

IASSC

Exam Questions ICBB

IASSC Certified Lean Six Sigma Black Belt



NEW QUESTION 1

Which Element of Waste best describes "the unnecessary movement of materials and goods"?

- A. Overprocessing
- B. Inventory
- C. Motion
- D. Conveyance

Answer: D

NEW QUESTION 2

The two types of data that are to be used in Statistical Analysis are Attribute and Variance.

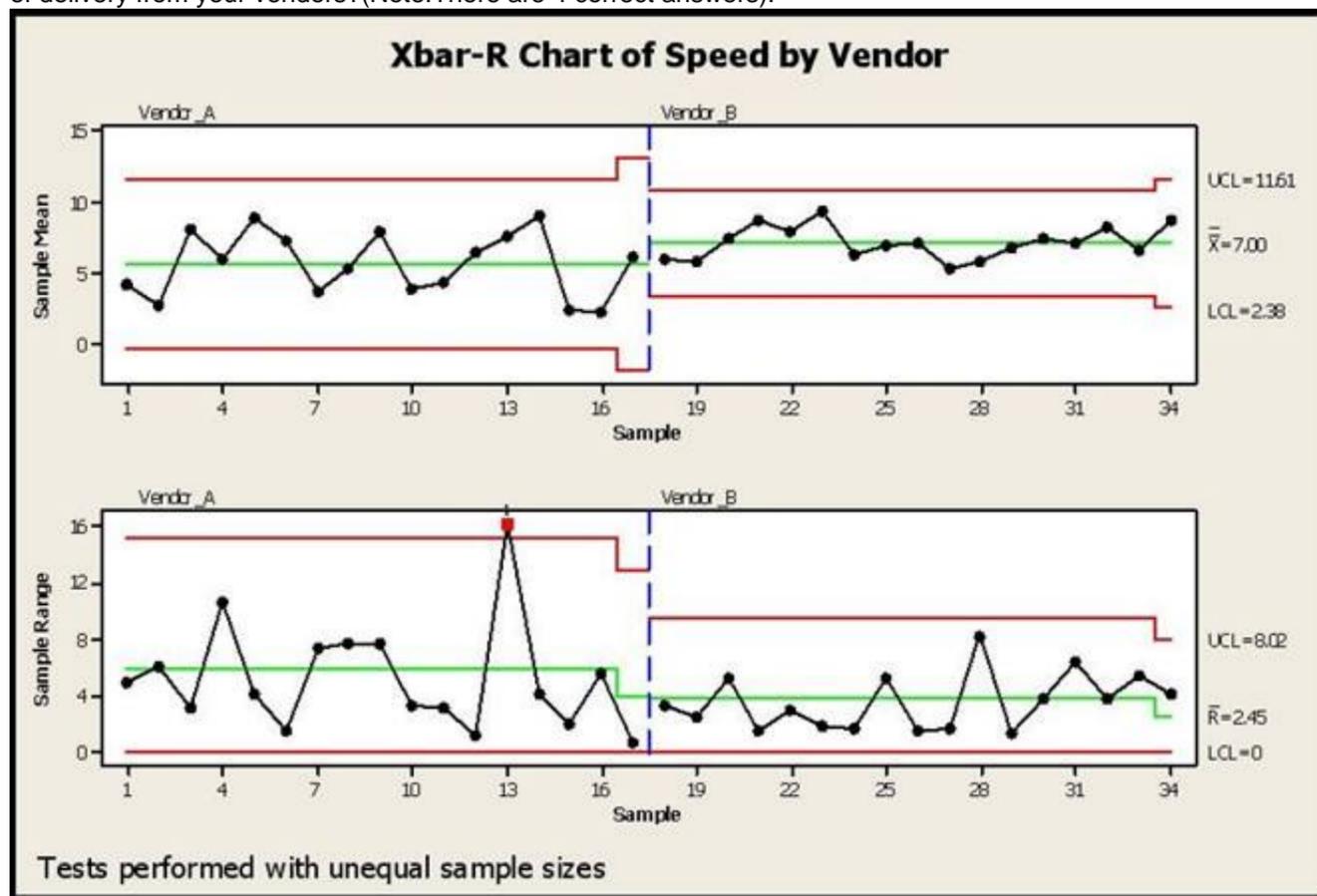
- A. True
- B. False

Answer: B

NEW QUESTION 3

SPC Charts are used extensively in different business and decision-making environments.

In this example a vendor is being selected based on speed of delivery. Which of the conclusions would help you pick a vendor for your needs regarding lead-time of delivery from your vendors?(Note:There are 4 correct answers).



- A. Vendor A with a much shorter lead time in delivery
- B. Vendor B as it has a better consistency (lower variance) on lead time
- C. Vendor B since Vendor A shows a situation out of control as shown in red
- D. Vendor B since the Control Limits are much narrower than Vendor A
- E. Vendor B has higher lead time, but a process with much narrower Control Limits

Answer: BCDE

NEW QUESTION 4

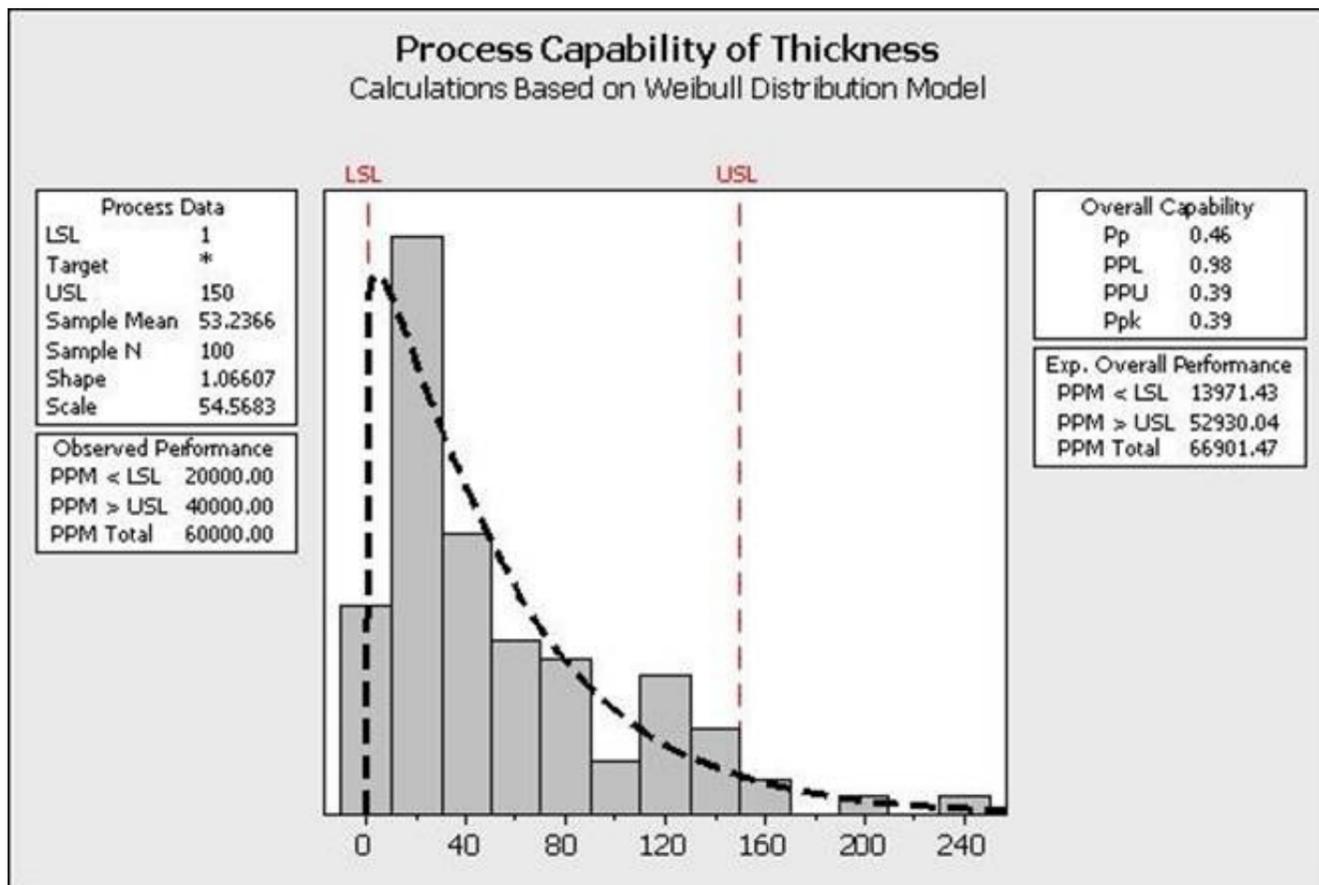
Which of these graphs demonstrates conditions which would be sufficient to enable OCAP for the process?

- A. Xbar Chart
- B. Time Series Chart
- C. Neither
- D. Both

Answer: A

NEW QUESTION 5

Review the analysis shown here. Which statements are true about the process?(Note:There are 3 correct answers).



- A. The initial focus for this project would be to determine why the thicknesses are so frequently too low
- B. The majority of the process is closer to the lower specification limit
- C. This process is described with the Weibull Distribution
- D. The process has more problems with Variation than Centering
- E. The process follows a non-normal distribution with the given data

Answer: BDE

NEW QUESTION 6

When we gather information for the Voice of the Business we are primarily interested in information concerning the _____ of the business.

- A. Advertising budget
- B. Market share
- C. Profitability
- D. Ownership

Answer: C

NEW QUESTION 7

Of the various types of data shown below which is NOT representative of Variable Data.

