

July 16, 2023

When is a "Table" the best visualisation option for presenting data?

Options :

6406531930081. ✘ When the outliers in the data need to be shown

6406531930082. ✘ When trends in the data need to be shown

6406531930083. ✘ When proportions in the data need to be shown

6406531930084. ✓ None of these

Question Label : Multiple Choice Question

The table below provides the summary statistic for a random variable. Then what distribution could be a good fit for this random variable?

Summary Statistic	Value
Number of observations	300
Mean	20
Median	22
Mode	20
Std. Deviation	3
Minimum	2
Maximum	50

Options :

6406531930102. ✘ Poisson distribution

6406531930103. ✓ Normal distribution

6406531930104. ✘ Uniform distribution

6406531930105. ✘ Standard normal distribution

For a linear demand response curve, the satiating price is __

Options :

6406531930121. ✘ The price at which the profits are maximum

6406531930122. ✓ The price at which demand is zero

6406531930123. ✘ The price beyond which the consumer surplus exists

6406531930124. ✘ The price beyond which latent demand exists

A distribution is left tailed if (select all that is applicable)

Options :

6406531930106. ✘ Coefficient of variation is positive

6406531930107. ✘ Skewness is positive

6406531930108. ✓ Skewness is negative

6406531930109. ✘ Cannot say without the histogram

For a demand response curve which has constant elasticity, which of the following statements are true (choose all that are applicable)

Options :

6406531930116. ✘ If the curve is for an inelastic product, the revenue is increased only by setting price close to zero

6406531930117. ✓ If the curve is for an inelastic product, the revenue is increased by simply increasing the prices

6406531930118. ✘ If the curve is for an elastic product, the revenue is increased by simply increasing the prices

6406531930119. ✓ If the curve is for an elastic product, the revenue is increased only by setting price close to zero

Suppose a factory manufactures products on three machines A, B and C. Suppose 65% of total output comes from machine A, 30% of total output comes from machine B and 5% of total output comes from machine C. From the past data, it is known that 1% of products by machine A are

	A	B	C
Output	0.65	0.30	0.05
defective	0.01	0.02	0.10

defectives, 2% of products by machine B are defectives and 10% of products by machine C are defectives. What is the probability that the product has come from machine B, given that it is defective?

$$\Rightarrow P(B \mid \text{Defective}) = \frac{0.3 \times 0.02}{0.65 \times 0.01 + 0.3 \times 0.02 + 0.05 \times 0.1}$$

$$\Rightarrow \underline{\underline{0.33}}$$

Say, Table-1 specifies the win results for the teams that batted first during the PARADOX Cricket Games. You are now interested to generate more data on win margins for Teams that bat first during future PARADOX games, which will be used as part of your business proposal to improve the pitch. Accordingly, you are told that the win margins are uniformly distributed between 1 and 10 runs $U[1,10]$ for any given game in the future. Then answer the given subquestions.

Game	Result for Team Batting First
Game-1	Won by 5 Runs
Game-2	Won by 4 Runs
Game-3	Won by 6 Runs
Game-4	Won by 3 Runs
Game-5	Won by 7 Runs

Table-1

Expected
5.5
"
"
"
"

What is the expected number of runs by which a team batting first will win a game?

Note: Round your answer to one decimal point. Example, if your answer is "1.245", enter the answer as "1.2"

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

$$\mu = \frac{10+1}{2} = 5.5$$

$\frac{(\text{Observed} - \text{Expected})^2}{\text{Expected}}$

What is the value of the computed test statistic?

