Question #1 *Topic 1*

You are about to run a t-test on shield thickness from 2 suppliers when you determine the data from one group is not normally distributed and cannot be transformed.
Your next step would be to?

A. Use the Shapiro-Wilk test

B. Proceed with the t-test

C. Use a non - parametric test

D. Discontinue the analysis

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #2 *Topic 1*

A manufacturing test process has 3 parallel machines performing exactly the same test. The data from this test process can be assumed to be normally distributed and the variances within each machine are the same. To understand if there is a significant statistical difference in the average test value between machines, what test should be used?

A. Kruskal - Wallis

B. Chi-Square

C. ANOVA

D. Bartlett or Levene

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #3 *Topic 1*

Which of the following is a commonly used test that examines the association between multiple discrete variables?

A. Kruskal-Wallace Test

B. Shapiro-Wilkes Test

C. Student's t-Test

D. Chi-Square Test

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #4 *Topic 1*

An engineer is trying to increase a product characteristic mean from the current production 850₩. to above 855₩. The standard deviation of the current process and the proposed process are assumed to be the same, ƒ̃Current = 7.7. The engineer wants to verify that the average difference of his new process as compared to the old process is statistically significant and is greater than 5₩. What are the correct statistical hypotheses for this engineering problem?

A. Ho: µ New - µ Old 5 ₪‰ג, Ha: µ New - µ Old > 5

B. Ho: µ New - µ Old=5, Ha: µ New - µ Old 5 ‰ג

C. Ho: µ New = 850, Ha: µ New > 850

D. Ho: ƒ̃New 7.7 ₪‰ג, Ha: ƒ̃New > 7.7

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #5 *Topic 1*

Which of the following statistical procedures is appropriate when there is one continuous input variable variable (X) and one continuous output variable (Y)?

A. T-test

B. Chi-Square test

C. One-Way ANOVA

D. Correlation

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #6 *Topic 1*

In a statistical analysis, the beta risk (²⁻) is:

A. The probability of rejecting the null hypothesis when it is true

B. Always equal to 0.10

C. Driven by the cost of sampling

D. The probability of failing to reject the null hypothesis when it is false

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #7 *Topic 1*

Sigma Saving and Loans processes loans and leases from around the world. The CEO wants to know if the current cycle time for processing is less than 9.5 days on average. To test the claim that the average cycle time is less than 9.5 days, use:

A. A 1-sample T-test

B. A 2 sample T-test

C. A One-way ANOVA

D. A Chi-square test of means

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #8 *Topic 1*

Two different samples were pulled randomly from the same population. One sample is size n=10 and the other is size n=100. A two-sided confidence interval for the mean was calculated separately for each.
How will the intervals compare?

A. The confidence interval for size n=10 will be smaller.

B. The confidence interval for size n=10 will be larger.

C. The confidence intervals will be the same for both n=10 and n=100.

D. There is not enough information given.

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #9 *Topic 1*

The purpose of a screening experiment using DOE is to?

A. Optimize the response by determining the best levels for the input factors

B. Separating the ɹ€vital few from the trivial manyɹ€

C. Comparing various levels for one factor

D. Finding a set of levels for the inputs that produce a robust product

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #10 *Topic 1*

Based on the DOE results illustrated in the image below, and considering the Hierarchy of Effects, what terms should be left in the model? Use an alpha of 0.10.

Term	Effect	Coef	SE Coef	T	P
Constant		9.0530	1.243	7.29	0.000
Temp	4.9811	2.4905	1.243	2.00	0.076
Pressure	1.0190	0.5095	1.243	0.41	0.691
Time	6.5092	3.2546	1.243	2.62	0.028
Temp*Pressure	5.8832	2.9416	1.243	2.37	0.042
Temp*Time	2.8010	1.4005	1.243	1.13	0.289
Pressure*Time	3.0024	1.5012	1.243	1.21	0.258

A. Temp, Time, Temp*Pressure

B. Temp, Time, Pressure, Temp*Pressure

C. Time, Temp + Pressure

D. Temp, Time

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #11 *Topic 1*

What is the correct order of steps in an experiment (DOE)?

✑ Design the experiment & plan data collection

✑ Run the experiment and collect data

✑ State the problem or objective

✑ Analyze the results

✑ Interpret the results`

A. 1, 3, 4, 2, 5

B. 3, 1, 2, 4, 5

C. 3, 1, 4, 2, 5

D. 3, 1, 2, 5, 4

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #12 *Topic 1*

Which of the following experimental designs could you run if you had 5 factors and a maximum of 21 experimental units?

A. 26-2 with 6 center points

B. 25 with 3 center points

C. 25-1 with 5 center points

D. 24 with 5 center points

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #13 *Topic 1*

The four basic objectives for experiments, which are a vital part of Lean Six Sigma, include Screening, Optimization, and which of the following?

A. Result, Comparison

B. Comparison, Robust Design

C. Reduced Variance, Parsimony

D. Comparison, Result

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #14 *Topic 1*

Experimental error includes the _____ in the experiment caused by uncontrolled and unknown nuisance factors. This is also called_____.

A. Noise/pure error

B. Noise/signal

C. Signal/noise

D. Pure error/signal

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #15 *Topic 1*

A Black Belt candidate has found that three process factors significantly affect process throughput and variability. He suspects that the influence of one of the factors is non-linear over the range of throughput. Which of the following tools should be used to determine the relationship between the factors and responses?

A. Screening factorial experiment

B. Response surface method (RSM) experiment

C. Multiple linear regression analysis

D. 2-Level Full Factorial experiment

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #16 *Topic 1*

A full factorial experiment is characterized by all of the following properties EXCEPT:

A. All factors in the experiment are controlled

B. Higher level interaction effects cannot be estimated

C. All combinations of the levels of the factors are run in the experiment

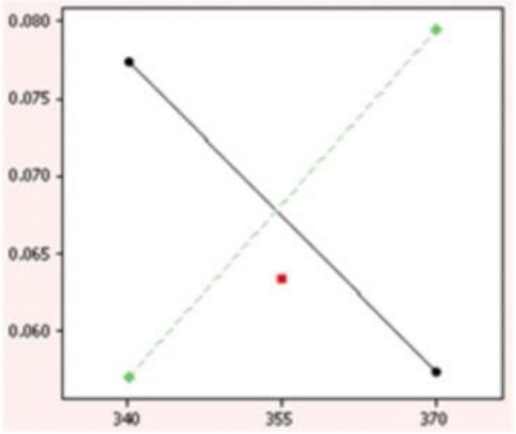
D. The 2-factor, 2-level design is the simplest full factorial experiment

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #17 *Topic 1*

A Black Belt has run a full factorial experiment. The below image illustrates an interaction plot from the analysis. What level of interaction is there between these two factors?



