Kizspy | Question: 1

(Choose 1 answer)

An employee at the local ice cream parlor asks three customers if they like chocolate ice cream. What is the population?

A. three selected customers

B. all women customers.

C. all men customers

D. all customers

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Kizspy | Question: 2

(Choose 1 answer)

A stock analyst compares the relationship between stock prices and earnings per share to help him select a stock for investment. What type of the description is?

A. Observation study

B. Experiment

C. Retrospective study

Kizspy | Question: 3

(Choose 1 answer)

$|5, 10|$

2	3	4	~~5~~	6	7
3	4	~~5~~	6	7	8
4	~~5~~	6	7	8	9
~~5~~	6	7	8	9	~~10~~
6	7	8	9	~~10~~	11
7	8	9	~~10~~	11	12

We throw a fair six-sided die twice, then add the two numbers. Let E denote the event that getting a number divisible by 5. What is the number of outcomes in E?

A. 5

B. 6

C. 7

D. 8

Kizspy | Question: 4

(Choose 1 answer)

$P(A) + P(B) + P(C) = 1$

$\Leftrightarrow 0 + \frac{1}{14} + \frac{13}{14} = 1$

Which of the following assignments of probabilities to the sample points A, B, and C is valid if A, B, and C are the only sample points in the experiment?

A. P(A) = -1/4 , P(B) = 1/2 , P(C) = 3/4

B. P(A) = 1/9 , P(B) = 1/4 , P(C) = 1/2

C. P(A) =0, P(B) =1/14 , P(C) = 13/14

D. P(A) =1/5 , P(B) = 1/5 , P(C) = 1/5

E. None of the other choices is correct

Kizspy | Question: 5

(Choose 1 answer)

(See picture)

A. 0.1
B. 0
C. 0.2
D. 0.6

If $P(A) = 0.5; P(B) = 0.4$ and $P(A \cap B) = 0.3$. Determine $P(A' \cap B)$.

Kizspy | Question: 6

(Choose 1 answer)

Let's say that 50% of 10,000 women who take pregnancy tests are actually pregnant. Suppose there is a new pregnancy test and we know the following information: 92% of women who are pregnant will correctly get a positive result and 6% of women who are not pregnant will also get a positive result. Given that a woman is not pregnant, what's the chance she'll get a negative result?

A. 94%

B. 93.88%

C. 95%

D. 93%

92% pregnant → positive result

⇒ 8% non-pregnant → Negative result

6% non-pregnant → positive result

⇒ $\boxed{\text{94\% pregnant → negative result}}$

Kizspy | Question: 7

(Choose 1 answer)

5 trong 52

$C_5^{52} =$

5 in 13

$C_5^{13} = 1287$

A batch contains 52 bacteria cells. Assume that 13 of cells are not good. Five cells are selected at random, without replacement. What is the probability that all five cells of selected cells are not good?

A. None of the others

B. 0.495

C. 0.0002215

D. 0.257

E. 0.0004952

$n = 52$

13 cell not good

5 cell random

$$P(\text{5 cell not good}) = \frac{C_5^{13}}{C_5^{52}}$$

$= 0{,}0004952$

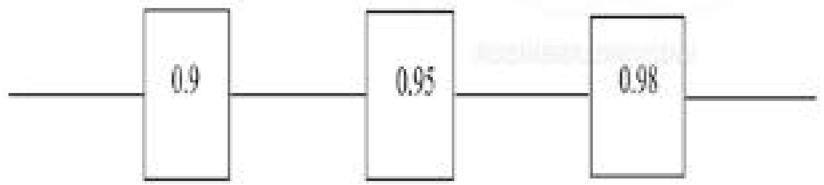
Kizspy | Question: 8

(Choose 1 answer)

(See picture)

A. 0.8379
B. 0.9310
C. 0.8550
D. 0.9999

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 functions independently. What is the probability that the circuit operates?



nối tiếp thì nhân nhau

=> $0,9 \times 0,95 + 0,98 = 0,8379$

Kizspy | Question: 9

(Choose 1 answer)

	A	B
White	15	10
Black	10	15
	25	25

Total = 50

Để giải bài toán này, ta sử dụng Định lý Bayes. Gọi:

- A là biến cố "chọn quả bóng từ Túi A."
- B là biến cố "chọn quả bóng từ Túi B."
- W là biến cố "quả bóng được chọn là màu trắng."