Note: Round your answer to one decimal point. Example, if your answer is "1.245", enter the answer as "1.2"

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

2 to 2.2 ✓

$$\chi^2 = \frac{(5-5.5)^2 + (4-5.5)^2 + (6-5.5)^2 + (3-5.5)^2 + (7-5.5)^2}{5.5}$$

$$\Rightarrow \frac{0.25 + 2.25 + 0.25 + 6.25 + 6.25}{5.5}$$

$$\Rightarrow \frac{15.25}{5.5}$$

$$\Rightarrow \underline{\underline{2.77}}$$

What is the number of degrees of freedom for the test?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

The p-value of the chi-square goodness of fit test represents __

Options :

6406531930092. ✘ The chance of observing the sample when the null hypothesis is false

6406531930093. ✘ The chance of observing the sample when the alternative hypothesis is true

6406531930094. ✘ The chance of observing the sample at the specified level of significance

6406531930095. ✓ None of these

If the p-value for the test is 0.75, then what should be the minimum level of significance needed if we need to conclude that the sample indeed comes from a U[1,10]

Note: Round your answer to one decimal point. Example, if your answer is "1.245", enter the answer as "1.2"

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.75 to 0.76

2.

T L C = Reject Null



Tabulated less than calculated

Any value

Say Table-2, provides the data on the number of enrolments in the three BSc courses for "Male" and "Female" gender students. Given this information, answer the given subquestions.

	Diploma in Data Science	Diploma in Programming	BS in Electronic Systems
Male	30	40	30
Female	55	20	25

Table-2

	DS	DP	BS	Total
Male	30	40	30	100
Female	55	20	25	100
Total	85	60	55	200

What is the value for the computed test statistic? (Note-1: round your final answer to two decimal places. Example: If your answer is "1.2345" enter it as "1.23")

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

14.00 to 15.00

Male
Female

Expected

DS	DP	BS
42.5	30	27.5
42.5	30	27.5

$$\chi^2 = \frac{(30-42.5)^2}{42.5} + \frac{(40-30)^2}{30} + \frac{(30-27.5)^2}{27.5} + \frac{(55-42.5)^2}{42.5} +$$

$$\frac{(30-20)^2}{30} + \frac{(25-27.5)^2}{27.5}$$

$$\Rightarrow 3.676 + 3.333 + 0.227 + 3.676 + 3.333 + 0.227$$

$$\Rightarrow \cancel{14.472}$$

If a 20% confidence interval is considered, then which of the following statements is/are true
(choose all that is applicable)

Options :

6406531930098. ✓ If the p-value for the test is 0.35, conclude that the course enrolments are independent of gender

6406531930099. ✗ If the p-value for the test is 0.35, conclude that the course enrolments are not independent of gender

6406531930100. ✗ If the computed test statistic is less than the chi-square tabulated, then conclude that the course enrolments are not independent of gender

6406531930101. ✗ If the computed test statistic is greater than the chi-square tabulated, then conclude that the course enrolments are independent of gender

$T \neq C \Rightarrow T \neq C = \text{Accept Null}$

$T < C \Rightarrow T < C = \text{Reject Null}$

Your local grosser has observed that the demand for Butter Milk follows a linear demand response curve. Hence, he has decided to raise the "Butter Milk" price by Rs. 5 rupees per bottle to Rs. 15 per bottle. If the demand was 100 units per day before the rise and is now 80 units per day after the rise, then answer the given subquestions.

What is the elasticity of demand?

$$d_2 = 80 \quad d_1 = 100$$

Response Type : Numeric

$$p_2 = 15 \quad p_1 = 5$$

Evaluation Required For SA : Yes

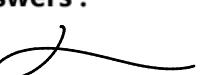
Show Word Count : Yes

$$\text{Elasticity} = -\frac{\frac{d_2 - d_1}{d_1}}{\frac{p_2 - p_1}{p_1}} = -\frac{\frac{80 - 100}{100}}{\frac{15 - 5}{5}} = -\frac{\frac{-20}{100}}{\frac{10}{5}} = -\frac{-2}{2} = 1$$

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.4 to 0.42 

2) $\frac{1}{10}$

Given the computed elasticity, what can you say about the "Butter Milk" demand? (choose all that are applicable)

Options :

6406531930111. ✗ It is elastic

6406531930112. ✓ It is inelastic

6406531930113. ✗ It is a luxury

6406531930114. ✗ It is a necessity

6406531930115. ✗ Cannot say, insufficient information

Feb 26, 2023

A visualization expert (VE) having the data given in Table-1 needs to make a presentation to the company's top management. Table-1 specifies the number of units of products A and B sold in the last 12 months in a given market. Then answer the given subquestions.