A. No interaction

B. Strong interaction

C. Weak interaction

D. Three-way interaction

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #18 *Topic 1*

A Black Belt runs an experiment on 2 different shifts comparing two different methods for data entry. The Black Belt wants to learn if there is a difference between methods. She suspects that shifts have impact on the response. However, she is not interested in optimizing the shift. What experimental design technique should the Black Belt use?

A. Repeats only

B. Replication and repeats

C. Run in standard order

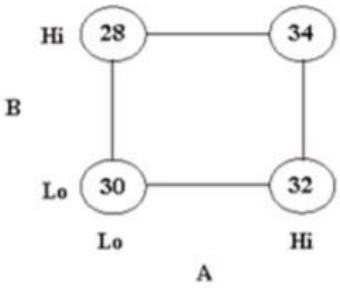
D. Blocking

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #19 *Topic 1*

What is the AB interaction effect of:



A. 4

B. 2

C. -2

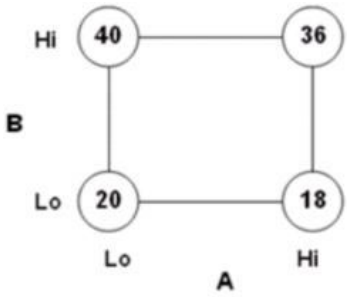
D. 6

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #20 *Topic 1*

Given the image below, what is the main effect of A?



A. -3

B. 3

C. -6

D. 6

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #21 *Topic 1*

A Black Belt is in the early stages of a problem solving effort. The Black Belt determines that the data gathered so far requires a DOE to gain additional insight and to understand which factors are important.
There are 8 factors and budget is limited. What type of experiment is most appropriate?

A. Full factorial

B. Fractional factorial

C. Response surface methodology

D. One factor at a time

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #22 *Topic 1*

Following is a confounding pattern of a DOE:

A =BCD -

B =ACD -

C =ABD -

D =ABC -

AB=CD -

AC=BD -

AD = BC -

Based on this structure, what is the resolution of the design:

A. III

B. IV

C. V

D. None, it is a full factorial

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #23 *Topic 1*

In a sequential experimentation strategy, RSM experiments are most likely to be conducted at which of the following phases?

A. As a follow-up experiment to earlier experiments to help find optimum settings or if curvature was detected

B. In the initial conjecture phase

C. After making confirmation runs, especially if an acceptable linear model with high R-squared has been obtained

D. As a first experiment before spending 25% of resources

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #24 *Topic 1*

Which of the following best completes this statement? Factors are _____ and responses are _____.

A. Input variables, output variables

B. Output variables, input variables

C. Outputs, inputs

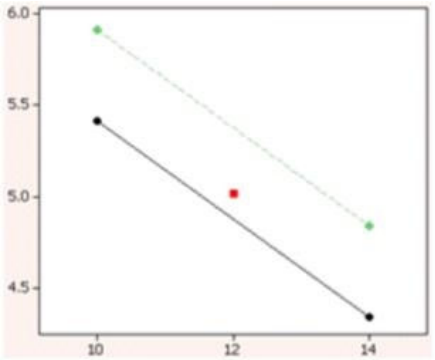
D. A and C only

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #25 *Topic 1*

A Black Belt has run a full factorial experiment. The below image illustrates an interaction plot from the analysis. What level of interaction is there between these two factors?



A. No interaction

B. Strong interaction

C. Weak interaction

D. Three-way interaction

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #26 *Topic 1*

Which experimental design has main effects confounded with second order interactions?

A. Resolution IV (Resolution 4)

B. Resolution V (Resolution 5)

C. Resolution III (Resolution 3)

D. Resolution II (Resolution 2)

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #27 *Topic 1*

What is the recommended run order for an experiment?

A. Standard order

B. Random order

C. Center points last

D. It doesn't matter

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #28 *Topic 1*

In a DOE analysis, residual plots are examined to accomplish which of the following?

A. Make precise predictions

B. Improve model fit

C. Determine which effects to keep in the model

D. Validate model assumptions

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #29 *Topic 1*

A 3^2 experiment means that we are considering:

A. Two levels for three factors.

B. Two dependant variables and three independent variables.

C. Three levels of two factors.

D. Two continuous variables and three attribute variables.

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #30 *Topic 1*

Which of the following is FALSE regarding FMEA?

A. The focus is reaction

B. Failure may or may not have occurred yet

C. It is initiated prior to any design activity

D. It is an assessment of potential failure modes

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #31 *Topic 1*

The definition of Severity is best described by the following statement:

A. It is the likelihood for a failure mode to occur

B. It is an assessment of how serious the effect will be to the customer if the failure mode occurs

C. It is an assessment of the process' ability to contain a problem and keep it from reaching the customer

D. It is an assessment only of the impact on the process or business

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #32 *Topic 1*

Which of the following statements best summarizes the purpose for conducting an FMEA?

A. To develop cause-effect diagrams for process or product design.

B. To capture field failure data and track appropriate corrective actions to failure modes

C. To prioritize failures modes by severity, occurrence, and detection

D. To proactively anticipate failure modes and their risks for subsequent action

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #33 *Topic 1*

Potential Ca uses are listed on FMEA forms because:

A. Individual failure modes may have multiple causes

B. Different causes may have different monitors or controls to detect those occurrences

C. Individual causes may cause multiple modalities of failure

D. All of the Above

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #34 *Topic 1*

After developing a Process map (listing steps and functions), the first step in developing an FMEA is:

A. Brainstorming possible failure modes with team members

B. Assigning scores for SEVERITY, OCCURRENCE and DETECTION

C. Calculating RPN - Risk Priority Number

D. Prioritizing failure modes for action or resolution

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #35 *Topic 1*

The BEST source of data for assigning an Occurrence Rating in an FMEA is:

A. Estimates from Industry Experts

B. Simulated failure rates from reliability models

C. Best guesses by those preparing FMEA

D. Historical failure data

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #36 *Topic 1*

The most common source of error in generating an FMEA is:

A. Assigning wrong SEVERITY scores

B. Missing Failure modes during brainstorming

C. Estimating probabilities incorrectly for OCCURRENCE

D. Scoring easily detectable failure modes as high DETECTION instead of low.

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #37 *Topic 1*

DFMEA should be:

I. Initiated no later than design concept finalization

II. Updated continually as changes occur

III. Completed before product drawings and specifications are released in final form¡±

A. I only

B. II only

C. III only

D. I, II, and III

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #38 *Topic 1*

Actions listed on FMEA forms are:

A. Corrective actions to repair damage to products, which have experienced the associated failure modes.

B. Actions that are to be taken after failures occur

C. Actions that can be taken to reduce the associated RPN

D. Required for all failure modes

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #39 *Topic 1*

Select the correct definition for the role of Project Champion.