Chúng ta cần tìm xác suất $P(A|W)$, tức là xác suất quả bóng được chọn từ Túi A khi biết rằng quả bóng này là màu trắng.

Bag A contains 15 white and 10 black balls while another Bag B contains 10 white and 15 black balls. One ball is drawn at random from one of the bags and it is found to be white. Find the probability that it was drawn from Bag A.

A. 0.3

B. 0.4

C. 0.5

D. 0.6

$$P(w|A) = \frac{15}{25} = 3/5$$

$$P(w|B) = \frac{10}{25} = 2/5$$

xác xuất toàn phần để chọn ra white

$$P(w) = P(w|A)\,P(A) + P(w|B).P(B)$$
$$= 3/5 \times 1/2 + 2/5 \times \frac{1}{2} = 1/2$$

$$P(A|w) = \frac{P(w|A).P(A)}{P(w)}$$
$$= \frac{3/5 \cdot \frac{1}{2}}{1/2} = 0,6$$

Kizspy | Question: 10

(Choose 1 answer)

Choose a correct answer.
A random variable is a function that assigns ________ to each outcome in the sample space of a random experiment.

A. a letter

B. a real number

C. an event

D. a probability

Kizspy | Question: 11

(Choose 1 answer)

A batch of 500 machined parts contains 15 that do not conform to customer requirements. The random variable is the number of parts in a sample of ten parts that do not conform to customer requirements. What is the range of the random variable?

A. Integers from 0 to 10

B. Integers from 0 to 15

C. Integers from 10 to 500

D. Real numbers from 0 to 10

E. Real numbers from 0 to 15

15 do not conform

$0 \leq x \leq 15$

Sample of ten parts

$\Rightarrow 0 \leq x \leq 10$

Kizspy | Question: 12

(Choose 1 answer)

(See picture)

A. f(0)=1/3; f(1)=1/6; f(2)=1/2
B. f(0)=1/9; f(1)=1/36; f(2)=1/4
C. f(0)=1/3; f(1)=1/6; f(4)=1/2
D. f(0)=1/3; f(1)=1/6; f(4)=1/4
E. None of the other choices is correct

A random variable X takes values 0, 1, 2 with probabilities 1/3, 1/6, 1/2, respectively. Describe the probability mass function of $Y = X^2$.

X^2	0	1	4
X	0	1	2
Y	1/3	1/6	1/2

$$f(0) = \frac{1}{3}, \quad f(1) = \frac{1}{6}, \quad f(4) = \frac{1}{2}$$

Kizspy | Question: 13

(Choose 1 answer)

(See picture)

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

0,2 $\quad 0 \leq x < 1$

$\Rightarrow P(0) = 0,2$

0,6 $\quad 1 \leq x < 3$

$\Rightarrow P(1) + P(2) = 0,6$

1 $\quad x \geq 3$

$\Rightarrow P(3) + P(1) + P(2) = 1$

Determine the probability mass function for the random variable with the following cumulative distribution function

$$F(x) = \begin{cases} 0 & x < 0 \\ 0.2 & 0 \leq x < 1 \\ 0.6 & 1 \leq x < 3 \\ 1 & x \geq 3 \end{cases}$$

(i)

X	0	1	3
f(x)	0.2	0.4	0.4

$\Rightarrow P(2) = 0,6 - P(1) = 0,2$

(ii)

X	0	2	3
f(x)	0.3	0.3	0.4

$P(0) \neq 0,2$

(iii)

X	0	2	3
f(x)	0.4	0.3	0.3

$P(0) \neq 0,2$

(iv)

X	1	2	3
f(x)	0.4	0.4	0.2

$P(1) + P(2) \neq 0,6$

Kizspy | Question: 14

(Choose 1 answer)

The produce manager at a food store was interested in determining how many apples a person buys when they buy apples. He asked the cashiers over a weekend to count how many apples a person bought when they bought apples and record this number for analysis at a later time. The data is given in the table. The random variable x represents the number of apples purchased and P(x) represents the probability that a customer will buy x apples. Determine the variance of the number of apples purchased by a customer.

