose a 95% confidence interval for population mean turns out to be (1000, 2100). To make more useful inferences from the data, it is desired to reduce the width of the confidence interval. Which of the following will result in a reduced interval width?

Choose the best answer:

- A. Decrease the confidence level.
- B. Both increase the sample size and decrease the confidence level.
- C. Increase the sample size.
- D. Both increase the confidence level and decrease the sample size.

(Choose 1 answer)

The product manager for a large retail store has recently stated that she estimates that the average purchase per visit for the store's customers is between \$33 and \$65. What is the width of this confidence interval estimate?

- A. 32
- B. 49
- C. 33
- D. 65
- E. None of the other choices is correct

(Choose 1 answer)

A random sample of 10 parking meters in a beach community showed the following incomes for a day.

3.60 4.50 2.80 6.30 2.60 5.20 6.75 4.25 8.00 3.00

A simple computation yields a sample mean of 4.7 and standard deviation of 1.8. Assume the incomes are normally distributed. Find the 95% confidence interval for the true mean.

- A. (4.81, 6.31)
- B. (3.41, 5.99)
- C. (1.35, 2.85)
- D. (2.11, 5.34)
- E. None of the other choices is correct

Let

$$\begin{aligned}z_{0.05} &= 1.65, \quad z_{0.025} = 1.96, \\t_{0.05,9} &= 1.83, \quad t_{0.025,9} = 2.26.\end{aligned}$$

(Choose 1 answer)

From a prior study, the population proportion p is estimated by 0.08. Find the minimum sample size you should use to be 99% confident that the point estimate of p will be within 0.04 around the population p .

- A. 307
- B. 308
- C. 249
- D. 250
- E. None of the other choices is correct

Let $z_{0.005} = 2.58$ and $z_{0.01} = 2.33$

(Choose 1 answer)

(See picture)

A. (i)

B. (ii)

C. (iii)

D. (iv)

A cereal company claims that the mean weight of the cereal in its packets is 14.2 oz. Express the null hypothesis and the alternative hypothesis in symbolic form.

(i) $H_0: \mu = 14.2$
 $H_1: \mu > 14.2$

(ii) $H_0: \mu = 14.2$
 $H_1: \mu < 14.2$

(iii) $H_0: \mu = 14.2$
 $H_1: \mu \neq 14.2$

(iv) $H_0: \mu \geq 14.2$
 $H_1: \mu < 14.2$

The mean water temperature downstream from a power plant cooling tower discharge pipe should be no more than 100 F. Past experience has indicated that the standard deviation of temperature is 2 F. The water temperature is measured on nine randomly chosen days, and the average temperature is found to be 98 F. Find the test statistic for this test.

- A. -3
- B. 3
- C. 2
- D. -2
- E. None of the other choices is correct

(Choose 1 answer)

Medicare would like to test the hypothesis that the average monthly rate for one-bedroom assisted-living facility is equal to \$3,300. A random sample of 12 assisted-living facilities had an average rate of \$3,690 per month and a standard deviation of \$530. It is believed that the monthly rate for one-bedroom assisted-living facility is normally distributed. Use the significance level of 0.05 for this hypothesis test, what is the critical value?

- A. 2.201; -2.201
- B. 2.761; -2.761
- C. 1.985; -1.985
- D. 1.645; -1.645
- E. None of the other choices is true

Let $z_{0.05} = 1.645$, $t_{0.025,11} = 2.201$, $t_{0.05,11} = 1.796$.

(Choose 1 answer)

(See picture)

- A. (i)
- B. (ii)
- C. (iii)
- D. (iv)

Suppose a nationwide survey showed that 70% of the adult population favored the concept of euthanasia for the terminally ill. Find the test statistic and test whether this also holds for the over-55 age group if 684 of a sample of 900 are found to support the concept using a 5% significance level.