- A. Length of a table
- B. Liters of solution added to a formula
- C. Number of employees wearing a uniform
- D. Miles per hour of a vehicle

Answer: C

NEW QUESTION 8

Control Charts were developed by Dr. Shewhart to track data over time. To detect Special Cause variation the Control Charts use which of these?

- A. Data shift analysis
- B. Outlier analysis methods
- C. Center Line and Control Limits
- D. None of the above

Answer: C

NEW QUESTION 9

One of the primary deliverables from performing a SIPOC is to begin to understand which inputs have the greatest affect on the _____ outputs.

- A. Management's desired
- B. Supplier delivered
- C. Process operator
- D. Customer most valued

Answer: D

NEW QUESTION 10

Customers make their decisions based on Features, Integrity (of the seller) Delivery and_____ ?

- A. Color
- B. Expense
- C. Season
- D. None

Answer: B

NEW QUESTION 10

A Belt working in a supply chain environment has to make a decision to change suppliers of critical raw materials for a new product upgrade. The purchasing manager is depending on the Belt's effort requiring that the average cost of an internal critical raw material component be less than or equal to \$3,600 in order to stay within budget. Using a sample of 42 first article components, a Mean of the new product upgrade price of \$3,200 and a Standard Deviation of \$180 was estimated. Based on the data provided, the Z value for the data assuming a Normal Distribution is?

- A. 1.11
- B. 2.22
- C. 4.30
- D. 5.42

Answer: B

NEW QUESTION 11

If you can Poka-Yoke a defect out of the process entirely then you do not need use SPC on the characteristic of interest in the defect.

- A. True
- B. False

Answer: A

NEW QUESTION 16

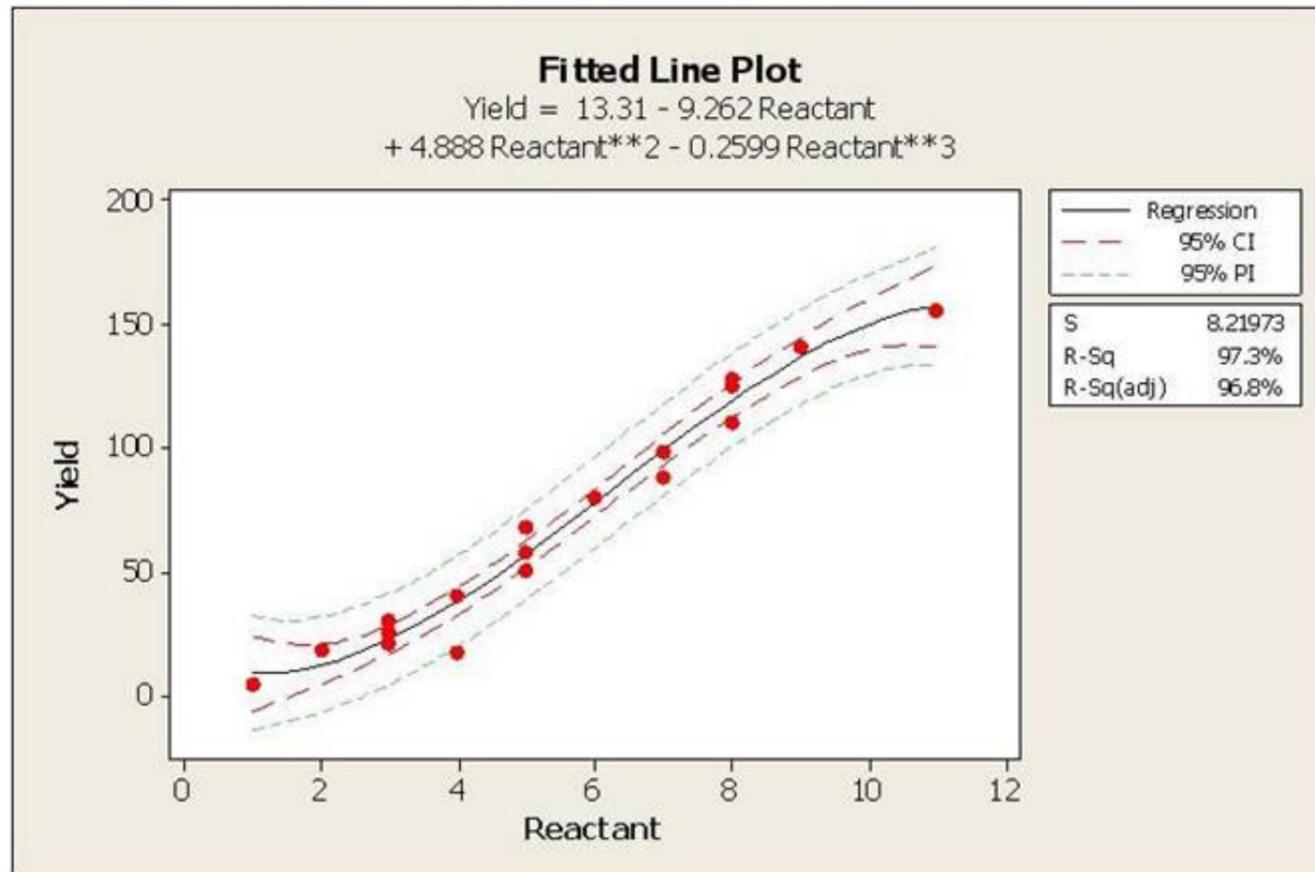
Data that can be measured on a continuum and has meaningful decimal subdivisions are _____ data.

- A. Continuous
- B. Surplus
- C. Discrete
- D. Variable

Answer: A

NEW QUESTION 17

Which statement is NOT correct about the Fitted Line Plot shown here?



- A. The independent variable is the reactant
- B. If the reactant was 6 units, with 95 % confidence we would expect a minimum yield of 100 units
- C. With at least 95% confidence, we can expect less than 10 units of Yield when the reactant is at a value of 1
- D. A reactant value between 2 and 4 units yields around 20 to 40
- E. When the reactant increases, the expected yield would increase

Answer: D

NEW QUESTION 20

For a batch manufacturing process, while assessing short term process variation, which variation category(ies) should one need to focus on?(Note:There are 2 correct answers).

- A. Variation within consecutive pieces
- B. Variation among consecutive batches
- C. Variation among groups of pieces
- D. Variation among the completed product

Answer: AB

NEW QUESTION 24

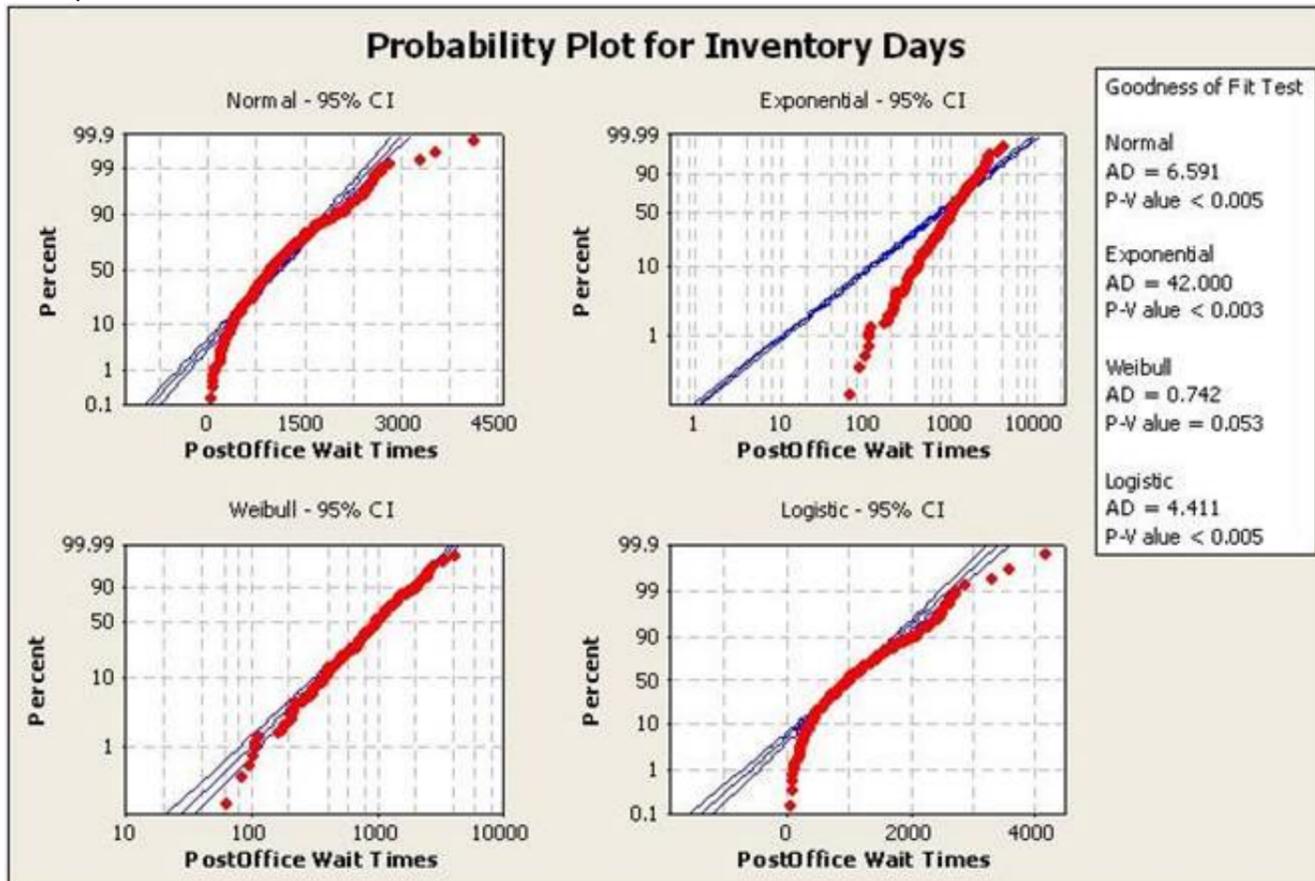
When the Inputs, X's, for your process are Normally Distributed about the Mean, the Outputs, Y's, will be Normally Distributed.