A. 1.95
B. 0.56
C. 3.57
D. 3.97
E. None of the other choices is correct

casio 2-variable

X	1	2	3	4	5	6	7	8	9	10
P(X)	0.05	0.19	0.20	0.25	0.12	0.10	0	0.08	0	0.01

$var(X) = E(x^2) - E(x)^2$

$E(x) = \sum x . P(x) = 3,97$

$E(x^2) = \sum x^2 . P(x) = 19,33$

$\Rightarrow var = 19,33 - (3,97)^2$

$\Leftrightarrow var(x) \approx 3.57$

Kizspy | Question: 15

(Choose 1 answer)

(See picture)

A. 0
B. 1
C. 10
D. 11
E. None of the other choices is true

Let X and Y be two discrete uniform distributions with $E(X) = 1$ and $E(Y) = 10$.

Find the value of $E(10X - Y)$.

$E(aX + bY) = aE(X) + bE(Y)$

$\Rightarrow E(10X - Y) = 10E(X) - E(Y)$

$\Leftrightarrow E(10X - Y) = 0$

Kizspy | Question: 16

(Choose 1 answer)

Assume that male and female births are equally likely and that the birth of any child does not affect the probability of the gender of any other children. Find the probability of at most three boys in ten births.

A. 0.333

B. 0.172

C. 0.003

D. 0.300

E. None of the other choices is correct

$$\text{male} = \text{female} \Rightarrow P(\text{male}) = \frac{1}{2}$$

$\Rightarrow$ 10 births

0 births: $0 \cdot \left(\frac{1}{2}\right)^{10}$

1 birth: $C_{10}^{1} \left(\frac{1}{2}\right)^{10} = \frac{5}{512}$

2 birth: $C_{10}^{2} \left(\frac{1}{2}\right)^{10} = \frac{45}{1024}$

3 birth: $C_{10}^{3} \left(\frac{1}{2}\right)^{10} = \frac{15}{128}$

$$\sum_{x=0}^{3} C_x^{10} \left(\frac{1}{2}\right)^{10} = 0,172$$

Kizspy | Question: 17

(Choose 1 answer)

In a certain manufacturing process it is known that, on the average, 1 in every 100 items is defective. What is the probability that the fifth item inspected is the first defective item found?

A. 0.0099

B. 0.8879

C. 0.6879

D. 0.0096

E. None of the other choices is correct

1 in every 100 items is defective

$\Rightarrow p = \frac{1}{100} = 0{,}01$

$P(X=5) = (1-p)^{k-1} \cdot p$

$= (1-0{,}01)^{5-1} \cdot 0{,}01$

$\Rightarrow P(X=5) \approx 0{,}096$

Geometric distribution : $E(X) = \frac{1}{p}$

$P(X=k) = (1-p)^{k-1} \cdot p$

Kizspy | Question: 18

(Choose 1 answer)

Sample : n = 7

3 ERROR => 4 not ERROR

$C_3^3 = 1$ | $C_{12-3}^4 = 126$

$$\frac{C_3^3 \cdot C_{12-3}^4}{C_{12}^7} \approx 0{,}1\bar{5}91$$

There are calculation errors in 3 out of a package of 12 invoices. An auditor checks a random sample of 7 invoices from the package. What are the probabilities of finding all 3 errors in the sample?

A. 0.1591

B. 0.1996

C. 0.8327

D. 0.0031

E. None of the other choices is correct

N = 12 k = 3

n = 7 K = 3 (finding all 3 errors)

hypergeometric distribution

$$P(X = k) = \frac{C_k^K \times C_{K-k}^{N-n}}{C_n^N}$$

Kizspy | Question: 19

(Choose 1 answer)

Possion distribution

$$P(x = k) = \frac{\lambda^{k} e^{-\lambda}}{k!}$$

$$P(x = 2) = \frac{5^{2} e^{-5}}{2!} \approx 0,125$$

Casio : Posson CD

The number of times that Cuong stops at traffic lights follows a Poisson distribution with a mean of one stop per kilometer. Find the probability that he only stops at at most two traffic lights during a 5-kilometer ride.