Note to students: Please do not worry about the colour combinations. In TCS ion, the colour

representations may not appear accurately. Kindly use the "data labels" and "visualisation theory" to arrive at the appropriate answers.

Month	Sales for Product-A	Sales for Product-B
1	10	20
2	11	19
3	11	19
4	12	17
5	12	16
6	14	16
7	16	12
8	17	12
9	17	11
10	17	9
11	18	6
12	20	6

Table-1

If the aim is to highlight the behaviour of the product sales in the past year, then which of the following visualizations would be best suited?



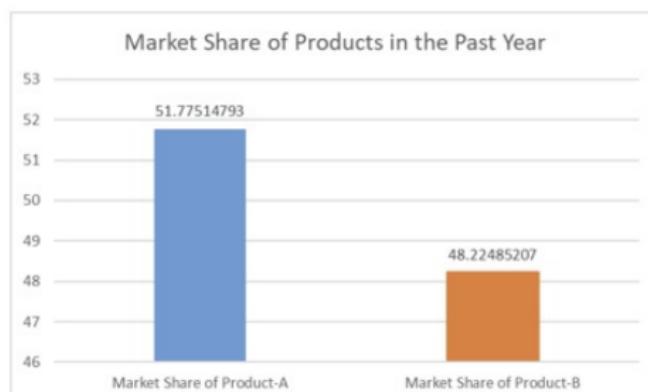
6406531562428. ✓



6406531562429. ✗

6406531562430. ✗ None of these

If the aim is to highlight the market share of the products in the past year, then which of the following visualizations would be best suited?



6406531562432. ✘



6406531562433. ✓

6406531562434. ✘



A company sells two products (A and B) in two different marketplaces. In the first marketplace, the sales are made at the Forenoon (FN). In the second marketplace, sales are made during the Afternoon (AN). Table-2 provides the data on the sales in the two marketplaces for the two products in the first 10 days on January 2023. Using this data, answer the given subquestions.

Date	Time of Day	Number of units of Product A Sold	Number of units of Product B Sold
01-01-2023	FN	31	30
02-01-2023	FN	21	41
03-01-2023	FN	16	45
04-01-2023	FN	7	56
05-01-2023	FN	13	49
06-01-2023	FN	8	40
07-01-2023	FN	8	42
08-01-2023	FN	21	44
09-01-2023	FN	13	55
10-01-2023	FN	7	42
01-01-2023	AN	31	30
02-01-2023	AN	21	41
03-01-2023	AN	16	52
04-01-2023	AN	7	57
05-01-2023	AN	13	49
06-01-2023	AN	8	55
07-01-2023	AN	8	57
08-01-2023	AN	21	44
09-01-2023	AN	13	52
10-01-2023	AN	7	62

If the total sales of both products (A&B) on any given day are expected to be uniformly distributed across both marketplaces, then what is the expected total sales on any given day? (Note: If your answer is in decimal, enter it rounded to two decimal places. For example, if your answer is "10.256", enter it as "10.26")

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

123

$$\frac{\text{Sum all values}}{\text{No. of days}} = \text{mean}$$

$$\Rightarrow \text{mean} = \frac{1233}{10} = 123.3$$

To test the hypothesis that **the total sales of both products (A&B) are uniformly distributed across both marketplaces (FN&AN)**, a chi-square goodness-of-fit test is conducted. If the days are taken as the buckets, then what is the value of the computed test statistic? (Note: If your answer is in decimal, enter it rounded to two decimal places. For example, if your answer is "10.256", enter it as "10.26")

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

3.45 to 3.55

Total Sales

122

124

129

127

124

111

115

130

133

118

Expected

123.3

,

,

,

,

,

,

,

,

,

$$\frac{4.2241}{123.3} = \chi^2$$

$$\chi^2 = 3.42$$

In the Goodness-of-Fit test, if the computed test statistic is greater than the tabulated value of the test statistic at a given significance level, then (choose all that is applicable)