A. Has influence and often authority over the process and connecting organizations

B. Owns the process being changed and accountable for final results

C. Manages Sector change strategy

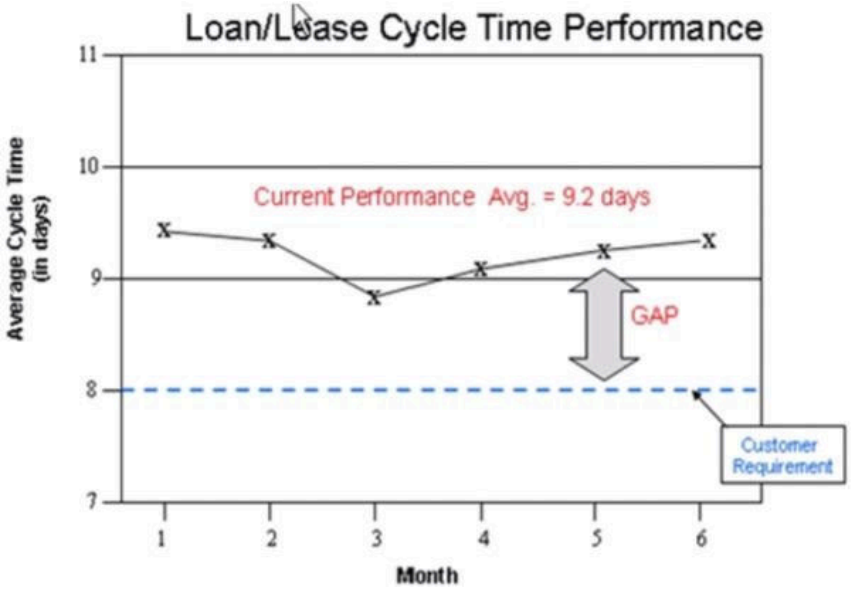
D. Manages and oversees multiple LSS projects

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #40 *Topic 1*

In the figure below, identify the Output Indicator.



A. Current performance

B. Customer requirement

C. Average cycle time

D. Month

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #41 *Topic 1*

What percent of data falls between 2 standard deviations on either side of the mean for a normal distribution?

A. 68%

B. 92%

C. 95%

D. 99.73%

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #42 *Topic 1*

What is the purpose of performing a Stakeholder Analysis?

A. Analyze the strength of commitment needed for project stakeholders vs. where they are currently

B. Analyze the risk for the project

C. Analyze the completeness of charter for the project

D. Analyze the methodology chosen for the project

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #43 *Topic 1*

What is the primary advantage of the Median over the Mean?

A. The Median is a better description of the average

B. The Median is easier to compute

C. The Median is less sensitive to outliers

D. The Median is easier to understand

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #44 *Topic 1*

Electrical devices are evaluated as conforming or not conforming to specifications. The appropriate data type is:

A. Nominal discrete data

B. Continuous data

C. Ordinal data

D. Variable data

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #45 *Topic 1*

A team has just completed one of the DMAIC steps. As part of the DMAIC methodology, they have generated solutions to the problem. What phase of the DMAIC process have they most likely just completed?

A. Analyze

B. Improve

C. Control

D. Measure

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #46 *Topic 1*

Which of the following has the team role of being a creative thinker who challenges conventional ways of doing things?

A. Functional Team Expert

B. IT Representative

C. Assumption Buster

D. Champion

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #47 *Topic 1*

Which of the following is NOT a correct statement about Value Analysis?

A. 80% of most processes are non-value added work

B. Value added work physically changes the inputs and the customer is willing to pay for it, or requires it

C. Purpose is to design out non-essential work that consumes critical time and energy

D. Value added work is all the work necessary to deliver the product

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #48 *Topic 1*

What is the most powerful factor in achieving success in Six Sigma in an organization?

A. Strategic Integration

B. Business Process Framework

C. A consistent, disciplined team meeting schedule

D. Committed Leadership

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #49 *Topic 1*

Which of the following is most sensitive to outliers in the data?

A. Median

B. Percentiles

C. Variance

D. Mean

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #50 *Topic 1*

A team has just developed an operational definition and has developed a plan for understanding current performance. What is the DMAIC phase in which the team is currently working?

A. Define

B. Measure

C. Analyze

D. Improve

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #51 *Topic 1*

Determine the process improvement goal which would require the usage of the DMADV methodology.

A. Improve Process Efficiency & Speed

B. Develop New Processes

C. Variation & Defect Reduction

D. Special Cause Elimination

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #52 *Topic 1*

The person who ultimately selects Little y's and vital x's, has influence and often authority over the process and connecting organization is the:

A. Champion

B. Sponsor

C. LSS Leader

D. Master Black Belt

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #53 *Topic 1*

A team has just completed one of the DMAIC steps. As part of the DMAIC methodology, they now have an understanding of the root causes of the problem(s).
What phase of the DMAIC process are have they most likely just completed?

A. Analyze

B. Improve

C. Control

D. Measure

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #54 *Topic 1*

Which of the following terms refers to a trial implementation of the proposed design or process change on a reduced scale?

A. Production Run

B. Pilot

C. Design of Experiments

D. Comparative Method

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #55 *Topic 1*

Determine the process improvement goal which would require the usage of the FORD-8D methodology.

A. Improve Process Efficiency & Speed

B. Develop New Processes

C. Variation & Defect Reduction

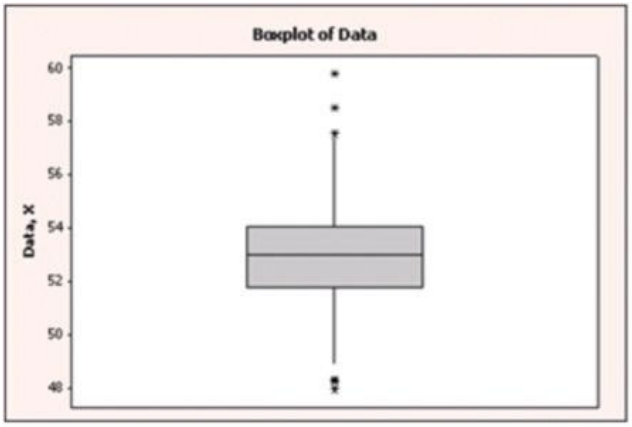
D. Special Cause Elimination

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #56 *Topic 1*

Estimate the inter quartile range from the following box plot of normally-distributed data.