A. 0.125

B. 0.098

C. 0.134

D. 0.212

E. None of the other choices is correct

at most two traffic light : $k = 2$

mean of one stop per km : 1

$\Rightarrow$ during a 5 Km : $\lambda = 5.1 = 5$

λ : số lần dừng trung bình dự kiến là 5

Kizspy | Question: 20

(Choose 1 answer)

A catalog company that receives the majority of its orders by telephone conducted a study to determine how long customers were willing to wait on hold before ordering a product. The length of time was found to be a random variable best approximated by an exponential distribution with a mean equal to 3 minutes. What proportion of customers having to hold more than 1.5 minutes will hang up before placing an order?

A. 0.60653

B. 0.39347

C. 0.86466

D. 0.13534

E. None of the other choices is correct

Kizspy | Question: 21

(Choose 1 answer)

(See picture)

A. -9/8
B. -8/9
C. 9/8
D. 8/9
E. None of the others

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

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

$$\int_0^2 f(x)\,dx = 1$$

$$\Leftrightarrow \int_0^2 (Cx^2 + 2x)\,dx = 1$$

$$\Rightarrow C = -1{,}125$$

Kizspy | Question: 22

(Choose 1 answer)

(See picture)

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

$$\left(1 - e^{-x/9}\right) - \int_0^x \frac{1}{9} e^{-x/9}\, dx = 0$$

The probability density function of the time customers arrive at a terminal (in minutes after 9:00 A.M.) is given by

$$f(x) = \frac{1}{9}e^{-x/9}, \quad x > 0.$$

Determine the cumulative distribution function F(x).

(i) $1 - e^{-x/9}, \quad x > 0$

(ii) $1 - (1/9)e^{-x/9}, \quad x > 0$

(iii) $e^{-x/9}, \quad x > 0$

(iv) $(1/9)e^{-x/9}, \quad x > 0$

Kizspy | Question: 23

(Choose 1 answer)

(See picture)

A. 3
B. 1
C. 0.25
D. 0.5
E. 0.75

Suppose that contamination particle size X (in micrometers) can be modeled as continuous random variable with probability density function $f(x) = 3/x^4$ for $x > 1$. Determine the variance of X.

$x > 1$

$$f(x) = \frac{3}{x^4}$$

$$E(x) = \int_a^b x\, f(x)\, dx$$

$$E(x^2) = \int_a^b x^2\, f(x)\, dx$$

$$Var(x) = E(x^2) - E(x)^2$$

$$E(x^2) = \int_1^{+\infty} x^2 \cdot \frac{3}{x^4}\, dx \approx 3$$

$$E(x) = \int_1^{+\infty} x \cdot \frac{3}{x^4}\, dx \approx$$

$$Var(x) = 3 - (1{,}5)^2 = 0{,}75$$

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Kizspy | Question: 24

(Choose 1 answer)

$0, 1, 2, 3, 4, 5, 6, 7, 8$

$n = b - a + 1 = 9$

$x > 3 = [4, 8]$

$P(x > 3) = \frac{5}{9} \approx 0{,}55$

descrete interval

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?

A. 0.625

B. 0.575

C. 0.750

D. 0.500

E. None of the other choices is correct

continuous interval

$\Rightarrow n = b - a = 8$

$\frac{5}{8} = 0{,}625$

Kizspy | Question: 25

(Choose 1 answer)

$\mu = 30$

$\sigma = 5$

$\left[z = \frac{x - \mu}{\sigma} \right]$

$P(X < 32)$

$z = \frac{32 - 30}{5} = 0,4$

$\Rightarrow P(Z < 0,4)$

If a random variable has the normal distribution with mean = 30 and standard deviation = 5, find the probability that it will take on the value less than 32.

Let P(Z < 0.4) = 0.6554, P(Z < 0.2) = 0.5793

A. 0.3446

B. 0.4207

C. 0.6554

D. 0.5793

E. None of the other choices is correct

Kizspy | Question: 26

(Choose 1 answer)

$\mu = 32,3$

$\sigma = 1,2$

$p(x < 32)$

$$z = \frac{32 - 32,3}{1,2} = -0,25$$

$\Rightarrow P(z < -0,25)$

The volumes of soda in quart soda bottles are normally distributed with a mean of 32.3 oz and a standard deviation of 1.2 oz. What is the probability that the volume of soda in a randomly selected bottle will be less than 32 oz?