Options :

6406531562437. * Reject the null hypothesis and conclude that there is strong evidence that the data does not come from a population with a specified distribution

6406531562438. ✓ At the specified significance level, reject the null hypothesis and conclude that there is strong evidence that the data does not come from a population with a specified distribution

6406531562439. * Do not reject the null hypothesis and conclude that there is strong evidence that the data does not come from a population with a specified distribution

6406531562440. * At the specified significance level, do not reject the null hypothesis and conclude that there is strong evidence that the data does not come from a population with a specified distribution

6406531562441. * None of these

In the Goodness-of-Fit test, if the days are taken as the buckets, what is the number of degrees of freedom **if the total sales of both products (A&B) across both markets (FN&AN) is assumed to be normally distributed?** (Note: If your answer is in decimal, enter it rounded to two decimal places.

For example, if your answer is "10.256", enter it as "10.26"]

Response Type : Numeric

$$\begin{aligned} \text{dof.} &= n - k - 1 \\ &\geq 10 - 2 - 1 \\ &\Rightarrow 7 \end{aligned}$$

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

$k = a, b$ of mean

7

The question of whether sales of products A and B are independent across the different markets is

being checked. Then what is the value of the computed test statistic? (Note: If your answer is in decimal, enter it rounded to two decimal places. For example, if your answer is "10.256", enter it as "10.26"]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.73 to 0.77

Observed			Expected		
A	B	Total	A	B	Total
FN	145	444	589	138.53	450.47
AN	145	499	644	151.47	492.53
Total	290	943	1233		

$$\chi^2 = \frac{(145 - 138.53)^2}{138.53} + \frac{(444 - 450.47)^2}{450.47} + \frac{(145 - 151.47)^2}{151.47} + \frac{(499 - 492.53)^2}{492.53}$$

$$\Rightarrow 0.302 + 0.092 + 0.276 + 0.084$$

$$\Rightarrow \cancel{0.754}$$

The question of whether sales of products A and B are independent across the different markets is being checked. Then what is the number of degrees of freedom for the test?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

$$(rows - 1) \times (columns - 1)$$

for contingency table ~~only~~

$$\Rightarrow (2 - 1) \times (2 - 1)$$

$$\Rightarrow \cancel{1}$$

The linear demand response for product-A is modelled as a simple linear regression represented as $D(P) = 1500 - 20*P$, where $D(P)$ is the demand at price-P. Then, answer the given subquestions.

Sub questions

Question Number : 237 **Question Id :** 640653470173 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 2

Question Label : Short Answer Question

What is the elasticity of the demand-response curve when the price is Rs. 50? (Note: If your answer is in decimal, enter it rounded to two decimal places. For example, if your answer is "10.256", enter it as "10.26")

At satiating price,

Response Type : Numeric

$$D(P) = 0$$

Evaluation Required For SA : Yes

$$\Rightarrow P = \frac{1500}{20}$$

Show Word Count : Yes

$$\Rightarrow P = 75$$

Answers Type : Equal

$$d_1 = 0$$

Text Areas : PlainText

$$P_2 = 75$$

Possible Answers :

2

$$D(50) = 500$$

$$\Rightarrow P_1 = 50$$

$$d_2 = 500$$

$$\text{Elasticity} = \frac{\frac{d_2 - d_1}{d_1}}{\frac{P_2 - P_1}{P_1}} = \frac{\frac{0 - 500}{500}}{\frac{75 - 50}{50}}$$

$$\Rightarrow \frac{50}{25} = 2$$

What is the satiating price for the demand-response curve? (Note: If your answer is in decimal, enter it rounded to two decimal places. For example, if your answer is "10.256", enter it as "10.26"]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

75

You want to apply for a student visa to country X. You can do this through any one of the two application centres, "A" or "B". To determine which application centre to choose, you collect data. Currently, the embassy has decided to receive 65% of the applications from centre A, and 35% from centre B. Historically, 70% of the applications from centre A have been granted the visa, and 80% of the applications from centre B have been granted the visa. Then answer the given subquestions.