- A. True
- B. False

Answer: B

NEW QUESTION 25

A Lean Six Sigma project is attempting to reduce inventory days. The Process Capability will be monitored as part of the Control Phase to track the sustainability of the improvement.



Which distribution type is best used for performing the Capability Analysis?

- A. Weibull Distribution
- B. Normal Distribution
- C. Exponential Distribution
- D. Logistic Distribution
- E. Gaussian Distribution

Answer: A

NEW QUESTION 27

When a Belt conducts a Linear Correlation Analysis and finds that as an X increases the Y also increase then he has proven a _____ correlation.

- A. Negative
- B. Positive
- C. Monomial
- D. Single alignment

Answer: B

NEW QUESTION 32

The _____ is the most frequently occurring value in a distribution of data.

- A. Median
- B. Mean
- C. Mode
- D. Center Point

Answer: C

NEW QUESTION 35

Those people who have a interest in the outputs of a process are known as _____ .

- A. Stakeholders
- B. Senior management
- C. Co-workers
- D. Process owners

Answer: A

NEW QUESTION 36

Statistical Difference is the magnitude of difference or change required to distinguish between a true difference, brought about by change or improvement, and one that could have occurred by chance.

- A. True
- B. False

Answer: A

NEW QUESTION 39

Fractional Factorial designs are used to reduce the _____ because the number of runs has been lowered.

- A. Time and cost of experiments
- B. Number of people involved
- C. Number of data measurement points
- D. Output summary

Answer: A

NEW QUESTION 43

For her injection molding project a Belt needed to track the percentage of defectives of a particular sample set so she used a _____ to display the data?

- A. Individual Chart
- B. C Chart
- C. Xbar Chart
- D. P Chart

Answer: D

NEW QUESTION 48

A Belt working in a supply chain environment has to make a decision to change suppliers of critical raw materials for a new product upgrade. The purchasing manager is depending on the Belt's effort requiring that the average cost of an internal critical raw material component be less than or equal to \$4,200 in order to stay within budget. Using a sample of 35 first article components, a Mean of the new product upgrade price of \$4,060, and a Standard Deviation of \$98 was estimated. Select the answer that best states the Practical Problem.

- A. If the average cost per component is \$4,200 or less, then the purchase manager will introduce the new product upgrade with new components
- B. If the average cost per component is greater than \$4,200, then the purchase manager will introduce the new product upgrade with new components
- C. Only if the average cost per product upgrade is \$4,060, will the purchase manager introduce new product upgrades with new components
- D. If the average cost per new product upgrade is less than \$180, then the purchase manager will introduce the new product upgrade with new components

Answer: C

NEW QUESTION 49

An ANOVA used across many dependent variables could increase the Beta risk.

- A. True
- B. False

Answer: B

NEW QUESTION 50

For the data set shown here which of these statements is/are true?

Grade A	Grade B	Grade C
0.917	1.1	0.63
0.68	0.173	4.17
1.74	0.24	0.6
0.3	0.67	0.84
0.33	6.94	0.22
4.13		

- A. Hypothesis Testing of Means or Medians cannot be done since there are an unequal number of observations for the 3 samples
- B. A Paired T-test would be applicable for comparing Grade B and Grade A since they follow each other in the data set
- C. Grade A has the lowest sample Mean of the 3 samples
- D. Grade A has a higher sample Mean than Grade B

Answer: C

NEW QUESTION 55

Two of the key deliverables for the Measure Phase are a robust description of the process and its flow and an assessment of the Management System.

- A. True
- B. False

Answer: B

NEW QUESTION 58

What conclusion is most correct about the Experimental Design shown here with the response in the far right column?

Adv	Bev	Des	Crux	Response
-1	-1	-1	-1	20
1	-1	-1	1	14
-1	1	-1	1	17
1	1	-1	-1	10
-1	-1	1	1	19
1	-1	1	-1	13
-1	1	1	-1	14
1	1	1	1	10

- A. No factor has enough statistical confidence greater than 95% to have an impact on the response rate
- B. Constant, Adv and Bev are the only factors statistically affecting the response rate with 95% confidence or more
- C. If the Adv is increased from the low level to the high level, the response rate increases
- D. The response level is statistically concluded to only need the Adv and Bev factors set at the low level to get the largest response rate
- E. This design does not have enough experimental runs to conclude anything as evidenced by the lack of P-values in the MINITABTM output

Answer: D

NEW QUESTION 60

Accuracy can be assessed in several ways and a fairly accurate means of measurement is visual comparison.

- A. True
- B. False

Answer: B

NEW QUESTION 63

The Control Limits width varies if the sample size varies for which type of chart?

- A. P Charts
- B. NP Charts
- C. Xbar-R Charts
- D. Time Series Charts

Answer: A

NEW QUESTION 68

Upon completion and validation of an improvement to a process a Belt and the Project Team create a Control Plan that contains which of these?

- A. Standard operating work description of the process change
- B. Description of the monitoring system in place to assure continued compliance
- C. Summary of the targeted critical metrics for process performance measurement
- D. All of the above

Answer: D

NEW QUESTION 69

Which one of these tools is frequently used to help drill down to possible causes once a Fishbone Diagram is constructed?

- A. 3 When Analysis
- B. 5 Why Analysis
- C. Ishikawa Diagram
- D. Skeleton Diagnostic

Answer: B

NEW QUESTION 71

What dollar amount of savings would a project show if it reduced your outstanding Accounts Receivable by \$0.9 million dollars to \$3.5 million total and your organization's marginal cost of capital was 5.7%?

- A. \$49,250
- B. \$51,300
- C. \$117,500
- D. \$202,424

Answer: B

NEW QUESTION 75

When conducting a Hypothesis Test using Continuous Data the proper sample size is influenced only by the extent to which we need to assess a Difference to be detected but not the inherent variation in the process.

- A. True
- B. False

Answer: B

NEW QUESTION 76

Which of these elements are not included in Implementation plans?

- A. Work breakdown structure
- B. Risk management plans
- C. Cost/Benefit ratios
- D. Planned audits of work completion

Answer: C

NEW QUESTION 79

Calculate the Rolled Throughput Yield of this process using this data. Data: unit input: 1450, unit output: 1390, defects repaired: 320, scrap: 60

- A. 71.33%
- B. 72.66%
- C. 73.79%
- D. 77.93%

Answer: B

NEW QUESTION 82

A Belt working in a supply chain environment has to make a decision to change suppliers of critical raw materials for a new product upgrade. The purchasing manager is depending on the Belt's effort requiring that the average cost of an internal critical raw material component be less than or equal to \$4,200 in order to stay within budget. Using a sample of 35 first article components, a Mean of the new product upgrade price of \$4,060, and a Standard Deviation of \$98 was estimated. Select the answer that best states the Practical Problem.

- A. If the average cost per component is \$4,200 or less, then the purchase manager will introduce the new product upgrade with new components.
- B. If the average cost per component is greater than \$4,200, then the purchase manager will introduce the new product upgrade with new components.
- C. Only if the average cost per product upgrade is \$4,060, will the purchase manager introduce new product upgrades with new components.
- D. If the average cost per new product upgrade is less than \$180, then the purchase manager will introduce the new product upgrade with new components.

Answer: C

NEW QUESTION 85

If a Six Sigma project was to reduce changeover times and the team found the project success was decreasing over time since changeover times began to creep

back up, which Lean tools should be considered in the Control Phase to reestablish and sustain the project success?

- A. Improve the lighting to assure adequate visibility
- B. Confirm a Visual Factory exists to assure proper communication of status of machines
- C. Implement Kanbans to assure enough inventory for the process step
- D. Reword the standardized work instructions to use active verbs and not passive phrases

Answer: B

NEW QUESTION 88

The English words used for the 5S's are _____, _____, Shining, Standardizing and Sustaining.(Note:There are 2 correct answers).

- A. Shaping
- B. Sorting
- C. Shifting
- D. Straightening

Answer: BD

NEW QUESTION 89

As a means of measuring the effects on other areas of a process as a result of changes in the primary metric we also define and track _____.

- A. Parallel process metrics
- B. Secondary metrics
- C. Tertiary metrics
- D. Industry standards

Answer: B

NEW QUESTION 90

Which statement(s) are incorrect about Fractional Factorial Designs?

- A. A Half Fractional Design for 5 factors has the same number of experimental runs as a Full Factorial Design for 4 factors assuming no repeats or replicates or Center Points
- B. Quarter Fractional experiments can exist for those with 4 factors
- C. Resolution V design is desired while controlling costs of experimentation
- D. Half Fractional experiments do not exist for those designs with only 2 factors

Answer: C

NEW QUESTION 95

For the data shown here which statement(s) are true?(Note:There are 2 correct answers).

Grade A	Grade B	Grade C
0.917	1.1	0.63
0.68	0.173	4.17
1.74	0.24	0.6
0.3	0.67	0.84
0.33	6.94	0.22
4.13		

- A. With 95% confidence, we cannot conclude if the samples are from three Normal Distributions
- B. With greater than 95% confidence, we conclude the samples are from Non-normal Distributions
- C. If we wanted to compare the Central Tendencies of these three samples we would use the one way ANOVA test
- D. If we wanted to compare the Central Tendencies of these three samples we could use Mood's Median test
- E. If we wanted to compare the Central Tendencies of all three samples we could use the Mann-Whitney test

Answer: BD

NEW QUESTION 99

The relationship between a response variable and one or more independent variables is investigated and modeled by use of which of these?