A. 1

B. 2

C. 12

D. 8

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #57 *Topic 1*

Scatter diagrams are most useful for which of the following?

A. Showing that output factor (Y) is normally distributed

B. Graphically showing the relationship between two variables

C. Determining whether a process is in control

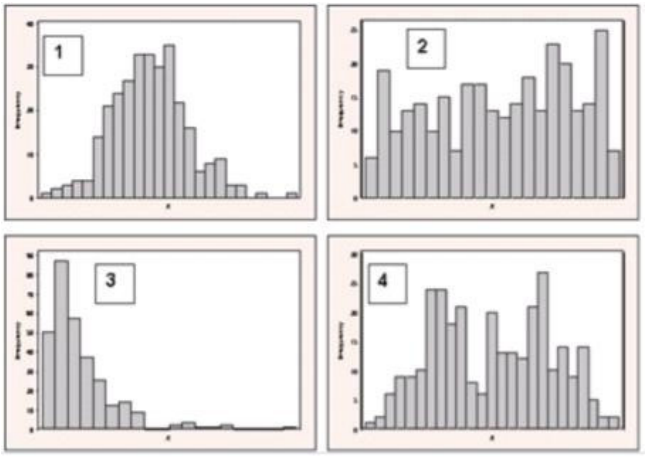
D. Proving root causes of problems

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #58 *Topic 1*

Match the following histograms with the appropriate distributions.



A. 1-Exponential, 2-Bimodal, 3-Normal, 4-Uniform

B. 1-Normal, 2-Uniform, 3-Exponential, 4-Bimodal

C. 1-Normal, 2-Exponential, 3-Uniform, 4-Bimodal

D. 1-Exponential, 2-Bimodal, 3-Uniform, 4-Normal

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #59 *Topic 1*

An MSA study is generally performed during which of the DMAIC phases?

A. Define phase

B. Measure phase

C. Analyze phase

D. Control phase

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #60 *Topic 1*

When performing a Measurement System Analysis, $\bar{f}$total = 5. What is the required measurement unit of the measurement tool in order to have acceptable discrimination?

A. 3 or less

B. 4.5 or less

C. 5 or less

D. 3.5 or less

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #61 *Topic 1*

The _____ the discrimination, the _____ the changes that can be detected by the measurement tool.

A. Higher/higher

B. Higher/smaller

C. Smaller/smaller

D. None of the above

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #62 *Topic 1*

With Measurement Systems Analysis (MSA), we want to determine how much of the variation in our data is due to:

A. Variation in our measurement system

B. Manufacturing Equipment

C. Part to part variation

D. Lot to lot variation

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #63 *Topic 1*

% R & R can be expressed as:

A. % productivity divided by run rate

B. % repeatability divided by production (rate)

C. Sigma of the measurement system divided by total sigma

D. Variance of the measurement system divided by total variance

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #64 *Topic 1*

If you have a gauge study with a % R&R of 25% what should you do?

A. Pull the tool from production.

B. This is fine-go ahead.

C. This is not acceptable for critical measurements, you should look into improvements in the measurement process.

D. This is only an issue if you fail calibration.

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #65 *Topic 1*

Three different operators perform MSA on 10 parts. They measure the same 10 parts twice. What would the Total # of readings be?

A. 30

B. 60

C. 120

D. 10

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #66 *Topic 1*

A measurement system is said to have a consistent bias if:

A. The standard deviation of the system is consistent across the measurement range

B. The difference between the average reading of the measurement tool and reference value is the same across the operating range of the tool operation

C. The standard deviations of the reading given by the measurement tool when measuring a standard is the same across the operating range of the tool operation

D. All tools of the same type give the same variance reading

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #67 *Topic 1*

The variance of your measurement system is 25. The total standard deviation is 50. What is your % R & R?

A. 15%

B. 50%

C. 10%

D. 22%

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #68 *Topic 1*

What type of knowledge is gained by doing an MSA?

A. Determine the size of the measurement variability

B. Determine if the measurement system is stable over time

C. Determine if the measurement system is capable of making the required measurements

D. All of the above

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #69 *Topic 1*

A measurement system has sufficient discrimination if:

A. A measurement system should not discriminate

B. The measurement unit is at most one-tenth of the six sigma spread of the total process variation

C. You can get output to the second decimal point

D. If the tool can be easily calibrated

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #70 *Topic 1*

When assessing gauge performance, you should look at the following (Choose the best answer).

A. Repeatability

B. Reproducibility

C. Repeatability and reproducibility

D. Improve variation of process being measured

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #71 *Topic 1*

Given repeatability ƒRPT =4 and reproducibility ƒRPD = 3, calculate precision ƒMS

A. ƒMS = 3

B. ƒMS = 7

C. ƒMS = 25

D. ƒMS = 5

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #72 *Topic 1*

The following is the best description for the purpose of a process map:

A. It is a tool used only after a Six Sigma project is completed

B. It is a tool to convert customer requirements to a set of measurable technical requirements with target values.

C. It is a tool for identifying alternative solutions or concepts

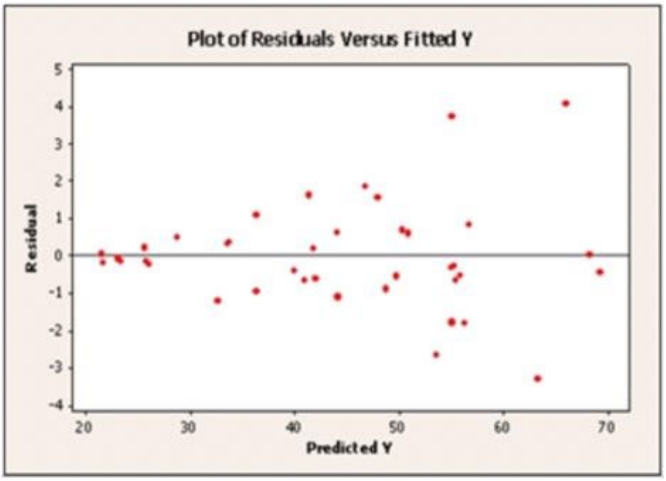
D. It is a tool used to identify all major steps, outputs, and inputs to look for potential causes of a problem.