Let P(Z < -0.3) = 0.3821, P(Z < -0.25) = 0.4013, P(Z < 0.6) = 0.5987 and P(Z < 0.85) = 0.8026.

A. 0.4013 ✓

B. 0.8026

C. 0.3821

D. 0.5987

E. None of the other choices is correct

$$P(z < -0,25) = \frac{1}{2}\left(1 + \frac{2}{\sqrt{\pi}}\int_0^{z/\sqrt{2}} e^{-x^2}\,dx\right)$$

$\Leftrightarrow P(Z < -0,25) = 0,4013$

Kizspy | Question: 27

(Choose 1 answer)

A certain baseball player hits a home run in 3% of his at-bats. Consider his at-bats as independent events. Use normal distribution to approximate the probability that this baseball player hits 5 home runs in 60 at-bats?

$P(Z < 2.80) = 0.9974$, $P(Z < 2.04) = 0.9793$, $P(Z < 0.8) = 0.7881$.

A. 0.0181

B. 0.1093

C. 0.1912

D. 0.3923

E. None of the other choices is correct

Kizspy | Question: 28

(Choose 1 answer)

Compute the sample standard deviation of the heights (in inches) of three men with heights of 64.9, 65, 65.5

A. 0.321

B. 1.911

C. 3.652

D. 4.174

E. None of the other choices is correct

Casio

Kizspy | Question: 29

(Choose 1 answer)

Consider the following sample data:

25 11 6 4 2 17 9 6

For these data the median is_______________

A. 10

B. 7.5

C. 3.5

D. None of the other choices is correct

Kizspy | Question: 30

(Choose 1 answer)

(See picture)

A. (i)
B. (ii)
C. (iii)
D. None of the other choices is true

The following data represents the high ambient temperature for a particular city over the past 16 days.

52	56	56	58	59	60	62	65
69	73	73	74	76	76	77	78

Construct a stem and leaf display for this data.

65 xuất hiện 1 lần

(i)

5	26689
6	0259
7	3346678

(ii)

5	26689
6	025599
7	3346778

(iii)

5	22669
6	0259
7	346778

73 - 2 lần

5	2 6 6 8 9
6	0 2 5 5
7	3 3 4 6 6 7 8

5 | 2 6 → 52 56 . . .

Kizspy | Question: 31

(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

tần suất tích lũy của
[60, 69]

=> từ đầu → 69

=> 9

Kizspy | Question: 32

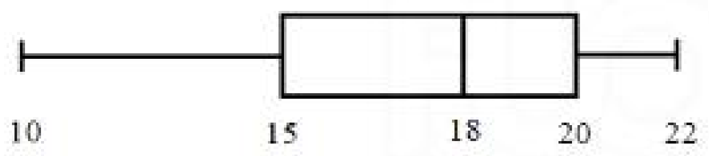
(Choose 1 answer)

interval [10, 22]

(See picture)

A. 2
B. 0
C. 1
D. 3

The box plot below is constructed from a given data set:



How many of the following statements are correct?

i) Half of the data falls between 15 and 20.
ii) The number 22 must be in the data set.
iii) The number 18 must be in the data set.

Kizspy | Question: 33

(Choose 1 answer)

(See picture)

A. All of them are true.
B. (ii)
C. (iii)
D. (i)

Which of the following is true about the sampling distribution of the sample mean?

(i) The mean of the sampling distribution is always μ

(ii) The standard deviation of the sampling distribution is always σ

(iii) The shape of the sampling distribution is always approximately normal.

Kizspy | Question: 34

(Choose 1 answer)

$\mu = 65$

$\sigma = 8$

$n = 64$

$P(\bar{x} > 71)$ $\sigma_{\bar{x}}$

$SE\ mean = \frac{\sigma}{\sqrt{n}} = 1$

$Z = \frac{71 - 65}{\sigma_{\bar{x}}}$

$Z = \frac{6}{1} = 6$

$P(Z > 6) = 1 \Rightarrow$

The amount of time it takes to complete an examination has a distribution with a mean of 65 minutes and a standard deviation of 8 minutes. If 64 students were randomly sampled, what is the probability that the sample mean of the sampled students exceeds 71 minutes?

