

(Choose 1 answer)

Data that describe a characteristic about a population is known as a _____.

- A. parameter
- B. sample
- C. statistic
- D. survey
- E. None of the other choices is true

(Choose 1 answer)

A method of gathering data while the subjects of interest are in their natural environment, often unaware they are being watched, is known as _____

- A. observation.
- B. experiments.
- C. retrospective
- D. None of the other choices is correct

(Choose 1 answer)

The outcome of an experiment is the number of resulting heads when a nickel and a dime are flipped simultaneously. What is the sample space for this experiment?

- A. {0, 1, 2}
- B. {HH, HT, TH, TT}
- C. {nickel, dime}
- D. {HH, HT, TT}
- E. None of the other choices is correct

Kizspy | Question: 4
(Choose 1 answer)

Suppose that a coin is tossed three times. In this notation, S is the sample space, H indicates a head and T indicates a tail. Let A be the event that at least one head is obtained in the three tosses; let B be the event that a tail is obtained on the third toss. Describe the event A U B.

- A. S
- B. Empty set
- C. {HHH, THH, HTH, HHT, HTT, THT, TTH}
- D. {HHT, HTT, THT, TTT}

(Choose 1 answer)

A box contains 7 red, 5 white, and 4 black balls. What is the probability of your drawing at random one black ball?

- A. 1/3
- B. 1/4
- C. 5/16
- D. 7/16
- E. None of the other choices is correct

(Choose 1 answer)

A box contains 7 red balls, 4 green balls and 9 blue balls. A ball is drawn at random from the box. Find the probability that the ball is either green or blue.

- A. 0.2
- B. 0.45
- C. 0.35
- D. 0.65

(Choose 1 answer)

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

- A. 1/4
- B. 1/3
- C. 2/4
- D. 2/3

(Choose 1 answer)

A sample of 2 different calculators is randomly selected from a group containing 12 that are defective and 88 that have no defects. What is the probability that all two of the calculators selected are defective?

- A. 0.013
- B. 0.024
- C. 0.210
- D. 0.331
- E. None of the other choices is correct

(Choose 1 answer)

(See picture)

- A. 0.56
- B. 0.8
- C. 0.7
- D. 0.15



The following circuit operates only if there is a path of functional devices from left to right. The probability that each device functions is shown on the graph. Assume that devices function independently. What is the probability that the circuit operates?



(Choose 1 answer)

Suppose that $P(A|B) = 0.7$, $P(A) = 0.5$ and $P(B) = 0.4$. Determine $P(B|A)$.

- A. 0.56
- B. 0.28
- C. 0.35
- D. 0.20
- E. None of the other choices is correct

(Choose 1 answer)

The average number of hours spent completing statistics homework for a randomly selected group of statistics students is an example of what type of variable?

- A. continuous-quantitative variable
- B. qualitative variable
- C. discrete-quantitative variable
- D. None of the other choices is true

A batch of 500 machined parts contains 10 that do not conform to customer requirements. Parts are selected successively, without replacement, until a nonconforming part is obtained. Determine the range (possible values) of the random variable giving the number of parts selected.

- A. [1, 500]
- B. [1, 10]
- C. [1, 491]
- D. None of the other answers is correct

(Choose 1 answer)

A car agency sells 50% of its inventory of a certain foreign car equipped with airbags. Let X be a random variable giving the number of cars with airbags among the next 4 cars sold by the agency. Find the probability distribution of the number of cars with airbags.

- A. $f(0) = 1/16, f(1) = 3/4, f(2) = 1/8, f(3)=1/16, f(4) = 1/16$
- B. $f(0) = 1/16, f(1) = 1/2, f(2) = 1/8, f(3) = 1/16, f(4) = 1/4$
- C. $f(0) = 1/16, f(1) = 1/4, f(2) = 3/8, f(3) = 1/4, f(4) = 1/16$
- D. $f(0) = 1/16, f(1) = 1/4, f(2) = 1/8, f(3) = 1/16, f(4) = 1/2$
- E. None of the other choices is correct

(Choose 1 answer)

If a random variable X takes values 1, 2, 3 and 4 such that $P(X=1) = 2P(X=2) = P(X=3) = 4P(X=4)$, find $F(3.5)$, where $F(x)$ is the cumulative distribution function of X .