- (i) Test statistic $z_0 = 3.93$, reject the null hypothesis
- (ii) Test statistic $z_0 = 3.03$, fail to reject the null hypothesis
- (iii) Test statistic $z_0 = 8.93$, reject the null hypothesis
- (iv) Test statistic $z_0 = 3.93$, fail to reject the null hypothesis

Let $z_{0.05} = 1.64$ $z_{0.025} = 1.96$

(Choose 1 answer)

(See picture)

- A. Reject Null hypothesis
- B. Fail to reject Null hypothesis
- C. Not enough information

Let μ_1 be the mean score on a test of agility using a new training method and let μ_2 be the mean score on the test using the traditional method. Consider a test of $H_0: \mu_1 - \mu_2 = 0$. A large sample significance test finds $P\text{-value} = 0.04$. What conclusion, in the context of the problem, do you report if the significance level α is 0.05?

(Choose 1 answer)

(See picture)

- A. 0.692
- B. -0.692
- C. 0.874
- D. -0.874

Checking the lengths (cm) of randomly selected products from two manufacturing plants, we get the following data:

$$n_1 = 26, \bar{x}_1 = 6.9, s_1 = 1.26,$$
$$n_2 = 23, \bar{x}_2 = 7.2, s_2 = 1.76.$$

Use $\alpha = 0.05$ and assume equal variances, what is the test statistic when testing the hypothesis that both groups have the same average lengths?

(Choose 1 answer)

(See picture)

- A. (-0.043, 0.063)
- B. (-0.038, 0.058)
- C. (-0.038, 0.063)
- D. (-0.043, 0.058)
- E. None of the other choices is correct

Two different types of injection-molding machines are used to form plastic parts. Two random samples, each of size 200, are selected, and 10 defective parts are found in the sample from machine 1 while 8 defective parts are found in the sample from machine 2. Construct a two-sided 99% confidence interval on the difference in the two fractions defective.

Let $z_{0.01} = 2.33$ and $z_{0.005} = 2.58$.

(Choose 1 answer)

(See picture)

- A. $-21.5 + 31.17x$
- B. $-21.5x + 31.17$
- C. $21.5 + 31.17x$
- D. $21.5x + 31.17$
- E. None of the other choices is correct

The height y and base diameter x of four trees of a certain variety produced the following data

x	2	2	3	5
y	31	36	94	127

Find the equation of the estimated regression line $\hat{y} = a + bx$ of y on x .

(Choose 1 answer)

Which of the following statements are FALSE about the error in simple linear regression model?

- (i) This is a random variable with mean 0
 - (ii) This is a random variable with variance 0
- A. (i)
B. (ii)
C. Both (i) and (ii)
D. None of (i) or (ii)

(Choose 1 answer)

It is believed that, the average numbers of hours spent studying per day (HOURS) during undergraduate education should have a positive linear relationship with the starting salary (SALARY, measured in thousands of dollars per month) after graduation. Given below is the Excel output from regressing starting salary on number of hours spent studying per day for a sample of 51 students.

NOTE: Some of the numbers in the output are purposely erased.

The value of test statistic to test whether average SALARY depends linearly on HOURS is _____

- A. 13.3561
- B. -4.7134
- C. 0.9795
- D. -1.8940
- E. None of the other choices is correct

Regression Statistics	
Multiple R	0.8857
R Square	0.7845
Adjusted R Square	0.7801
Standard Error	1.3704
Observations	51

ANOVA

	df	SS	MS	F	Significance F
Regression	1	335.0472	335.0473	178.3859	
Residual				1.8782	
Total	50	427.0798			

	Coefficients	Standard Error	t Stat	p-value	Lower 95%	Upper 95%
Intercept	-1.8940	0.4018	-4.7134	2.051E-05	-2.7015	-1.0865
Hours	0.9795	0.0733	13.3561	5.944E-18	0.8321	1.1269

(Choose 1 answer)

(See picture)

A. Reject H_0

B. Do not reject H_0

Suppose data is obtained from 27 pairs of (x, y) and the sample correlation coefficient is 0.85.

Test the hypothesis that

$H_0 : \rho = 0$ against $H_1 : \rho \neq 0$ with $\alpha = 0.05$.

Let $t_{0.025, 25} = 2.060$.