Let $P(Z < -1) = 0.138$, $P(Z < 0.07) = 0.529$ and $P(Z < 6) = 1$.

A. 0.529

B. approximately 0

C. 0.862

D. approximately 1

E. None of the other choices is correct

$P(Z < 6) = 1 - P(Z > 6) \approx 0$

Kizspy | Question: 35

(Choose 1 answer)

$\mu = 1,5$

$\sigma = 0,8$

$N = 100$

$n = 100$

$\sigma_{\bar{x}} = \frac{0,8}{\sqrt{100}} = 0,08$

Major league baseball salaries averaged $1.5 million with a standard deviation of $0.8 million in 1994. A random sample of 100 major league players was taken, find the probability that the average salary of these 100 players exceeds $1 million.

$\bar{x}$

Let P(Z< - 0.625) = 0.266, P(Z< - 2.65) = 0.004, P(Z< - 6.25) = 0.000.

A. 0.266

B. 0.050

C. 0.734

D. None of the other choices is correct

E. 1.0

$P(\bar{x} > 1)$

$Z = \frac{\bar{x} - \mu}{SE}$

$Z = \frac{1 - 1,5}{0,08} = -\frac{25}{4} = -6,25$

$\Rightarrow P(Z < -\frac{25}{4}) = 0,00$

$\Rightarrow P(Z > -\frac{25}{4}) = 1,0$

Kizspy | Question: 36

(Choose 1 answer)

An economist is interested in studying the incomes of consumers in a particular region. The population standard deviation is known to be $1,500$. A random sample of 50 individuals resulted in an average income of $25,000. What is the width of the 95% confidence interval?

A. 415.78
B. 700.04
C. 350.02
D. 831.56
E. None of the other choices is correct

$\sigma_x = 1500$

$n = 50$

$\bar{x} = 25000$

$95\% \Rightarrow \alpha = 0{,}05$

$Z_{\alpha/2} = 1{,}96$

$\Rightarrow \cancel{1{,}96 = \frac{1}{2}\left(1 + \frac{2}{\sqrt{\pi}} \int_0^{\frac{z}{\sqrt{2}}} e^{-x^2} dx\right)}$

Let
$z_{0.025} = 1.96$, $t_{0.025;49} = 2.01$;
$z_{0.05} = 1.65$, $t_{0.05;49} = 1.68$

width $= 2 \cdot ME$

$z =$

$\bar{x} \pm z \cdot \frac{\sigma}{\sqrt{n}}$

$\rightarrow z \cdot \frac{\sigma}{\sqrt{n}} = z \cdot SE = ME \approx 415{,}78$

$\Rightarrow$ width $= 2 \cdot ME$

$\Leftrightarrow$ width $= 2 \cdot 415{,}78$

$\Rightarrow$ width $\approx 831{,}56$

Kizspy | Question: 37

(Choose 1 answer)

In a sample of 10 randomly selected women, it was found that their mean height was 63.4 inches. From previous studies, it is assumed that the standard deviation of the population is 2.4 inches. Construct the 95% confidence interval for the population mean.

A. (61.9, 64.9)
B. (60.8, 65.4)
C. (59.7, 66.5)
D. (58.1, 67.3)
E. None of the other choices is correct

$n = 10$

$\bar{X} = 63,4$

$\sigma_{\bar{x}} = 2,4$

$95\% \Rightarrow \alpha = 0,005$

$Z_{0,025} = 1,96$

Let $z_{0.025} = 1.96$, $z_{0.05} = 1.65$, $t_{0.025,9} = 2.26$

$$\bar{X} \pm Z_{\alpha/2} \cdot \frac{\sigma_x}{\sqrt{n}}$$

$$63,4 - 1,96 \cdot \frac{2,4}{\sqrt{10}} = 61,91246459$$

$$63,4 + 1,96 \cdot \frac{2,4}{\sqrt{10}} = 64,8875$$

Kizspy | Question: 38

(Choose 1 answer)

(See picture)