- A. X-Y Matrix
- B. Baldrige Assessment
- C. Critical X's Definition

D. Analysis of Variance (ANOVA)

Answer: D

NEW QUESTION 102

If in an experiment all possible variable pairs sum to zero the design is Orthogonal.

- A. True
- B. False

Answer: A

NEW QUESTION 105

Fractional Factorial, _____ and Response Surface Method are types of planned experiments.

- A. Multi-Vari Analysis
- B. Baldrige Channels
- C. One Factor at a Time or OFAT
- D. Factorial Design

Answer: D

NEW QUESTION 107

An example of the waste of mismanaged Inventory is _____.

- A. Capital costs of money
- B. Value decrease from aged inventory
- C. Cost of storage space
- D. All of these answers are correct

Answer: D

NEW QUESTION 111

A valid mathematical Regression represents all of the characteristics shown except _____.

- A. All of the standardized residuals will be within ± 3 Standard Deviations
- B. The sum of the residuals is zero
- C. The residuals when plotted follow a Normal Distribution
- D. Most standardized residuals are within ± 2 Standard Deviations
- E. The Residual is equal to the difference between the observed and predicted values

Answer: A

NEW QUESTION 114

The Japanese born function of a Kanban event utilizes a specific, step-by-step approach meant to bring about major changes to a process.

- A. True
- B. False

Answer: B

NEW QUESTION 119

All the data points that represent the total set of information of interest is called the _____.

- A. Population
- B. Sample
- C. Frame
- D. Spread

Answer: A

NEW QUESTION 121

Six Sigma is a business improvement discipline whose fundamental view is based on a _____ oriented approach of the business.

- A. Profit
- B. Performance
- C. Process
- D. Predatory

Answer: B

NEW QUESTION 124

Situations where standardized work needs to be incorporated include all of these except _____.

- A. Machines continually operating to reduce the labor cost per piece
- B. Lack of a system to assure proper inventory levels at repair stations
- C. Changeover instructions incomplete
- D. Process flow for the same product assembly taking various cycle time for completion

Answer: A

NEW QUESTION 129

Of the various types of data shown which is NOT representative of Variable Data.

- A. Child's height is 4 foot 3 inches
- B. Three employees wore hard hats
- C. Car burned 2.7 gallons of gasoline
- D. Train was going 140 kilometers per hour

Answer: B

NEW QUESTION 134

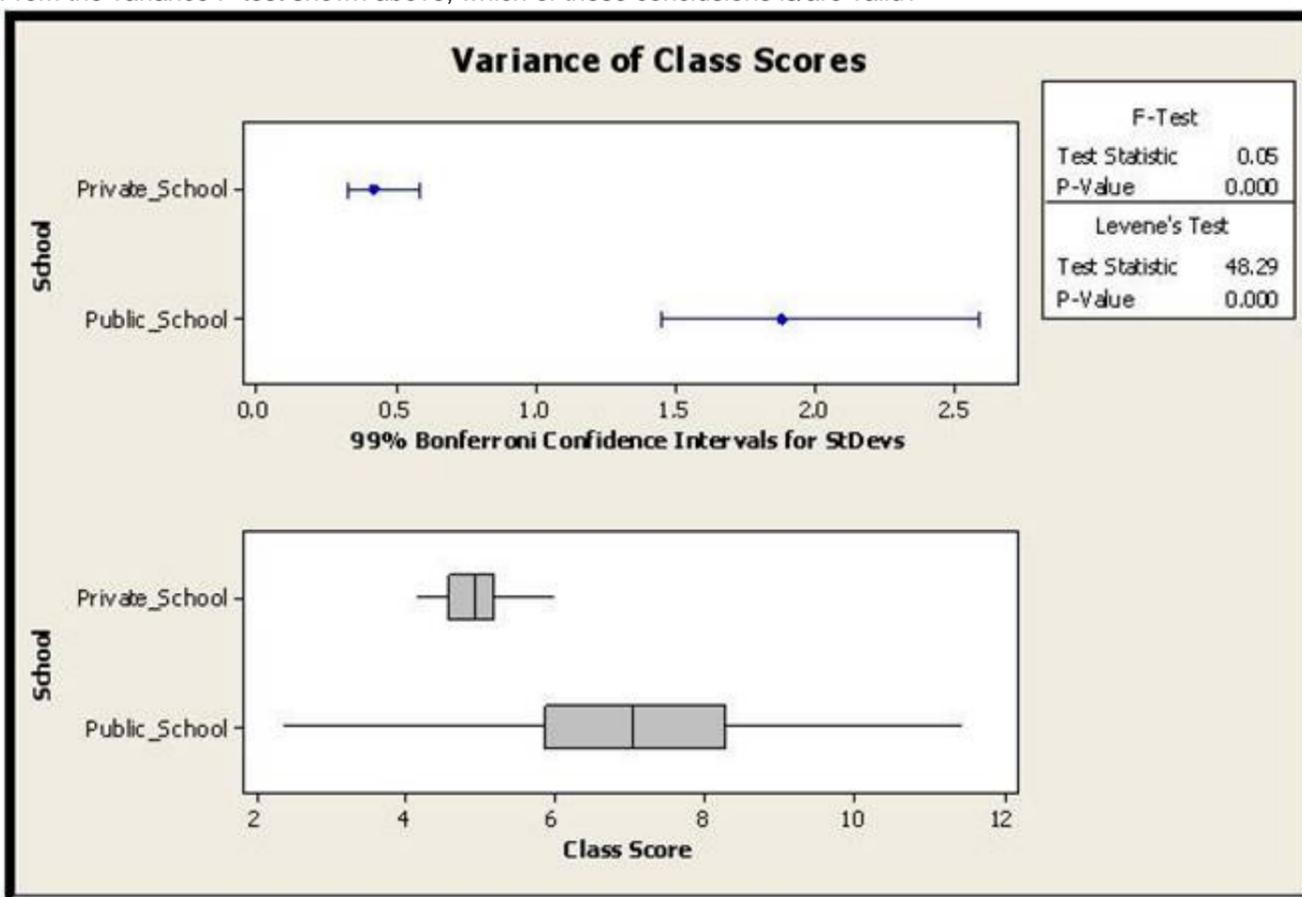
If a Six Sigma project was to reduce repair station inventory and the team found the inventory was creeping up over time which Lean tools should be considered in the Control Phase to reestablish and sustain the project success?

- A. Review the Visual Factory to assure inventory in excess of desired visible
- B. Improve the lighting to assure adequate visibility
- C. Analyze data from supplier deliveries
- D. Reword the standardized work instructions to use active verbs and not passive phrases

Answer: A

NEW QUESTION 136

From the variance F-test shown above, which of these conclusions is/are valid?



Test for Equal Variances: Class Score versus School

99% Bonferroni confidence intervals for standard deviations

School	N	Lower	StDev	Upper
Private_School	50	0.32753	0.42210	0.58233
Public_School	50	1.45338	1.87303	2.58404

F-Test (Normal Distribution)

Test statistic = 0.05, p-value = 0.000

- A. The variance between the class score distribution is significantly different
- B. The variance between the class score distribution is not significantly different
- C. This test applies only to Normal Distributed data at 99 % confidence

- D. This test applies only to Non-normal Data at 99 % confidence
- E. There are not enough data points to make any statistical conclusions

Answer: A

NEW QUESTION 139

When a Belt properly analyzes the results of an experiment he must examine the Residuals in expectation of finding all of the following except _____.

- A. Some Residuals higher than others
- B. Residuals will represent a Linear Regression
- C. All Residuals within 2 Standard Deviations of the Mean
- D. Some Residuals lower than others

Answer: B

NEW QUESTION 144

Measurement _____ is defined as the difference between the observed and the expected values for a given set of data.

- A. Bias
- B. Linearity
- C. Range
- D. Breadth

Answer: A

NEW QUESTION 147

It would be more likely than not for a Belt conducting a Regression Analysis to find that the _____.

- A. r^2 value is smaller than the absolute value of r
- B. Correlation Coefficient equals r^2
- C. Coefficient of Determination is less than r^2
- D. Correlation Coefficient equals r divided by 2

Answer: A

NEW QUESTION 152

Kaizens or Kaikakus and Six Sigma projects are intended to create breakthrough, significant process improvement versus minor, incremental improvements.

- A. True
- B. False

Answer: A

NEW QUESTION 153

An ANOVA used across many dependent variables could increase the Beta risk.

- A. True
- B. False

Answer: B

NEW QUESTION 158

A valid mathematical Regression represents all of the characteristics shown except _____.

- A. The residuals when plotted follow a Normal Distribution
- B. The sum of the residuals is zero
- C. All of the standardized residuals will be within ± 3 Standard Deviations
- D. Most standardized residuals are within ± 2 Standard Deviations

Answer: A

NEW QUESTION 160

A Belt working in a supply chain environment has to make a decision to change suppliers of critical raw materials for a new product upgrade. The purchasing manager is depending on the Belt's effort requiring that the average cost of an internal critical raw material component be less than or equal to \$3,800 in order to stay within budget. Using a sample of 38 first article components, a Mean of the new product upgrade price of \$3,680, and a Standard Deviation of \$120 was estimated. In order to increase the Long Term Z value to 5, what is the maximum long term variation in pricing the Belt can accept for his upgraded critical raw material component?