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #73 *Topic 1*

While checking regression model assumptions, an engineer generates the following plot of residuals versus predicted Y.
Which of the actions below is the most appropriate next step?



A. Transform the response and re-fit the model

B. Make additional runs, collect additional data and re-fit the model

C. No transformation is required for this type of pattern

D. Transform the independent variable and re-fit the model

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #74 *Topic 1*

In a regression analysis, model assumptions are validated using which of the following?

A. The ANOVA table

B. A plot of X versus predicted/fitted Y

C. Chi-square statistic

D. Residual diagnostics

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #75 *Topic 1*

For a multiple regression model, the R2 is the parameter that:

A. Represents the fraction of total variation explained by the model

B. Explains the strength of only one of the inputs in the model

C. Explains if the input factor causes the output response

D. Quantifies the slope of the line in the model

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #76 *Topic 1*

When evaluating residuals from a regression model, a Black Belt discovers that she has outliers in the data. What is best course of action for the outliers?

A. Ignore them. They should not impact the model.

B. Omit them.

C. Explore the source of the outlier.

D. Transform the independent variable and re-fit the model.

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #77 *Topic 1*

Which of the following statements is NOT true regarding the Simple Regression formula?

A. Y = the response variable

B. X = the input variable

C. ²1⁻ is the intercept

D. ²0⁻ and ²1⁻ are the model coefficients to be estimated in the data

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #78 *Topic 1*

What can you conclude if the Sum of Squares Error is larger than Sum of Squares for the Model?

A. R-Squareisgreaterthan0.5

B. R-Square is less than 0

C. R-Square is equal to 1

D. R-Square is less than 0.5

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #79 *Topic 1*

In analyzing some data, you first try multiple linear regression with all the factors and with interactions (example: Factor A times Factor B is interaction AB)
You obtain a multiple regression equation of the form:
Response = 15 + .13 A - .30 B - .02 C - .00001 AB + .0000004 AC - .00000013 BC +.000000 ABC.
The p-values for most of the factors and interactions are between 0 and .05, except interactions BC and ABC, which have p-values between .4 and .9.
Which of the following approaches might be appropriate to simplify the equation?

A. Drop all factors with negative coefficients.

B. Drop factors BC and ABC and rerun the multiple linear regression.

C. Drop factors B and C and rerun the multiple linear regression.

D. Drop factors B and C and rerun the multiple linear regression.

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #80 *Topic 1*

In Logistic Regression, an Odds Ratio of 1 means?

A. One group is more likely than the other

B. Both groups are very likely

C. No association between groups - they are equally likely

D. There is a significant relationship between groups

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #81 *Topic 1*

How do you check that a regression model is valid?

A. Residuals are normally distributed

B. Residuals are independent

C. Residuals have constant variation

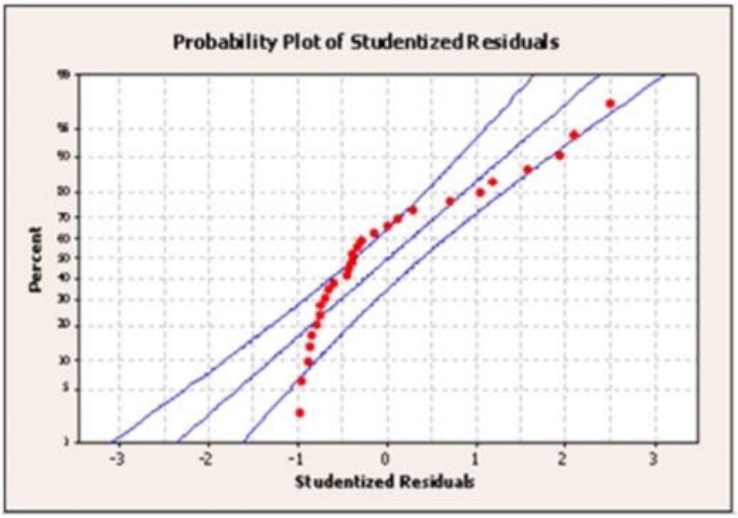
D. All of the above

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #82 *Topic 1*

While checking regression model assumptions, an engineer generates the following normal probability plot of residuals. Which of the actions below is the most appropriate next step?



A. Transform the response and re-fit the model

B. Investigate run order for a time pattern

C. Add runs, collect additional data and re-fit the model

D. Remove the highest order term from the model

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #83 *Topic 1*

Which of the following statements is true regarding correlation and simple regression?

A. A positive correlation is more significant than a negative correlation

B. R2 = the amount of variance explained by the regression model

C. A statistically significant correlation confirms a causal relationship between the X and Y variables

D. They are the best statistical methods when you have discrete X and Y variables

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #84 *Topic 1*

What action should be taken if the residuals from a regression model show a pattern over time?

A. It is acceptable to use the results as they exist

B. Transform the input variable

C. Transform the output variable

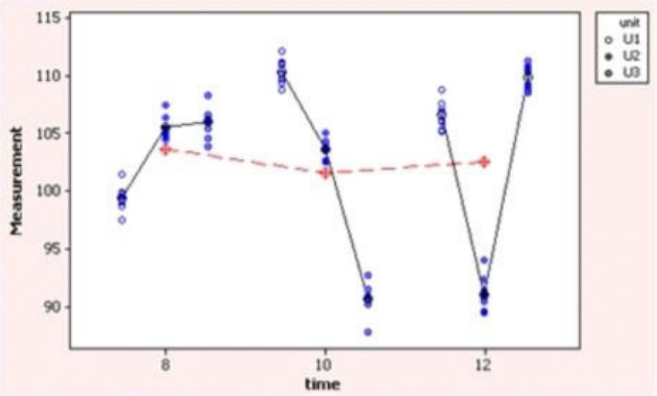
D. Track down the assignable cause of the time trend I pattern

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #85 *Topic 1*

Your team has done a SOV study and produced the following Multi-Van chart. What is the largest source of variation?