A. about 5.97 miles.
B. about 7.83 miles.
C. about 9.02 miles.
D. nearly 12.0 miles.

$> 95\%$

$\bar{x} = 4,35$

$\sigma = 3,5 \Rightarrow SE = \frac{3,5}{\sqrt{20}} =$

$n = 20$

$SE \approx 0,78$

$\alpha = 0,05 \Rightarrow z_{0,025} = 1,96$

$\bar{x} \pm 1,96 \cdot 0,78 \quad [3,0118, 5,6482]$

In an application to estimate the mean number of miles that downtown employees commute to work roundtrip each day, the following information is given:

$n = 20, \quad \bar{x} = 4.33, \quad s = 3.50$

Based on this information, what is the upper limit for a 95 percent two-sided confidence interval estimate for the true population mean?

Let $z_{0.025} = 1.96$, $z_{0.05} = 1.65$, $t_{0.025,19} = 2.09$ and $t_{0.05,19} = 1.73$.

Kizspy | Question: 39

(Choose 1 answer)

(See picture)

A. 755
B. 378
C. 267
D. 10
E. None of the other choices is correct

$$p \pm Z_{\alpha/2}\sqrt{\frac{p(1-p)}{n}}$$

$\alpha = 0,02$

$\Rightarrow Z_{0,01} = 2,33$

$E = 0,06$

vì không biết trc tỉ lệ thực tế nên cho $p = 0,5$

A researcher at a major hospital wishes to estimate the proportion of the adult population of the United States that has high blood pressure. 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%? Let $z_{0.01} = 2.33$.

→ sai số k° quá 6%

$$n = \frac{z^2 \cdot p(1-p)}{E^2}$$

$$n = \frac{2,33^2 \cdot 0,5(1-0,5)}{(0,06)^2} \approx 377,0$$

Kizspy | Question: 40

(Choose 1 answer)

(See picture)

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

A soft drink manufacturer claims that the average volume of soft drink in its bottle is at least 2000 ml. Express the null hypothesis and the alternative hypothesis in symbolic form.

(i) $H_0: \mu = 2000$
$H_1: \mu > 2000$

(ii) $H_0: \mu = 2000$
$H_1: \mu < 2000$

(iii) $H_0: \mu < 2000$
$H_1: \mu \geq 2000$

(iv) $H_0: \mu > 2000$
$H_1: \mu \leq 2000$

Kizspy | Question: 41

(Choose 1 answer)

Vnexpress would like to test the hypothesis that the average length of an online video watched by a user is more than 6 minutes. A random sample of 80 people watched online videos that averaged 6.3 minutes in length. It is believed that the population standard deviation for the length of online videos is 1.2 minutes. Vnexpress would like to set the significance level = 0.05. The critical value for this hypothesis test would be ________.

A. 1.645
B. 1.96
C. -1.96
D. -1.645
E. None of the other choices is true

$\sigma = 1,2$ 6

$n = 80$

$\mu = 6,3$

$SL = 0,05 \Rightarrow Z =$

Let $z_{0.05} = 1.645, \quad z_{0.025} = 1.96$

Kizspy | Question: 42

(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 value of the test statistic?

A. 2.55

B. -1.37

C. -2.16

D. 2.21

E. None of the other choices is true

Kizspy | Question: 43

(Choose 1 answer)

(See picture)

A. 2.575; -2.575
B. 2.33; -2.33
C. 1.645; -1.645
D. 1.96; -1.96
E. None of the other choices is correct

Determine the critical value to test the claim about the population proportion $p \neq 0.325$, given $n = 42$ and $\hat{p} = 0.247$. Use $\alpha = 0.05$.

Let $z_{0.05} = 1.645$, $z_{0.025} = 1.96$, $z_{0.01} = 2.33$, $z_{0.005} = 2.575$

Kizspy | Question: 44

(Choose 1 answer)

(See picture)

A. 6.519
B. 6.729
C. 6.482
D. 6.669
E. None of the other choices is correct

Two types of plastic are used for an electronics component. It is known that the breaking strengths (unit: psi) of plastic 1 and plastic 2 are normal with standard deviation $\sigma_1 = 1.7$ and $\sigma_2 = 1.4$, respectively. Two random samples of sizes $n_1 = 15$ and $n_2 = 12$ are tested, and the sample means are $\bar{x}_1 = 170$ and $\bar{x}_2 = 164.5$. Construct a 95% upper confidence bound for the difference in the two population means $\mu_1 - \mu_2$.