- A. \$6
- B. \$12
- C. \$24
- D. \$48

Answer: C

NEW QUESTION 163

The Mann-Whitney test is a powerful test and is unique to situations from which of the choices listed?(Note:There are 2 correct answers).

- A. Testing the identity of two populations
- B. Focuses on equality of the Median of the two populations
- C. Less powerful than the traditional "t-test"
- D. More widely applicable than the traditional "t-test"

Answer: BD

NEW QUESTION 164

A Belt is analyzing data and upon creation of the graphical analysis sees multiple modes. One of the primary reasons this could occur is because the process has experienced a _____.

- A. Significant change from one shift to another
- B. Sizable Measurement System error
- C. Catastrophic failure of some sort
- D. Any one of these

Answer: D

NEW QUESTION 165

Which item(s) listed would impact the Process Capability for a process with a continuous output?(Note:There are 4 correct answers).

- A. Shape of process data distribution (e. Normal Distribution)
- B. Process Technology
- C. Process Standard Deviation
- D. Presence of Special Causes or solely Common Causes
- E. Seasonal variation in process

Answer: ACDE

NEW QUESTION 170

When a Belt implements an improvement that is automated thus requiring no particular understanding for use he has applied which Lean tool?

- A. Mistake Proofing
- B. Kaizen Event
- C. 5S
- D. None

Answer: A

NEW QUESTION 171

From this list select the items that define what an X-Y Diagram is.(Note:There are 4 correct answers).

- A. Created for every project
- B. Based on team's collective opinions
- C. Updated whenever a parameter is changed
- D. Used to show each step in a process
- E. A living document throughout project lifecycle

Answer: ABCE

NEW QUESTION 174

Sally and Sara sell flower pots at their garage sale. Sally motivates Sara mentioning that they will sell a minimum of 22 pots per day if the outside temperature exceeds 60o F. From a sample, whose population is assumed to follow a Normal Distribution, taken for 30 days at 60 degrees or more an average of 18.2 pots per day were sold with a Standard Deviation of 0.9 pots. What is the Z value for this sales process?

- A. 1.23
- B. 1.62
- C. 2.11
- D. 4.22

Answer: D

NEW QUESTION 177

Early in a project a Belt will want to begin to identify and evaluate risk factors for the subject process and will therefore begin building a(n) _____ .

- A. SIPOC
- B. FMEA
- C. Business Case
- D. Team charter

Answer: B

NEW QUESTION 182

The method of Steepest Ascent guides you toward a target inside the original inference space.

- A. True
- B. False

Answer: B

NEW QUESTION 186

Using this partial Z Table, how many units from a month's production run are expected to not satisfy customer requirements for the following process?
Upper specification limit: 8.4 Lower specification limit: 4.7 Mean of the process: 6.2 Standard Deviation: 2.2 Monthly production: 360 units

- A. 8
- B. 13
- C. 28
- D. 57

Answer: D

NEW QUESTION 187

The Central Limit Theorem says that as the sample size becomes large the sample Mean distribution will form a Normal Distribution, _____.

- A. If the Measurement System is properly calibrated
- B. When the data is collected accurately
- C. If the shape is evenly spread
- D. No matter what the shape of the population distribution of individuals

Answer: D

NEW QUESTION 192

When we compare short-term and long-term Capability which of these is true?

- A. Cp is better for the short term
- B. Both short-term and long-term performance are alike
- C. Performance tends to improve over time
- D. Cp is better for the long-term

Answer: A

NEW QUESTION 197

For her injection molding project a _____ Belt needed to track the percentage of defectives of a particular sample set so she used a to display the data?

- A. Individual Chart
- B. C Chart
- C. Xbar Chart
- D. P Chart

Answer: D

NEW QUESTION 200

For a Normal Distribution as samples size increases the Range in Mean and Standard Deviation decrease relative to the Mean and Standard Deviation of the population.

- A. True
- B. False

Answer: A

NEW QUESTION 204

One of the methods of testing a Measurement System is to have at least two people take multiple readings from the same instrument and of the same sample set to judge the Repeatability and Reproducibly. This approach is called a _____ study.

- A. Correlation Analysis
- B. Gage R & R
- C. Bimodal
- D. Dual Attribute

Answer: B

NEW QUESTION 208

Data that can be measured on a continuum and has meaningful decimal subdivisions are _____ data.

- A. Continuous
- B. Surplus

- C. Discrete
- D. Variable

Answer: A

NEW QUESTION 213

When the Inputs, X's, for your process are Normally Distributed about the Mean, the Outputs, Y's, will always be Normally Distributed.

- A. True
- B. False

Answer: B

NEW QUESTION 217

A natural logarithmic base is not required for which of these distributions for probability calculations?

- A. Weibull
- B. Binomial
- C. Poisson
- D. Normal

Answer: D

NEW QUESTION 220

A Belt rearranged the location of the parts inventory for a rework station locating the most often used parts to be within hand reach of the repair person. This rearrangement resulted in quicker repair times by eliminating one of seven major elements of waste which is the Waste of _____ .

- A. Motion
- B. Conveyance
- C. Inventory
- D. Waiting

Answer: A

NEW QUESTION 223

A Factorial Experiment based on a Level 2 Design with 4 factors would require 16 runs to fully assess the interactions.

- A. True
- B. False

Answer: A

NEW QUESTION 227

When analyzing the behavior of our process to assess customer satisfaction we are concerned about both the variation such that it stays within the spec limits and how well the Mean is _____ the process requirements.

- A. Balanced against
- B. Over and above
- C. Twice as great as
- D. Centered relative to

Answer: D

NEW QUESTION 229

How many experimental runs exist in a Full Factorial and fully randomized design for 5 factors with 2 replicates for the Corner Points and no Center Points? The factors in the experiment are only at 2-levels.

- A. 10
- B. 128
- C. 256
- D. 64

Answer: D

NEW QUESTION 230

If an experiment has 5 factors and no replicates for a 2-level Experimental Design with 16 experimental runs which statement is incorrect?

- A. The Experimental Design is half-fractional
- B. The Main Effects are confounded with only 4-way interactions
- C. The Main Effects for the 5 factors are not aliased or confounded but the 2-way interactions are confounded with the 3-way interactions
- D. The experiment has 8 experimental runs with the first factor at the high level

Answer: C

NEW QUESTION 234

The English words used for the 5S's are Sorting, Straightening, _____, _____ and Sustaining. (Note: There are 2 correct answers).

- A. Shaping
- B. Shining
- C. Standardizing
- D. Signing

Answer: BC

NEW QUESTION 235

As a means of measuring the effects on other areas of a process as a result of changes in the primary metric we also define and track _____.

- A. Parallel process metrics
- B. Secondary metrics
- C. Tertiary metrics
- D. Industry standards

Answer: B

NEW QUESTION 240

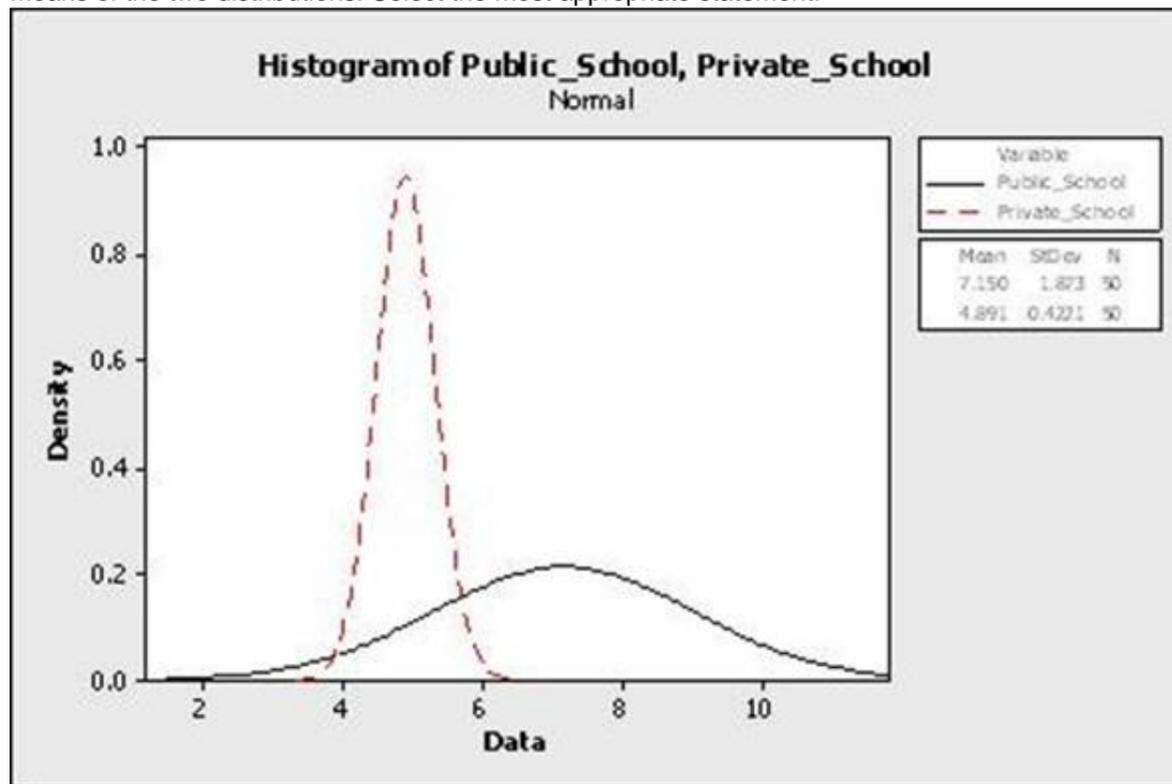
The Waste of Overproduction is defined as _____.