Sub questions

Question Number : 239 **Question Id :** 640653470176 **Question Type :** SA **Calculator :** None

Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 1

Question Label : Short Answer Question

What is your probability of applying for a student visa through centre A and it is granted?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

$$P(A \cap \text{Granted}) = 0.65 \times 0.7 \\ \Rightarrow \underline{\underline{0.455}}$$

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.45 to 0.47

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- +

What is your probability of applying for a student visa through centre B and it is granted?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.27 to 0.29

$$P(B \cap \text{Granted}) = 0.35 \times 0.80 \\ \Rightarrow \underline{\underline{0.28}}$$

Say you find someone who had applied for a student visa in the past, and the application was rejected. However, that person (someone) has not told you which application centre was chosen to submit the application. Then which application centre will you choose, given this additional information?

Options :

6406531562449. * Centre A

6406531562450. ✓ Centre B

$P(\text{Centre A} \mid \text{Rejected Application})$

$P(\text{Centre B} \mid \text{Rejected Application})$

$$\Rightarrow 0.65 \times (1 - 0.7)$$

$$0.35 \times (1 - 0.80)$$

$$\Rightarrow 0.65 \times 0.3$$

$$0.35 \times 0.2$$

$$0.195$$

$$0.07$$

Rejection for $A > B$
 $\Rightarrow B$ is better center.

Oct 16, 2022

Select which of the following are discrete data?

Options :

6406531285756. ✓ How many siblings do you have

6406531285757. * Weight

6406531285758. ✓ Number of houses in your locality

6406531285759. ✓ Defects per hour

6406531285760. * Pressure

Select which of the following are continuous data?

Options :

6406531285761. ✓ Time between two successive failures of an equipment

6406531285762. ✓ Volume

6406531285763. * Gender

6406531285764. * Your favourite cuisines

6406531285765. ✓ Density

Select the scenario where a histogram will be an appropriate representation?

Options :

6406531285766. * One item proportional to totals

6406531285767. ✓ Frequency of items

6406531285768. * Correlation representation

6406531285769. * Outlier identification

For a set of observations, the skewness = - 4. What does this indicate?

Options :

6406531285774. * Right tail is bigger than the left tail in the density plot

6406531285775. ✓ Left tail is bigger than the right tail in the density plot

6406531285776. * Both the tails are bigger than normal

6406531285777. * Both the tails are smaller than normal

If the mean, mode, and median of a data set are not equal, what does that indicate?

Options :

6406531285778. * Distribution is symmetric

6406531285779. * Distribution is partially symmetric

6406531285780. ✓ Distribution is non-symmetric

6406531285781. * Can't say about symmetry with the information provided

We have a dataset with a minimum value of 0.05 and a maximum value of 0.8. We are building an empirical distribution using the dataset. What is the probability (P) of finding the value 0.04 in the dataset?

Options :

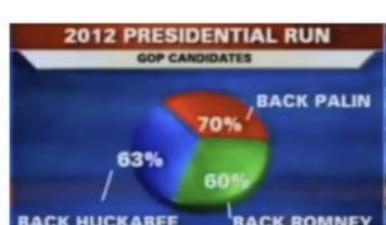
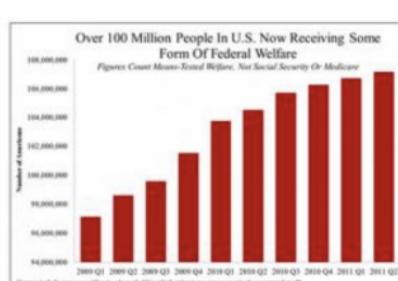
6406531285788. * P = 0.1

6406531285789. * P=0.001

6406531285790. ✓ P=0

6406531285791. * P>0.05

Identify the misleading visual(s).



6406531285771. *



6406531285772. *

For a normal distribution, the Coefficient of variation (CV) is greater than one. Is the statement

True or False?