A. Time to Time

B. Within Unit

C. Unit to Unit

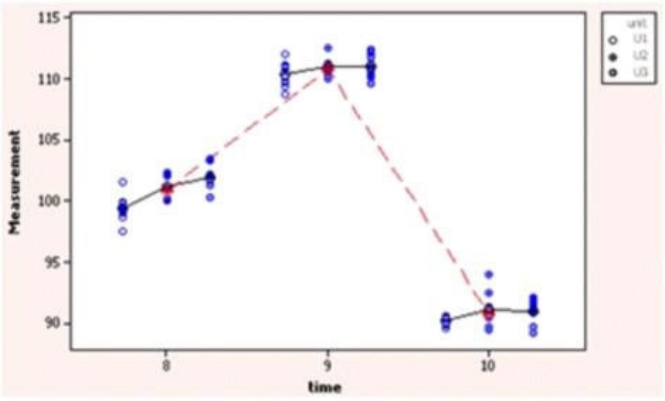
D. Need variance components

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #86 *Topic 1*

Your team has done a SOV study and produced the following Multi-Van chart. What is the largest source of variation?



A. Time to Time

B. Within Unit

C. Unit to Unit

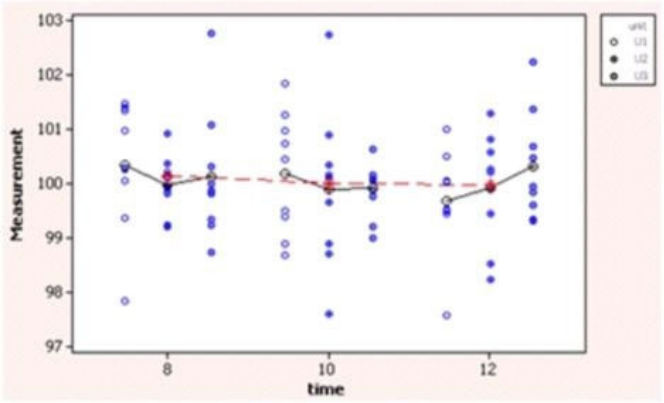
D. None of the above

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #87 *Topic 1*

Your team has done a SOV study and produced the following Multi-Van chart. What is the largest source of variation?



A. Time to Time

B. Within Unit

C. Unit to Unit

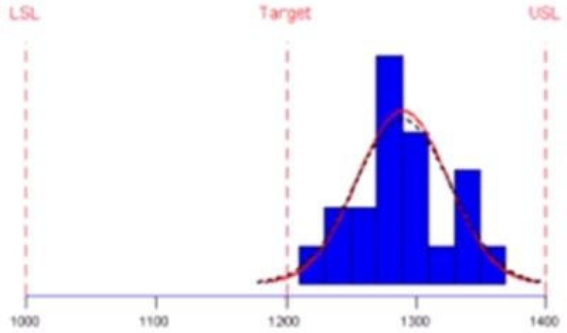
D. None of the above

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #88 *Topic 1*

A black belt is reviewing a process, as shown below. The specification limits are 1200 +1¡× 200. Is the process stable?



A. Yes, all the data meets specification.

B. No, there is data that exceeds the specification limits.

C. No, the data is not on target.

D. Can't tell from this graph.

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #89 *Topic 1*

A Black Belt is working a project on battery life. The Black Belt finds that the process is unstable, but wants to do a capability analysis. The Black Belt should:

A. Continue on with the capability analysis to gain more insight

B. Work to identify the special causes before continuing on with the capability analysis

C. Transform the data

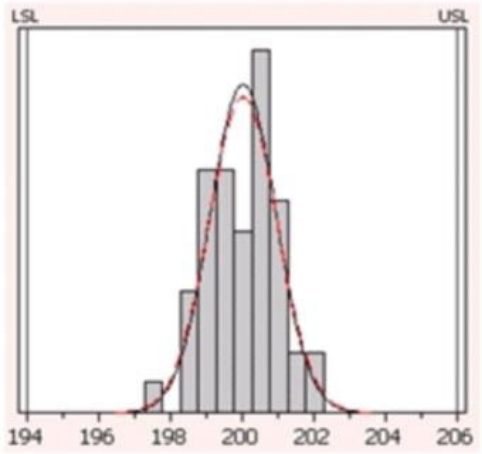
D. Find and remove the data points (outliers) that caused it to appear unstable. If the process is capable without the outliers, the outliers can simply be discarded.

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #90 *Topic 1*

A person owns the following process with a process target of 200. The Cp of the process is 2.0. Mean of the process is 200. What is the Cpk?



A. Cpk=2.0

B. Cpk=1

C. Cpk=1.5

D. Cpk=2.5

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #91 *Topic 1*

A Black Belt is reviewing a stable, normal process that has a Cp = 3 and a Cpk = 1. In order to achieve a 6 sigma process, what must be done?

A. Reduce variation only

B. Shift the mean only

C. Reduce variation and shift the mean

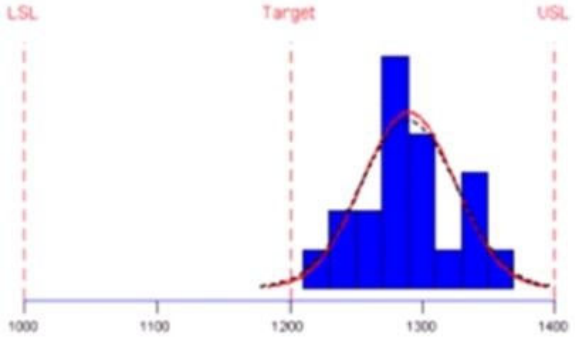
D. Not enough information given

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #92 *Topic 1*

A black belt is reviewing a process, as shown below. The specification limits are 1200 +1¡× 200. Which of the following is the best statement?



A. Cpk < Cp

B. Cp < Cpk

C. Cpk = Cp

D. The process is on-target

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #93 *Topic 1*

A black belt needs to determine if a process is stable. What technique should be used?

A. Capability Chart

B. Pareto Chart

C. Control Chart

D. Histogram

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #94 *Topic 1*

You have been asked to monitor daily production yields to determine if the process yield is in statistical control. Select the control chart best suited for this purpose.

A. C-chart

B. U-chart

C. X and R chart

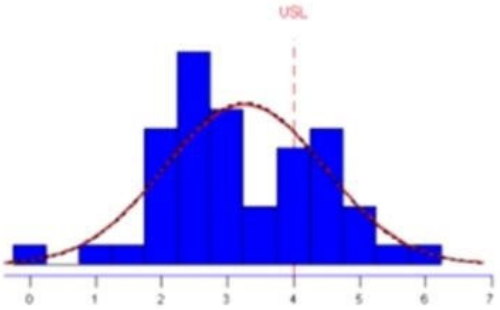
D. P-chart

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #95 *Topic 1*

A black belt at a call center is reviewing the length of calls, as shown below. The phone call length is not to exceed 4 minutes. Is the call-in-process capable?