- A. The unnecessary movement of people and equipment
- B. The liability of materials that are bought, invested in and not immediately sold or used
- C. Producing more than the next step needs or more than the customer buys
- D. The extra movement of material

Answer: C

NEW QUESTION 243

The class score distribution of schools in a metropolitan area is shown here along with an analysis output. Comment on the statistical significance between the Means of the two distributions. Select the most appropriate statement.



Two-sample t for Private_School vs Public_School

	N	Mean	StDev	SE Mean
Private_School	50	4.891	0.422	0.060
Public_School	50	7.15	1.87	0.26

Difference = μ (Private_School) - μ (Public_School)

Estimate for difference: -2.259

99% CI for difference: (-2.985, -1.534)

T-Test of difference = 0 (vs not =): T-Value = -8.32 p-Value = 0.000 DF = 53

- A. The two class Means are statistically different from each other
- B. The two class Means statistically not different from each other
- C. Inadequate information on class Means to make any statistical conclusions

D. A visual comparison shows that class Means are not statistically different

Answer: A

NEW QUESTION 248

Which statement(s) are incorrect for the Regression Analysis shown here?(Note:There are 2 correct answers).

Regression Analysis: Turbine Output versus Air-Fuel Ratio, % steam, ...

The Regression Equation is

$$\text{TurbineOutput} = 16.5 + 3.21 \text{ Air-Fuel Ratio} + 0.386 \% \text{ methane} + 0.0166 \text{ SteamExitTemp}$$

Predictor	Coef	SE Coef	T	P
Constant	16.488	2.918	5.65	0.000
Air-Fuel Ratio	3.2148	0.2377	13.52	0.000
% methane	0.38637	0.07278	5.31	0.000
SteamExitTemp	0.016576	0.004273	3.88	0.004

S = 0.508616 R-Sq = 98.6% R-Sq(adj) = 98.2%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	3	170.003	56.668	219.06	0.000
Residual Error	9	2.328	0.259		
Total	12	172.331			

Source	DF	Seq SS
Air-Fuel Ratio	1	159.048
% methane	1	7.062
SteamExitTemp	1	3.892

- A. The air-fuel ratio explains most of the TurbineOutput variation
- B. The Regression explains over 98% of the process variation
- C. This Multiple Linear Regression has three statistically significant independent variables
- D. If the air-fuel ratio increases by 1, the TurbineOutput more than triples
- E. The SteamExitTemp explains the most variation of the TurbineOutput

Answer: DE

NEW QUESTION 249

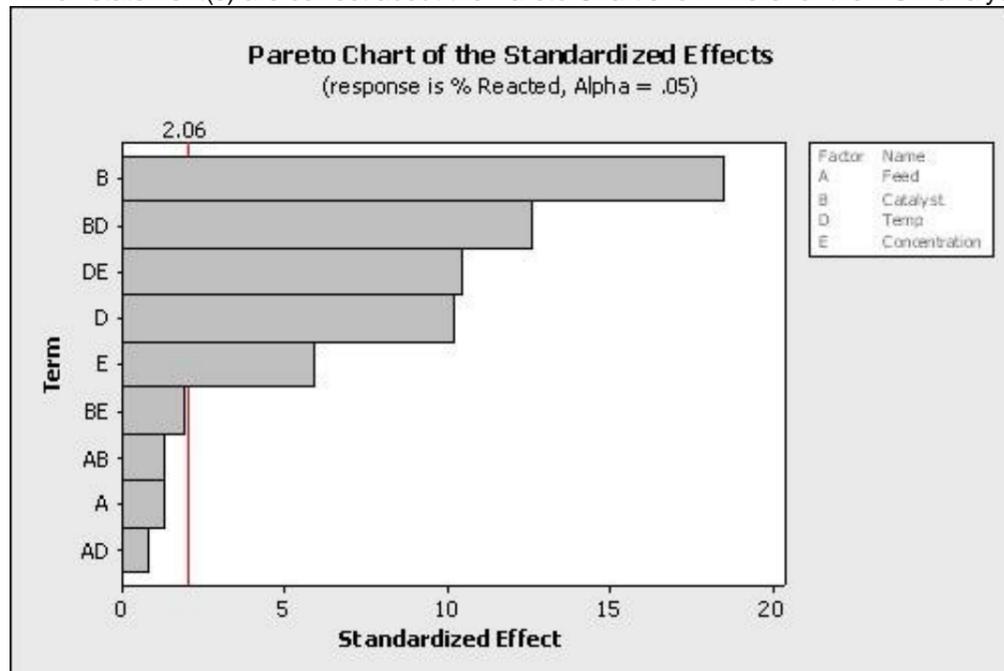
Following process modifications, the Null Hypothesis states that no improvement to the process has occurred. If we discover the Null Hypothesis Test was rejected when it was false that would be a(n) _____.

- A. Alpha Error
- B. Type I Error
- C. Type II Error
- D. Type III Error

Answer: C

NEW QUESTION 253

Which statement(s) are correct about the Pareto Chart shown here for the DOE analysis?(Note:There are 2 correct answers).



- A. It is unknown from this graph how many factors were in the Experimental Design
- B. The factors to keep in the mathematical model are E, D, DE, BD and B with an alpha risk equal to 2.06
- C. The effects to keep in the mathematical model are E, D, DE, BD and B with an alpha risk equal to 0.05
- D. The factors to keep in the mathematical model with a 5% alpha risk are BE, AB, A and AD

Answer: AC

NEW QUESTION 255

If a process has subgroups for Variable data and the process runs for a long period of time, then the best pair of SPC Charts to use would be an Xbar and _____.

- A. NP Chart
- B. Individuals Chart
- C. R Chart
- D. C Chart

Answer: C

NEW QUESTION 259

Time is always the metric on the horizontal scale of a(n) _____ Chart.

- A. Pareto
- B. Xbar
- C. Multi-Vari
- D. NP

Answer: C

NEW QUESTION 262

Which statement(s) are incorrect about Fractional Factorial Designs?

- A. A Half Fractional Design for 5 factors has the same number of experimental runs as a Full Factorial Design for 4 factors assuming no repeats or replicates or Center Points
- B. Quarter Fractional experiments can exist for those with 4 factors
- C. Resolution V design is desired while controlling costs of experimentation
- D. Half Fractional experiments do not exist for those designs with only 2 factors

Answer: C

NEW QUESTION 264

When a Belt decides to use written procedures and visual controls to improve the consistency of the tasks that must occur in the process he is improving he has utilized the _____ activity of 5S.

- A. Sustaining
- B. Sorting
- C. Standardizing
- D. Straightening

Answer: C

NEW QUESTION 268

Handling of warranty returns, process improvement team meetings and rework to meet customer expectations are all examples of business costs that are classified as _____.

- A. Nuisance
- B. Non-value Add
- C. Necessary
- D. Unavoidable

Answer: B

NEW QUESTION 269

Special Cause Variation falls into which two categories?(Note:There are 2 correct answers).

- A. Natural
- B. Short term
- C. Assignable
- D. Pattern

Answer: CD

NEW QUESTION 273

Range Charts are the technique used to determine if Special Causes are occurring within the subgroups of the _____.

- A. Histograms
- B. SPC Charts
- C. NP Charts
- D. Pareto Charts

Answer: B

NEW QUESTION 278

All the data points that represent the total set of information of interest is called the _____.

- A. Population
- B. Sample
- C. Frame
- D. Spread

Answer: A

NEW QUESTION 282

A statistical test or Hypothesis Test is performed to reject or fail to reject a stated hypothesis and it converts the Practical Problem into a Statistical Problem.

- A. True
- B. False

Answer: A

NEW QUESTION 283

What conclusion is most correct about the Experimental Design shown here with the response in the far right column?

Adv	Bev	Des	Crux	Response
-1	-1	-1	-1	20
1	-1	-1	1	14
-1	1	-1	1	17
1	1	-1	-1	10
-1	-1	1	1	19
1	-1	1	-1	13
-1	1	1	-1	14
1	1	1	1	10

- A. No factor has enough statistical confidence greater than 95% to have an impact on the response rate
- B. Constant, Adv and Bev are the only factors statistically affecting the response rate with 95% confidence or more
- C. If the Adv is increased from the low level to the high level, the response rate increases
- D. The response level is statistically concluded to only need the Adv and Bev factors set at the low level to get the largest response rate
- E. This design does not have enough experimental runs to conclude anything as evidenced by the lack of P-values in the MINITABTM output