Options :

6406531285782. * TRUE

6406531285783. ✓ FALSE

P-P plot is only applicable for continuous distributions only and not for discrete distributions. Is the statement True or False?

Options :

6406531285784. * TRUE

6406531285785. ✓ FALSE

In trace-driven simulation, there will not be sufficient data to run all possible simulations. Is the statement True or False?

Options :

6406531285786. ✓ TRUE

6406531285787. * FALSE

You are given the following contingency table based on a sample data with two age groups and their brand preferences. You perform a chi-squared test of independence to make inferences about the population from this sample.

	Brand A	Brand B	Brand C	Brand D
40 - 50	122	111	208	86
20 - 30	65	86	83	71

From the given contingency table, find the expected frequency of people belonging to the (20 - 30) age group preferring brand B?

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

70 to 74

What is the calculated value of chi-squared?

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

15 to 19

What is the p-value?

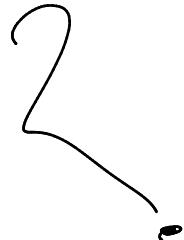
Options :

6406531285794. ✘ 0.4

6406531285795. ✘ 0.25

6406531285796. ✘ 0.01

6406531285797. ✓ None of these



At the significance level 0.05, chi-squared tabular value is 7.82. What do you conclude?

Options :

6406531285798. ✓ Reject the null hypothesis and conclude that the categorical variables are not independent

6406531285799. ✘ Fail to reject the null hypothesis and conclude that the categorical variables are not independent

6406531285800. ✘ Fail to reject the null hypothesis and conclude that the categorical variables are independent

6406531285801. ✘ Reject the null hypothesis and conclude that the categorical variables are independent

Suppose a factory manufactures products on three machines A, B and C. Suppose 45% of total output comes from machine A, 25% of total output comes from machine B and 9% of total output comes from machine C. From the past data, it is known that 10% of products by machine A are defectives, 5% of products by machine B are defectives and 15% of products by machine C are defectives. What is the probability that the product has come from machine C given that it is a defective?

NOTE: Enter your answer in two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.05 to 0.09

29 Oct, 2023

When is a "Pie Chart" the best visualisation option for presenting data?

Options :

6406532240166. ✘ When the outliers in the data need to be shown

6406532240167. ✘ When trends in the data need to be shown

6406532240168. ✓ When proportions in the data need to be shown

6406532240169. ✘ None of these

Which of the following distributions is/are symmetric in nature (select all that are applicable)?

Options :

6406532240170. ✓ Standard Normal distribution

6406532240171. ✓ Standard Binomial distribution

6406532240172. ✓ Uniform distribution

6406532240173. ✘ Poisson distribution

Say, Table 1 specifies the blood sugar level (in mg/dL) for the male and female patients who visit a hospital. If the people in the locality have a nominal sugar level (which is between 70 mg/dL and 100 mg/dL), then it is expected that the number of people in any given sugar level is uniformly distributed between 1 and 9. If you want to validate this claim, then, answer the given subquestions.

Patient ID	Gender	Blood sugar level (in mg/dL)
P1	MALE	71
P2	MALE	84
P3	MALE	76
P4	MALE	78
P5	MALE	89
P6	FEMALE	92
P7	FEMALE	97
P8	FEMALE	95
P9	FEMALE	83
P10	FEMALE	72

Table 1

What is the expected value for the statistical test to be performed? (Note: give only a numerical value rounded to 2 decimal places. For example, if your answer is 10.1253, then input the answer as "10.13")

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

$$\frac{1+9}{2} = 5$$

If three bins of equal sizes {that is Bin-1 = [70-80), Bin-2= [80 to 90) and Bin-3 = [90 to 100)} are considered. Then, what is the value of the computed test statistic for the statistical test to be performed? (Note: give only a numerical value rounded to 2 decimal places. For example, if your answer is 10.1253, then input the answer as "10.13")