Let $z_{0.025} = 1.96$, $z_{0.05} = 1.645$, $t_{0.025,25} = 2.06$, $t_{0.05,25} = 1.708$

Kizspy | Question: 45

(Choose 1 answer)

(See picture)

A. (0.627, 1.613)
B. (0.789, 1.449)
C. (0.742, 1.498)
D. (0.622, 1.618)
E. None of the other choices is correct

The diameter of steel rods manufactured on two different extrusion machines is being investigated. Two random samples of sizes $n_1 = 12$ and $n_2 = 10$ are selected, and the sample means and sample variances are $\bar{x}_1 = 9.25$, $s_1^2 = 0.4$, $\bar{x}_2 = 8.13$, and $s_2^2 = 0.5$. Assume that both populations are normally distributed with the same variance. Find a 90% two-sided confidence interval for the difference in the two population means.

Let $z_{0.05} = 1.645$, $z_{0.1} = 1.281$, $t_{0.05,\,20} = 1.725$, $t_{0.1,\,20} = 1.325$

Kizspy | Question: 46

(Choose 1 answer)

(See picture)

A. (0.03, 0.17)
B. (0.05, 0.15)
C. (0.04, 0.18)
D. (0.02, 0.14)

A random sample of 400 adult residents of Maricopa County found that 320 were in favor of increasing the highway speed limit to 75 mph, while another sample of 300 adult residents of Pima County found that 210 were in favor of the increased speed limit. Construct a 90% confidence interval on the difference in the two proportions $p_1 - p_2$ of adults who favor increased speed.

Let $z_{0.025} = 1.96$, $z_{0.05} = 1.65$

Kizspy | Question: 47

(Choose 1 answer)

Two variables have a negative association when________________

A. the values of one variable tend to increase as the values of the other variable increase

B. the values of one variable tend to decrease as the values of the other variable increase.

C. the values of one variable tend to increase irregardless of how the values of the other variable change.

D. None of the other choices is correct.

E. the values of both variables are always negative.

Kizspy | Question: 48

(Choose 1 answer)

(See picture)

A. 0.405
B. 0.632
C. 0.714
D. 0.831

English and Chinese grades of 5 students are as below

Student	English grade (X)	Chinese grade (Y)
1	5	6
2	6	8
3	7	5
4	4	6
5	9	9

We want to do linear regression analysis on X and Y. Given the standard error of estimate $\sigma = 1.56$, calculate the standard error of the slope $se(\hat{\beta}_1)$.

Given $se(\hat{\beta}_1) = \sqrt{\frac{\sigma^2}{S_{xx}}}$

Kizspy | Question: 49

(Choose 1 answer)

(See picture)

A. 1.46
B. 1.66
C. 1.86
D. 2.06

Mathematics and Physics grades of 5 students are as below

Student	Mathematics grade (X)	Physics grade (Y)
1	7.5	6
2	6.5	8.5
3	6	5.5
4	4.5	6
5	9.5	9

We want to do linear regression analysis on X and Y. Given the standard error of the regression $\widehat{\sigma} = 1.43$, the estimated slope $\widehat{\beta_1} = 0.56$.

Calculate the test statistic for the hypotheses

$$H_0 : \beta_1 = 0$$
$$H_1 : \beta_1 > 0$$

Given $T_0 = \frac{\widehat{\beta_1} - \beta_{1,0}}{\sqrt{\frac{\widehat{\sigma}^2}{S_{xx}}}}$

Kizspy | Question: 50

(Choose 1 answer)

(See picture)

A. -0.93
B. 0.93
C. 0.07
D. 0.86
E. None of the other choices is correct

Eight students in a mathematics anxiety workshop are given a questionnaire on math anxiety (y) and an inventory test on basic arithmetic skills (x). Given that

$$\sum x_i = 492; \sum y_i = 379; \sum x_i^2 = 32894; \sum y_i^2 = 20115; \sum x_i y_i = 21087$$

Compute the sample correlation coefficient.