Answer: D

NEW QUESTION 284

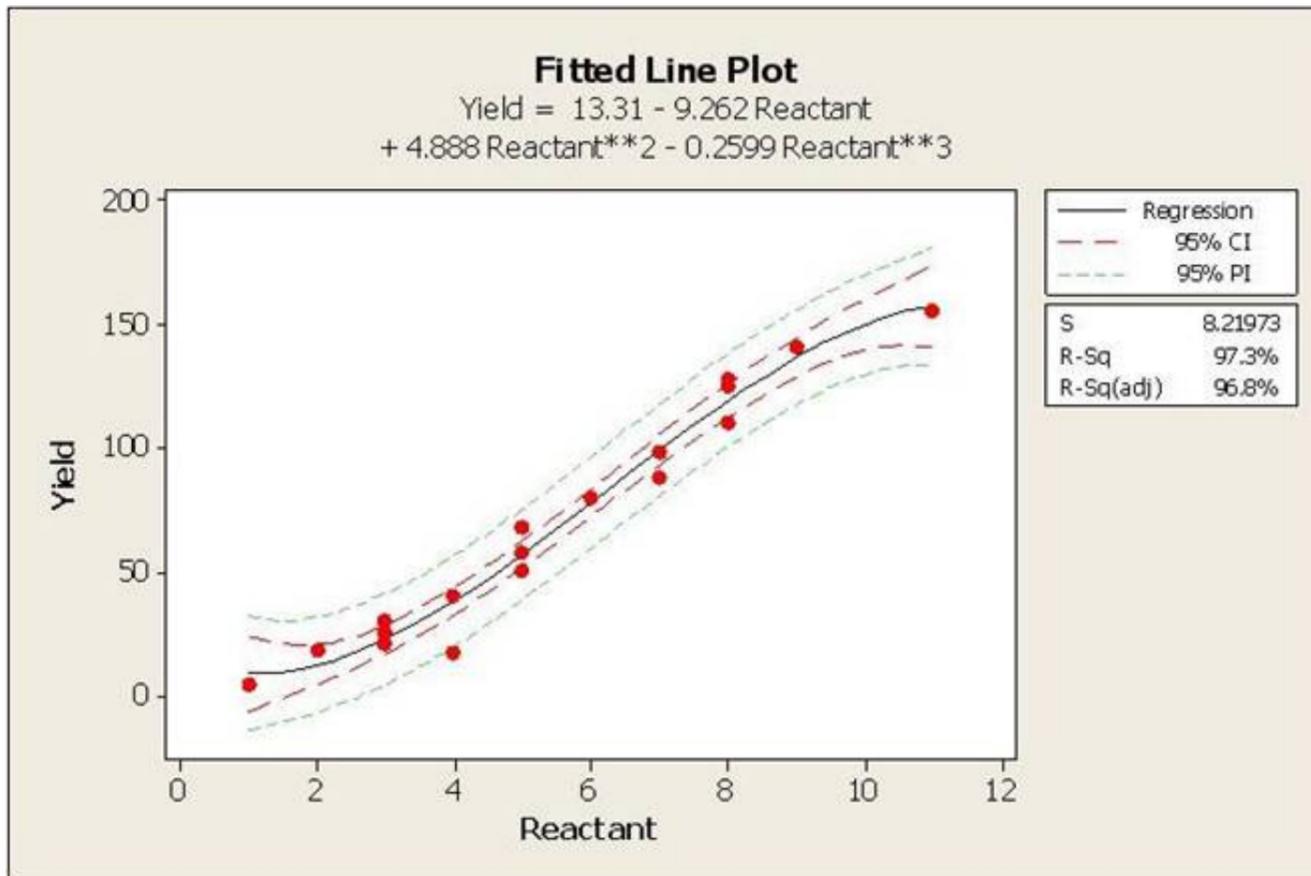
Relative to a Design of Experiments the term _____ refers to variables being a linear combination of each other.

- A. Mirror Image
- B. Directly Parallel
- C. Collinear
- D. None of the above

Answer: C

NEW QUESTION 285

Which statement is NOT correct about the Fitted Line Plot shown here?



- A. The independent variable is the reactant
- B. If the reactant was 10 units, with 95% confidence we would expect a minimum yield of 148 units
- C. With at least 95% confidence, we can expect less than 10 units of Yield when the reactant is at a value of 1
- D. A reactant value between 6 and 8 units yields around 40 to 60
- E. When the reactant increases, the expected yield would increase

Answer: D

NEW QUESTION 286

A dock worker for a feed supplier was tasked with assuring the proper weight in the feed bags as they left the dock. One of the columns listed the range of weight of the bags included in the studies. This required plotting a Histogram of the weight of the bags. While drawing the Histogram the x-axis contained a certain scale of data. Pick the scale of data that is appropriate for Histograms.

- A. Ordinal Scale Data
- B. Interval Scale Data
- C. Nominal Scale Data
- D. Ration Scale Data

Answer: B

NEW QUESTION 291

The Lean toolbox includes all of these items except _____.

- A. Mistake Proofing
- B. Visual Factory
- C. Design of Experiments
- D. Inventory Management

Answer: C

NEW QUESTION 292

Since Normality is required if we intend to use the data collected as a predictive tool. To test for Normality of data we must determine if the P-value is _____.

- A. Equal to 0.05
- B. Less than 0.05
- C. Greater than 0.05
- D. Greater than 0.5

Answer: C

NEW QUESTION 295

A Non-parametric Test should be used if just one distribution is not Normal out of the two or more gathered.

- A. True
- B. False

Answer: A

NEW QUESTION 300

Which of the items listed do not define what an X-Y Diagram is?

- A. Created for every project
- B. Based on team's collective opinions
- C. Updated whenever a parameter is changed
- D. Used to show each step in a process
- E. A living document throughout project lifecycle

Answer: D

NEW QUESTION 305

The Greek letter "sigma" is used by mathematicians to signify _____.

- A. Curve Width
- B. Numerical Average
- C. Standard Deviation
- D. Data Spread

Answer: C

NEW QUESTION 309

The distance between the Mean of a data set and the Point of Inflection on a Normal curve is called the _____.

- A. Curve Spread
- B. Standard Deviation
- C. Numerical Average
- D. Data Breadth

Answer: B

NEW QUESTION 314

Sally and Sara sell flower pots at their garage sale. Martha motivates Rose mentioning that they will sell a minimum of 16 pots per day if the outside temperature exceeds 60o F. From a sample, whose population is assumed to follow a Normal Distribution, taken for 30 days at 60 degrees or more an average of 15.2 pots per day were sold with a Standard Deviation of 0.6 pots. What is the Z value for this sales process?

- A. 0.67
- B. 1.13
- C. 1.33
- D. 2.66

Answer: C

NEW QUESTION 315

An operator checks that all boxes being packed contain enough products to fill the box. However, each box getting filled has a different number of products in it. This is a Reproducibility problem, not a Repeatability problem.

- A. True
- B. False

Answer: B

NEW QUESTION 319

A natural logarithmic base is not required for which of these distributions for probability calculations?

- A. Weibull
- B. Normal
- C. Poisson
- D. Binomial

Answer: D

NEW QUESTION 320

For the data set shown here which of these statements is/are true?

Grade A	Grade B	Grade C
0.917	1.1	0.63
0.68	0.173	4.17
1.74	0.24	0.6
0.3	0.67	0.84
0.33	6.94	0.22
4.13		

- A. Hypothesis Testing of Means or Medians cannot be done since there are an unequal number of observations for the 3 samples
- B. A Paired T-test would be applicable for comparing Grade B and Grade A since they follow each other in the data set
- C. Grade A has the lowest sample Mean of the 3 samples
- D. Grade A has a higher sample Mean than Grade B

Answer: C

NEW QUESTION 324

If in an experiment all possible variable pairs sum to zero the design is Orthogonal.

- A. True
- B. False

Answer: A

NEW QUESTION 326

The method of Steepest Ascent guides you toward a target inside the original inference space.

- A. True
- B. False

Answer: B

NEW QUESTION 331

When doing Hypothesis Testing on Non-normal data Belts will use a _____ to compare more than two sample proportions to each other.

- A. Z score Table
- B. Sakami Table
- C. Mean-to-Mode Analysis
- D. Contingency Table

Answer: C

NEW QUESTION 333

The relationship between a response variable and one or more independent variables is investigated and modeled by use of _____.

- A. X-Y Matrix
- B. Baldrige Assessment
- C. Analysis of Variance (ANOVA)
- D. Critical X's Definition

Answer: C

NEW QUESTION 335

To properly analyze the variables impacting the output of a process we need to collect data that represents at least 80% of the variation in the process and assure ourselves we are collecting data from all three types of variation which are _____.

- A. Within, Between and Temporal
- B. Within, Between and Temporary
- C. Without, Above and Below
- D. Induced, Natural and Unavoidable

Answer: A

NEW QUESTION 339

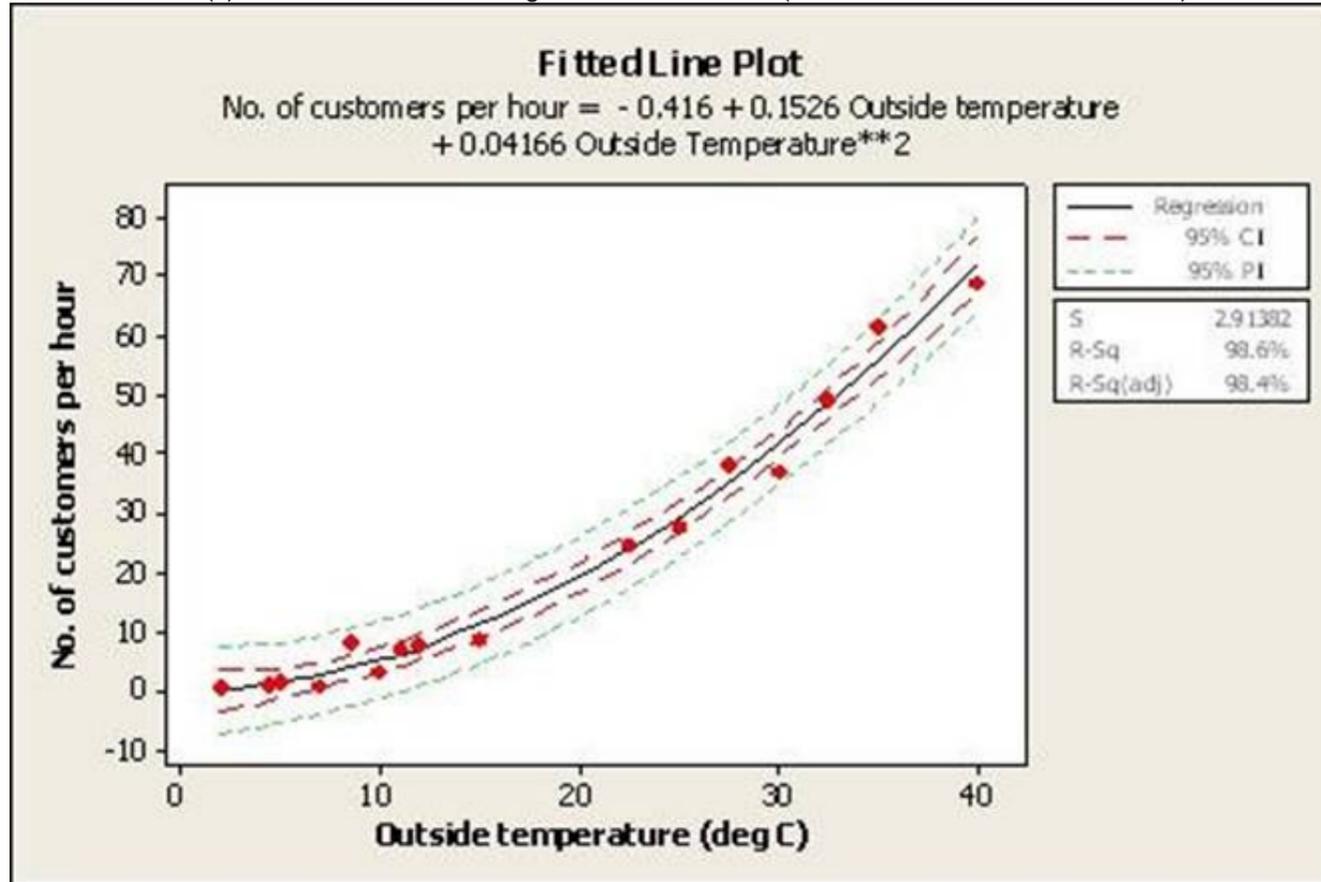
For Attribute Data, Process Capability is defined as the average proportion of nonconforming products.