A. Yes, the data is from a stable population.

B. No, many calls exceed the specification.

C. Unsure, more data is needed.

D. Yes, all the calls meet specification.

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #96 *Topic 1*

Lean Six Sigma process I product improvement suggests that the measure we use in our business is directly derived from which of the following sources?

A. Voice of Technology

B. Voice of Finance

C. Voice of the Customer

D. The Six Sigma Project Team

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #97 *Topic 1*

The most important process metrics are often determined by what the customer tells us is important to them. Which of these sequences describes the way customer requirements are converted to the customer-based process metrics?

A. Voice of the customer>critical to quality metrics>critical customer requirements

B. Voice of the customer>critical customer requirements>critical to process metrics

C. Critical customer requirements>critical to quality metrics>critical to process metrics

D. Voice of the customer>critical customer requirements>critical to quality metrics

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #98 *Topic 1*

The main feature(s) that differentiate the Control Chart from the Run Chart are which the following?

A. The presence of a statistically calculated center line and upper and lower limits

B. The Run Chart shows data over time and the Control Chart shows data at one point in time

C. The Run Chart requires more data than the Control Chart

D. The Run Chart is used in the ¡°Measure¡± Phase while the Control Chart is used in the ɹ€Controlɹ€ Phasex'

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #99 *Topic 1*

Which of the following are true regarding the Central Limit Theorem?

A. Sample averages are normally distributed as sample size gets larger.

B. Sample averages converge on the population mean.

C. Sample standard deviations are dependent upon the standard deviation of the population from which it was sampled.

D. All of the above

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #100 *Topic 1*

Suppose an X-bar / S Chart revealed that the variation of a process was consistent over time (consistent standard deviation, consistent mean) but a significant proportion of outcomes fell outside the customer requirements. Which of the following conclusions can best be made about the process?

A. The process is in control but has poor capability

B. The process variation is out of control

C. Special or assignable causes are affecting the process

D. The process mean needs to be reduced

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #101 *Topic 1*

A _____ is used primarily to track the stability of the average value of a metric of interest.

A. NP Chart

B. Xbar-R Chart

C. I-MR Chart

D. C Chart

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #102 *Topic 1*

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

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #103 *Topic 1*

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

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #104 *Topic 1*

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

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #105 *Topic 1*

Common and _____ Cause Variation are the focus of Statistical Process Control.

A. Uncommon

B. Ordinary

C. Special

D. Selective

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #106 *Topic 1*

Special Cause Variation falls into which two categories?

A. Natural & Unnatural

B. Short Term & Long Term

C. Assignable & Pattern

D. Attribute & Discreet

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #107 *Topic 1*

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

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #108 *Topic 1*

If the production is for higher volume and monitoring and the Mean and variability is to be monitored for four machines producing product and the characteristic to be monitored is Variable Data, which SPC Chart is best to be selected?

A. Xbar-R Chart

B. Individual-MR Chart

C. NP Chart

D. CUSUM Chart

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #109 *Topic 1*

When a Belt Poka-Yoke's a defect out of the process entirely then she should track the activity with a robust SPC system on the characteristic of interest in the defect as an early warning system.

A. True

B. False

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #110 *Topic 1*

Following the completion of a LSS project the Belt not only creates a Control Plan he also develops a _____ so those involved in the process know what to do when the critical metrics move out of spec.

A. Response Plan

B. Call List

C. Chain-of-Command

D. Defect Analysis Plan

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #111 *Topic 1*

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

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #112 *Topic 1*

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

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #113 *Topic 1*

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

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #114 *Topic 1*

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

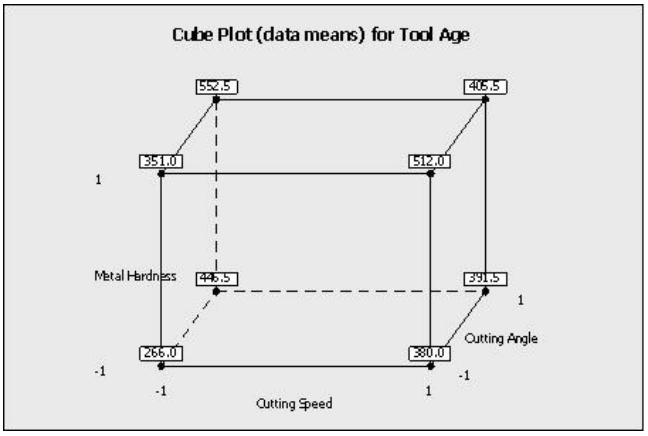
E. This design does not have enough experimental runs to conclude anything as evidenced by the lack of P-values in the MINITABTM output

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #115 *Topic 1*

Which statement(s) are correct about the Factorial Plot shown here? (Note: There are 3 correct answers).



A. When the cutting speed increased from low to high level, the tool age increases

B. The coefficient of the metal hardness is positively related to the output of tool age

C. The coded coefficient is lower for cutting speed than the cutting angle related to the output of tool age

D. These plots prove a statistically significance factor with 95% confidence

E. These plots are an example of interaction plots

Suggested Answer: *ABC*

Currently there are no comments in this discussion, be the first to comment!

Question #116 *Topic 1*

How many experimental runs exist in a Full Factorial and fully randomized design for 4 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. 32

C. 256

D. 64

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #117 *Topic 1*

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

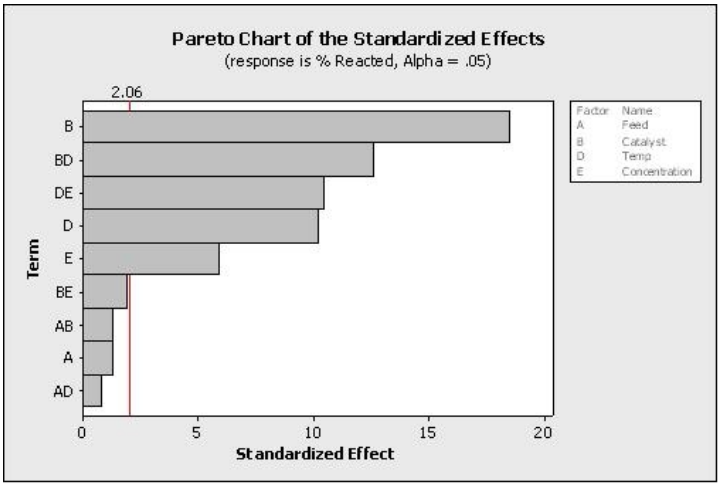
D. The experiment has 8 experimental runs with the first factor at the high level

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #118 *Topic 1*

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

Suggested Answer: *AC*

Currently there are no comments in this discussion, be the first to comment!