- A. 1/11
- B. 7/8
- C. 10/11
- D. 1/8
- E. None of the other choices is correct

(Choose 1 answer)

The random variable X represents the number of tests that a patient entering a hospital will have along with the corresponding probabilities. Find the mean and standard deviation for the random variable X .

X $P(X)$

- 0 $3/17$
- 1 $5/17$
- 2 $6/17$
- 3 $2/17$
- 4 $1/17$

- A. mean: 3.72; standard deviation: 2.52
- B. mean: 2.52; standard deviation: 1.93
- C. mean: 1.59; standard deviation: 1.09
- D. mean: 1.59; standard deviation: 3.72
- E. None of the other choices is correct

(Choose 1 answer)

Let the random variable X have discrete uniform distribution on the set $\{1, 2, 3, \dots, 35\}$. Determine the mean and variance of X .

- A. None of the others
- B. 17.5 and 102
- C. 17 and 102
- D. 18 and 102

(Choose 1 answer)

The probability that a tennis set will go to a tie-breaker is 17%. What is the probability that two of three sets will go to tie-breakers?

- A. 0.170
- B. 0.351
- C. 0.072
- D. 0.028
- E. None of the other choices is correct

(Choose 1 answer)

Suppose that the probability of passing the "board" examination is 0.45. This probability does not vary with time, and that each attempt is independent of previous attempts. What is the probability that you pass the examination on your fifth attempt?

- A. 0.0412
- B. 0.1027
- C. 0.8853
- D. 0.3094
- E. None of the other choices is correct

(Choose 1 answer)

Printed circuit cards are placed in a functional test after being populated with semiconductor chips. A lot contains 40 cards, and a sample of 3 are selected at random without replacement for functional testing. If 5 cards are defective, what is the probability that all cards in the sample are defective?

- A. 0.001
- B. 0.999
- C. 0.122
- D. 0.978
- E. None of the other choices is correct

(Choose 1 answer)

The number of telephone calls that arrive at a phone exchange is often modeled as a Poisson random variable. Assume that on the average there are 10 calls per hour. What is the probability that there are exactly 6 calls in 30 minutes?

- A. 0.0413
- B. 0.0631
- C. 0.1606
- D. 0.1462
- E. None of the other choices is correct

(Choose 1 answer)

Patients arriving at an outpatient clinic follow an exponential distribution at a rate of 15 patients per hour. What is the probability that a randomly chosen arrival to be less than 15 minutes?

- A. 0.9765
- B. 0.5765
- C. 0.2465
- D. 0.0165
- E. None of the other choices is correct

(Choose 1 answer)

(See picture)

A. 3/20

B. 9/8

C. -3/20

D. -9/8

E. None of the others

Find C such that $f(x)$ is a probability density function, where

$$f(x) = C(x^2 + 2x) \quad \text{for } 0 < x < 2.$$

(Choose 1 answer)

(See picture)

- A. 0.25
- B. 1
- C. 0
- D. 0.75



Suppose the cumulative distribution function of a continuous random variable X is given by

$$F(x) = \begin{cases} 0 & x < 0 \\ 0.25x & 0 \leq x < 4 \\ 1 & x \geq 4 \end{cases}$$

Determine $P(X > 5) + P(X < 1)$.



(Choose 1 answer)

(See picture)

A. 9

B. 10

C. 7

D. 8

E. None of the other choices is correct

Let X be a random variable with density function

$$f(x) = \begin{cases} \frac{x^2}{3} & \text{if } -1 < x < 2, \\ 0 & \text{elsewhere} \end{cases}$$

Find the expected value of $Y = 4X + 3$.