- A. True
- B. False

Answer: A

NEW QUESTION 342

Which statement(s) are correct about the Regression shown here?(Note:There are 2 correct answers).



- A. The dependent variable is the outside temperature
- B. The relationship between outside temperature and number of customers per hour is a Linear Regression
- C. The dashed lines indicate with 95% confidence where all of the process data should fall between
- D. The dashed lines indicate with 95% confidence the estimate for the Quadratic Regression Line
- E. The predicted number of customers per hour is close to 5 if the outside temperature is 10 deg C

Answer: DE

NEW QUESTION 343

Contingency Tables are used to test for association, or dependency, between two or more classifications.

- A. True
- B. False

Answer: A

NEW QUESTION 348

When conducting a Hypothesis Test using Continuous Data the proper sample size is influenced by the extent to which we need to assess a Difference to be detected and the inherent variation in the process.

- A. True
- B. False

Answer: A

NEW QUESTION 350

Fractional Factorial Designs are used to analyze factors to model the output as a function of inputs if Hypothesis Testing in the Analyze Phase was inadequate to sufficiently narrow the factors that significantly impact the output(s).

- A. True
- B. False

Answer: A

NEW QUESTION 352

What is the Ppk of a process with a spread of 24 units, an average of 68, an upper limit of 82 and a lower limit of 54?

- A. 1.68
- B. 2.00
- C. 4.00
- D. 4.42

Answer: C

NEW QUESTION 354

A Belt working in a supply chain environment has to make a decision to change suppliers of critical raw materials for a new product upgrade. The purchasing manager is depending on the Belt's effort requiring that the average cost of an internal critical raw material component be less than or equal to \$4,200 in order to stay within budget. Using a sample of 35 first article components, a Mean of the new product upgrade price of \$4,060, and a Standard Deviation of \$98 was estimated. The Alternative Hypothesis in the above example is?

- A. The Standard Deviation is equal to \$300
- B. The Mean is less than \$4,320
- C. The Mean is equal to \$4,060
- D. The Mean is less than \$4,200
- E. The Mean is greater than \$ 4,200

Answer: E

NEW QUESTION 358

Which statement(s) are most correct for the Regression Analysis shown here?

Regression Analysis: Turbine Output versus Air-Fuel Ratio, % steam, ...

The Regression Equation is

$$\text{TurbineOutput} = 16.5 + 3.21 \text{ Air-Fuel Ratio} + 0.386 \% \text{ methane} + 0.0166 \text{ SteamExitTemp}$$

Predictor	Coef	SE Coef	T	P
Constant	16.488	2.918	5.65	0.000
Air-Fuel Ratio	3.2148	0.2377	13.52	0.000
% methane	0.38637	0.07278	5.31	0.000
SteamExitTemp	0.016576	0.004273	3.88	0.004

S = 0.508616 R-Sq = 98.6% R-Sq(adj) = 98.2%

Analysis of Variance

Source	DF	SS	MS	F	P
Regression	3	170.003	56.668	219.06	0.000
Residual Error	9	2.328	0.259		
Total	12	172.331			

Source	DF	Seq SS
Air-Fuel Ratio	1	159.048
% methane	1	7.062
SteamExitTemp	1	3.892

- A. The Regression explains 50.8% of the process variation
- B. The air-fuel ratio explains most of the TurbineOutput variation
- C. This Simple Linear Regression explains 98+% of the process variation
- D. This Multiple Linear Regression has four statistically significant independent variables

Answer: B

NEW QUESTION 362

When a Belt implements an improvement that is automated thus requiring no particular understanding for use he has applied which Lean tool?

- A. Mistake Proofing
- B. Kaizen Event
- C. 5S
- D. None of the above

Answer: A

NEW QUESTION 367

To establish a sample size that will allow the proper overlap of distributions we do which of these?

- A. Multiply Alpha by 1.75
- B. Calculate one minus Beta
- C. Calculate Beta plus 2
- D. Multiply Beta by 3

Answer: B

NEW QUESTION 372

Production Line 1 is able to complete 500 units per shift. Production Line 2 is able to finish 1,500 units per shift. Production Line 2 is 3 times faster than Production Line 1. This analysis is an example of _____ Scale Data.

- A. Nominal
- B. Ratio
- C. Ordinal
- D. Interval

Answer: B

NEW QUESTION 375

Which of these is not a primary cause for Non-normal Data?

- A. Skewness
- B. Mixed Distributions
- C. Kurtosis
- D. Formulosis
- E. Granularity

Answer: D

NEW QUESTION 379

Customers make their decisions based on Features, Integrity (of the seller) Delivery and _____?

- A. Color
- B. Expense
- C. Season
- D. None

Answer: B

NEW QUESTION 383

A Belt has determined that the inventory of repair parts at a rework station can be reduced by 45%. According to Cost of Poor Quality (COPQ) definitions inventory reduction would be considered _____.

- A. Soft Savings
- B. COPQ efficiency
- C. Median Savings
- D. Hard Savings

Answer: D

NEW QUESTION 388

The _____ is the most frequently occurring value in a distribution of data.

- A. Median
- B. Mean
- C. Center Point
- D. Mode

Answer: D

NEW QUESTION 389

The reported Cpk for a process with an average of 98 units, a spread of 16 units and upper and lower specification limits of 115 and 90 units would be?

- A. 0.5
- B. 0.75
- C. 1.00
- D. 1.25

Answer: C

NEW QUESTION 392

One of the primary deliverables from performing a SIPOC is to begin to understand which outputs have the greatest affect on the customer most valued inputs.

- A. True
- B. False

Answer: B

NEW QUESTION 394

One of the foundations of Lean Six Sigma is the concept that the output of a process (Y) is influenced by the process inputs (X's) and is commonly shown as which formula?

- A. $Y = Z(X^2)$
- B. $Y = f(X^3)$
- C. $Y = f(X^n)$
- D. $Y = g(X + 1.5)$

Answer: C

NEW QUESTION 397

In a good Measurement System the most variation will be with part-to-part measurements. What should you do if the majority of variation is associated with the Gage R&R assuming the gage is technically capable?

- A. Focus on fixing the Repeatability and Reproducibility of the measurement device
- B. Purchase a new machine
- C. Focus on trimming the Part-to-Part variation
- D. Run another MSA test with the machine

Answer: A

NEW QUESTION 400

A valid Multiple Linear Regression (MLR) is characterized by all of these except _____.

- A. It is an assumption that the X's (inputs) are not correlated to each other
- B. The X's (inputs) are assumed to be independent of each other
- C. MLR is conducted based on a deliberate form of experimentation
- D. The Residuals from MLR analysis have to be Normally Distributed

Answer: C

NEW QUESTION 405

For a Normal Distribution as samples size increases the Range in Mean and Standard Deviation decrease relative to the Mean and Standard Deviation of the population.

- A. True
- B. False

Answer: A

NEW QUESTION 409

Which of these might contribute to similar distributions having Unequal Variance?

- A. Extreme tails
- B. Outliers
- C. Multiple Modes
- D. All of the above

Answer: D

NEW QUESTION 413

The two types of data that can be used in Statistical Analysis are Attribute and Variable.

- A. True
- B. False

Answer: A

NEW QUESTION 414

.....

Thank You for Trying Our Product

We offer two products:

1st - We have Practice Tests Software with Actual Exam Questions

2nd - Questions and Answers in PDF Format

ICBB Practice Exam Features:

- * ICBB Questions and Answers Updated Frequently
- * ICBB Practice Questions Verified by Expert Senior Certified Staff
- * ICBB Most Realistic Questions that Guarantee you a Pass on Your FirstTry
- * ICBB Practice Test Questions in Multiple Choice Formats and Updatesfor 1 Year

100% Actual & Verified — Instant Download, Please Click
[Order The ICBB Practice Test Here](#)