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

1.60 to 1.90

70-80	80-90	90-100
71	84	92
76	89	97
78	83	95
72		
	Cant	
	4	3
		3

$$\chi^2 = \frac{(4-5)^2}{5} + \frac{(3-5)^2}{5} + \frac{(3-5)^2}{5}$$

$$\Rightarrow \frac{1}{5} + \frac{4}{5} + \frac{4}{5}$$

$$\Rightarrow \frac{9}{5} = \underline{\underline{1.8}}$$

What is the number of degrees of freedom for the statistical test to be performed? (Note: give only a numerical value rounded to 2 decimal places. For example, if your answer is 10.1253, then input the answer as "10.13")

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2.00

$$n-1$$

$$n=3$$

$$\Rightarrow 3-1 = \underline{\underline{2}}$$

What does the p-value of the performed statistical test refer to?

Options :

6406532240177. ✓ The chance of observing the sample in Table 1 given that the locality has people who are uniformly distributed between 1 and 9 with the nominal sugar levels.

6406532240178. * The chance of observing the sample in Table 1 when the locality has a blood sugar levels which are uniformly distributed between 70mg/ dL and 100 mg/dL.

6406532240179. * The chance of observing the sample in Table 1 given that the locality has people who are uniformly distributed between 1 and 9 at any given sugar level.

6406532240180. * None of these

If the p-value for the test is 0.75, then what can be the maximum level of significance if the Null Hypothesis is NOT TO BE REJECTED

Options :

6406532240181. ✓ 0.74

6406532240182. ✗ 0.26

6406532240183. ✗ Any value between 0 and 1

6406532240184. ✗ Cannot say without more data

$$p < \alpha = \text{Reject}$$

$$p = 0.75$$

max $\alpha = 0.74$ to not get rejected

Say Table 2, provides the data on the number of enrolments who complete the "Foundation", "Diploma", and "Degree" and the number of enrolments who "discontinue" the IITM BSc program for "Male" and "Female" gender students. Given this information, answer the subquestions.

	Completed Foundation	Completed Diploma	Completed Degree	Discontinued
Male	30	40	30	23
Female	55	20	25	15

Table-2

If the aim is to understand if the "Gender" categories and "Completion" categories (including completion of any degree and discontinuation) are independent of each other, then what is the value for the computed test statistic? (Note: round your final answer to two decimal places. Example: If your answer is "1.2354" enter it as "1.24")

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

15.50 to 16.30

What is the number of degrees of freedom for the statistical test to be performed? (Note: give only a numerical value rounded to 2 decimal places. For example, if your answer is 10.1253, then input the answer as "10.13")

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3.00

$$\begin{aligned} & (\text{rows}-1) \times (\text{columns}-1) \\ \Rightarrow & (2-1) \times (4-1) \\ \Rightarrow & 3 \end{aligned}$$

If a 20% significance level is considered, then which of the following statements is/are true for the performed statistical test (choose all that are applicable)

Options :

$$\begin{aligned} \alpha &= 0.2 \\ P < \alpha &= \text{Reject Null} \end{aligned}$$

$$T < C = \text{Reject Null}$$

6406532240187. ✓ If the p-value for the test is 0.25, conclude that the course completions are independent of gender

6406532240188. ✓ If the p-value for the test is 0.15, conclude that the course completions are not independent of gender

6406532240189. * If the p-value for the test is 0.25, conclude that the course completions are not independent of gender

6406532240190. * If the p-value for the test is 0.15, conclude that the course completions are independent of gender

6406532240191. ✓ If the computed test statistic is less than the chi-square tabulated, then conclude that the course enrolments are independent of gender

6406532240192. ✓ If the computed test statistic is greater than the chi-square tabulated, then conclude that the course enrolments are not independent of gender

6406532240193. * If the computed test statistic is less than the chi-square tabulated, then conclude that the course enrolments are not independent of gender

6406532240194. * If the computed test statistic is greater than the chi-square tabulated, then conclude that the course enrolments are independent of gender

A distribution is right-tailed if (select all that is applicable)

Options :

6406532240195. * Coefficient of variation is positive

6406532240196. ✓ Skewness is positive

6406532240197. * Skewness is negative

6406532240198. * Cannot say without the histogram

The manager at a restaurant has observed that the "Lunch Buffet" follows a linear demand response curve. Hence, the manager has decided to raise the "Lunch Buffet" price by Rs. 250 rupees per person to Rs. 500 per person. The demand was 300 people per lunch before the raise and is 200 people per lunch after the raise. Then answer the given subquestions.