(Choose 1 answer)

The diameters of ball bearings produced in a manufacturing process can be described using a uniform distribution over the interval 8.5 to 10.5 millimeters. What is the probability that a randomly selected ball bearing has a diameter greater than 9.2 millimeters?

- A. 0.65
- B. 0.48
- C. 0.87
- D. 4.58
- E. None of the other choices is correct

(Choose 1 answer)

Given a standard normal distribution, find the normal-curve area between $z = -2$ and $z = -1$.

Let $P(Z < -2) = 0.0228$, $P(Z < -1) = 0.1587$, $P(Z < 1) = 0.8413$ and $P(Z < 2) = 0.9773$.

- A. 0.8641
- B. 0.2388
- C. 0.7612
- D. 0.1359
- E. None of the other choices is correct

(Choose 1 answer)

Find the standard normal-curve area between $z = -1.3$ and $z = -0.4$.

Let $P(Z < -1.3) = 0.0968$, $P(Z < -0.4) = 0.3446$ and $P(Z < 0) = 0.5$.

- A. 0.7522
- B. 0.1298
- C. 0.8702
- D. 0.2478
- E. None of the other choices is correct

(Choose 1 answer)

The random variable X has a binomial distribution with $n = 50$ and $p = 0.6$. Use the normal approximation for binomial distributions to find $P(X \leq 30)$.

Let $P(Z < 0.05) = 0.5199$, $P(Z < 0.144) = 0.5572$, $P(Z < 1) = 0.8413$, $P(Z < 1.44) = 0.9251$.

- A. 0.5572
- B. 0.5199
- C. 0.8413
- D. 0.9251
- E. None of the other choices is correct

(Choose 1 answer)

A family has eight children. The ages were 9, 11, 8, 15, 14, 12, 17, 14. Find the mean and the range of the data.

- A. 13 and 9
- B. 12.5 and 9
- C. 13 and 8
- D. 12.5 and 8
- E. None of the other choices is correct

(Choose 1 answer)

Find the variance of the sample: 6, 8, 10, 12, 14, 16.

- A. 14
- B. 3.74
- C. 11.67
- D. 13.25
- E. None of the other choices is correct

(Choose 1 answer)

(See picture)

- A. 2 5 6 6 7 7 7 8 8 9
- B. 2 5 6 6 7 7 8 8 9
- C. 2 5 6 6 7 7 7 8 9
- D. 2 5 5 6 6 7 7 8 8 9
- E. None of the other choices

Given a table of data:

44	63	84	98	56	32	26	75	35	97
53	39	96	36	97	44	74	26	85	84
13	46	64	38	96	45	89	86	43	71
60	12	46	84	15	75	37	80	37	27
97	46	36	38	37	58	85	44	57	72

In the corresponding stem-and-leaf diagram of this data table, what are the data values of stem 3?

(Choose 1 answer)

The scores for a statistics test are as follows:

52, 61, 78, 86, 56, 68, 98, 77, 90, 86,
66, 64, 56, 59, 72, 55, 92, 83, 74, 90

Assume that you are finding the cumulative frequency distribution using groupings: 50-59 inclusively, 60-69 inclusively, 70-79 inclusively, 80-89 inclusively and 90-99 inclusively. What is the cumulative frequency of the interval 60-69?

- A. 4
- B. 5
- C. 7
- D. 9
- E. None of the other choices is correct

(Choose 1 answer)

The following data reflect the number of customers who test drove new cars each day for a sample of 20 days at the Redfield Ford Dealership.

(See picture)

Given these data, what is the interquartile range?

- A. 14
- B. 3
- C. 4
- D. 7
- E. None of the other choices is correct

5	7	2	9	4
9	7	10	4	7
5	6	4	0	7
6	3	4	14	6

(Choose 1 answer)

The compressive strength of concrete is normally distributed with mean =1200 psi and standard deviation=30. A random sample of n=9 specimens will have a sample mean diameter that falls in the interval from 1011 psi to 1230 psi. What is the standard error of the sample mean?

- A. $400/3$
- B. None of the others
- C. 40
- D. $30/9$
- E. 10

(Choose 1 answer)

Car batteries produced by company A have a mean life of 3.5 years with a standard deviation of 0.4 years. A similar battery produced by company B has a mean life of 3.3 years and a standard deviation of 0.3 years. What is the probability that a random sample of 25 batteries from company A will have a mean life of at least 0.4 years more than the mean life of a sample of 36 batteries from company B? Assume that both populations are normally distributed.

Let $P(Z < -2.12) = 0.0170$, $P(Z < 2.12) = 0.9830$, $P(Z < -4) = 0$.

- A. 1
- B. 0.0170
- C. 0
- D. 0.9830
- 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 will be between 39 and 48 minutes?

Let $P(Z < 1.2) = 0.8849$; $P(Z < -2.4) = 0.0082$, $P(Z < 0) = 0.5$.

- A. 0.3376
- B. 0.8151
- C. 0.4572
- D. 0.8767
- E. None of the other choices is correct

(Choose 1 answer)

(See picture)

- A. (1006.08, 1013.92)
- B. (1006.70, 1013.30)
- C. (1005.88, 1014.12)
- D. (1006.58, 1013.42)
- E. None of the other choices is correct

A confidence interval estimate is desired for the gain in a circuit on a semiconductor device. Assume that gain is normally distributed with standard deviation $\sigma = 10$. Find a 95% confidence interval for the mean gain μ when $n = 25$ and $\bar{x} = 1010$.

Let $z_{0.025} = 1.96$, $z_{0.05} = 1.65$
 $t_{0.025, 24} = 2.06$, $t_{0.05, 24} = 1.71$

(Choose 1 answer)

Construct a 98% confidence interval for the population mean. Assume the population has a normal distribution. A study of 14 bowlers showed that their average score was 192 with a standard deviation of 8.

- A. (186.3, 197.7)
- B. (328.3, 386.9)
- C. (222.3, 256.1)
- D. (115.4, 158.8)
- E. None of the other choices is correct

Let $t_{0.01, 13} = 2.65$

(Choose 1 answer)

From a prior study, the population proportion p is estimated by 0.6. What sample size is needed to be 99% confident that the point estimate of p will be within 0.2 around the population p ?

- A. 40
- B. 39
- C. 32
- D. 33
- 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)

The mean pull-off force of a connector depends on cure time. State the null and alternative hypotheses used to demonstrate that the pull-off force is below 25 newtons.

(i) $H_0: \mu > 25$, $H_1: \mu = 25$

(ii) $H_0: \mu = 25$, $H_1: \mu > 25$

(iii) $H_0: \mu = 25$, $H_1: \mu < 25$

(iv) $H_0: \mu < 25$, $H_1: \mu = 25$

(Choose 1 answer)

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)

(See picture)

- A. 2.576; -2.576
- B. 2.326; -2.326
- C. 2.609; -2.609
- D. 2.352; -2.352
- E. None of the other choices is true

Let

$$z_{0.005} = 2.576; z_{0.01} = 2.326$$

$$t_{0.005, 149} = 2.609, t_{0.01, 149} = 2.352$$

The critical values for a two-tail hypothesis test

$$H_1: \mu \neq 15$$

when the population standard deviation is unknown, the sample size is 150 and $\alpha = 0.01$, are _____

(Choose 1 answer)

(See picture)

- A. 4.22
- B. -4.22
- C. 6.32
- D. -6.32
- E. None of the other choices is correct

Suppose that 1000 customers are surveyed and 940 are satisfied or very satisfied with a corporation's products and services. Compute the test statistic when testing the hypothesis $H_0: p = 0.9$ against $H_1: p \neq 0.9$ at $\alpha = 0.05$.