Sub questions

Question Number : 217 Question Id : 640653668664 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

What is the market size for the "Lunch Buffet" at the restaurant? (Note: give only a numerical value rounded to 2 decimal places. For example, if your answer is 10.1253, then input the answer as "10.13")

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

400.00

$$D(0) = \text{Market size}$$

$$D(250) = 300$$

$$D(500) = 200$$

$$\Rightarrow D_0 + (250)m = 300 \quad \textcircled{1}$$

$$\Rightarrow D_0 + (500)m = 200 \quad \textcircled{2}$$

$$\textcircled{2} - \textcircled{1}$$

$$\Rightarrow (250)m = -100$$

$$\Rightarrow m = \frac{-100}{250} = -0.4$$

From $\textcircled{1}$

$$\Rightarrow D_0 = 300 - 250(m)$$

$$\Rightarrow D_0 = 300 - 250(-0.4)$$

$$\Rightarrow D_0 = 300 + 100 = \underline{\underline{400}}$$

What is the elasticity of the linear demand response curve at a price of 500? (Note: give only a numerical value rounded to 2 decimal places. For example, if your answer is 10.1253, then input the answer as "10.13")

$$\begin{array}{c|c} P_2 = 500 & P_1 = 250 \\ d_2 = 200 & d_1 = 300 \end{array}$$

$$\begin{aligned} \Rightarrow & \frac{200 - 300}{300} \\ \Rightarrow & -\frac{500 - 250}{250} \\ \Rightarrow & \frac{1}{3} = 0.33 \end{aligned}$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.40 to 0.41

What is the satiating price of the linear demand response curve for the "Lunch Buffet" demand at the restaurant? (Note: give only a numerical value rounded to 2 decimal places. For example, if your answer is 10.1253, then input the answer as "10.13")

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1000.00

Satiating Price
 $D(p) = 0$

$$\Rightarrow 400 - 0.4p = 0$$

$$\Rightarrow p = \frac{400}{0.4} = \underline{\underline{1000}}$$

At the satiating price, what can be said about the "Lunch Buffet" demand? (choose all that are applicable)

Options :

6406532240202. ✓ It is perfectly elastic

6406532240203. ✗ It is perfectly inelastic

6406532240204. ✗ It is for an "inferior good"

6406532240205. ✗ It is for a "luxury good"

6406532240206. ✗ Cannot say, insufficient information

Your family is seeking an alliance for you and has found three matrimonial services "A", "B" and "C". Assume that the enrolment in the matrimonial services is mutually exclusive. A market survey indicates that 30% of total enrolments are in "A", 30% are in "B" and the remaining are in "C". The market survey also indicates that 15% of registrations in "A" do not find a suitable match, 12% in "B" do not find a suitable match, and 30% in "C" do not find a suitable match. Recently, your family has heard the news that a relative "X" has found a suitable match after enrolling in one of the

	A	B	C
Enrolment	0.3	0.3	0.4
Acceptance	0.85	0.88	0.7

matrimonial services. Then which matrimonial service would you suspect "X" to have enrolled in?

Options :

6406532240207. ✗ A

6406532240208. ✗ B

6406532240209. ✓ C

6406532240210. ✗ Cannot say, require more information.

We can ignore denominators
None or all of them have
 $P(\text{Accept})$ as denominator.

$P(A \mid \text{Accept})$

$$0.3 \times 0.85$$

$$0.255$$

$P(B \mid \text{Accept})$

$$0.3 \times 0.88$$

$$0.264$$

$P(C \mid \text{Accept})$

$$0.4 \times 0.7$$

$$0.28$$

Higher