(Choose 1 answer)

(See picture)

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

The federal government would like to test the hypothesis that the average age of men filing for Social Security is higher than the average age of women set using $\alpha = 0.05$ with the following data:

	Men	Women
Sample mean	64.5 years	63.6 years
Sample size	35	39
Population standard deviation	3.0 years	3.5 years

If Population 1 is defined as men and Population 2 is defined as women, the correct hypothesis statement for this hypothesis test would be

- (i) $H_0: \mu_1 - \mu_2 \geq 0; H_1: \mu_1 - \mu_2 < 0.$
- (ii) $H_0: \mu_1 - \mu_2 = 0; H_1: \mu_1 - \mu_2 > 0.$
- (iii) $H_0: \mu_1 - \mu_2 = 0; H_1: \mu_1 - \mu_2 \neq 0.$
- (iv) $H_0: \mu_2 - \mu_1 \leq 0; H_1: \mu_2 - \mu_1 > 0.$

(Choose 1 answer)

(See picture)

A. 28.31

B. 5.00

C. 4.00

D. 4.23

E. None of the other choices is correct

Given the following information, calculate s_p^2 , the pooled sample variance that should be used in the pooled-variance t test.

$$\begin{array}{ll} s_1 = 4 & s_2 = 6 \\ n_1 = 16 & n_2 = 25 \end{array}$$

(Choose 1 answer)

(See picture)

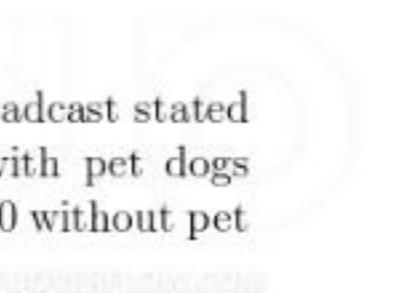
- A. -0.102
- B. 0.000
- C. -0.041
- D. -0.173

E. None of the other choices is correct



Compute the test statistic used to test the null hypothesis that $p_1 = p_2$.

A report on the nightly news broadcast stated that 13 out of 111 households with pet dogs were burglarized and 23 out of 190 without pet dogs were burglarized.



(Choose 1 answer)

Regression methods were used to analyze the data from a study investigating the relationship between steam usage (y) and the average temperature (x) (degree F). Assume that the least squares estimates of the slope and intercept are 9.20836, -6.3355. What is the estimate of expected steam usage when the average temperature is 55 F. Assume that the variables x and y have a significant correlation.

- A. -339.244
- B. 500.124
- C. 512.44
- D. 547.38
- E. None of the other choices is correct

(Choose 1 answer)

(See picture)

A. 0.1595

B. 1.6271

C. 0.1455

D. None of the other choices is correct.

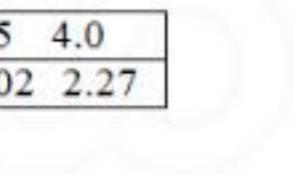
E. 0.9982



An article described a study of investigating the relationship between the age (x) and length (y) of 5 captured dugongs:

x	1.0	1.5	1.5	2.5	4.0
y	1.80	1.85	1.87	2.02	2.27

Find the total sum of square SS_T .



(Choose 1 answer)

Suppose that you have carried out a regression analysis where the total corrected sum of squares is 358,690 and the correlation coefficient was 0.9. The regression sum of squares is _____

- A. 322.821
- B. 322821
- C. 290539
- D. 290.539
- E. None of the other choice is correct

(Choose 1 answer)

(See picture)

A. -0.962

B. 0.962

C. 0.692

D. -0.692

E. None of the other choices is correct



Over a period of one year, a greengrocer sells tomatoes at six different prices (x pence per kilogram). He calculates the average number of kilograms, y , sold per day at each of the six different prices. From these data the following are calculated

$$\sum x_i = 200, \sum y_i = 436,$$

$$\sum x_i y_i = 12515, \sum x_i^2 = 7250, \sum y_i^2 = 39234, n = 6.$$

Estimate the correlation coefficient.