Question #119 *Topic 1*

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

A. Multi-Vari Analysis

B. Baldridge Channels

C. One Factor at a Time or OFAT

D. Factorial Design

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #120 *Topic 1*

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

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #121 *Topic 1*

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

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #122 *Topic 1*

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

A. True

B. False

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #123 *Topic 1*

Which Experimental Design typically is most associated with the fewest number of input variables or factors in the design?

A. Fractional Factorial design

B. Full Factorial design

C. Simple Linear Regression

D. Response Surface Design

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #124 *Topic 1*

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

A. True

B. False

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #125 *Topic 1*

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

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #126 *Topic 1*

The Lean toolbox includes all of these items except _____.

A. Mistake Proofing

B. Visual Factory

C. Design of Experiments

D. Inventory Management

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #127 *Topic 1*

Questions that can be best answered by a Visual Factory include all of these except _____.

A. Are downtime issues easily noted?

B. Can extra inventory be seen easily?

C. Are unneeded tools or supplies easily noted?

D. Are setups optimized for lower scrap levels?

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #128 *Topic 1*

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

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #129 *Topic 1*

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

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #130 *Topic 1*

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

A. True

B. False

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #131 *Topic 1*

Which of these items contribute to what is necessary for successful Kaizen events?

A. Analysis tools

B. Management support

C. Operator support

D. All of these answers are correct

Suggested Answer: *D*

Currently there are no comments in this discussion, be the first to comment!

Question #132 *Topic 1*

Kanban establishes a means of monitoring production, conveyance and delivery information such that efficient flow is established. The method used by Kanban is to require a _____ before anything moves.

A. Sign-off

B. Signal

C. Bell to ring

D. Work order

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #133 *Topic 1*

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

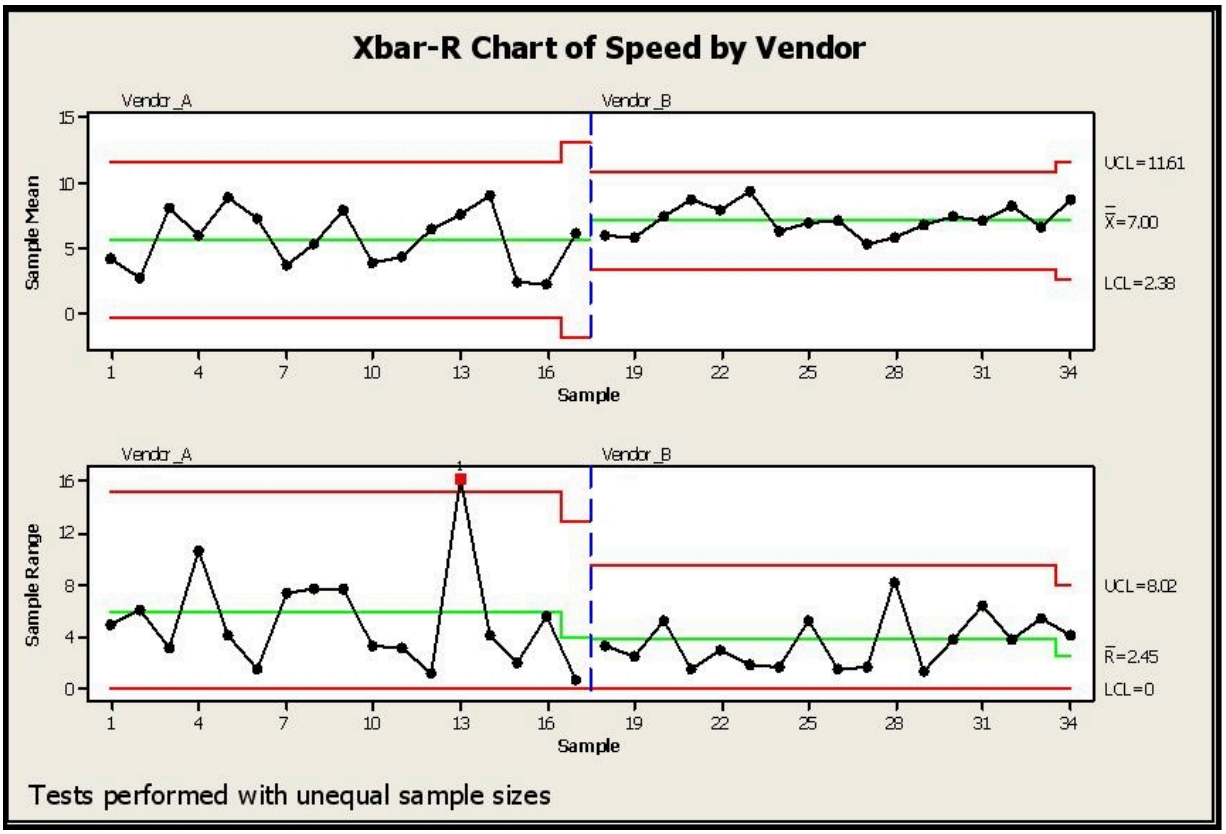
Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #134 *Topic 1*

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 as Vendor A shows a situation out of control as shown in red

D. Vendor B as the Control Limits are much narrower than Vendor A

E. Vendor B with higher lead time, but a process with much narrower Control Limits

Suggested Answer: *BCDE*

Currently there are no comments in this discussion, be the first to comment!

Question #135 *Topic 1*

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

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #136 *Topic 1*

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

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #137 *Topic 1*

A Factorial Experiment based on a Level 2 Design with 6 factors would require 16 runs to fully assess the interactions.

A. True

B. False

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!

Question #138 *Topic 1*

A Full Factorial experiment using a 3 level 3 factor approach has been proposed to test the viability of an extrusion machine experiment. How many treatment combinations will this approach involve?

A. 6

B. 9

C. 27

D. 54

Suggested Answer: *C*

Currently there are no comments in this discussion, be the first to comment!

Question #139 *Topic 1*

Screening experiments are the proper choice when a Belt is faced with the situation of highly Fractional Factorial Designs.

A. True

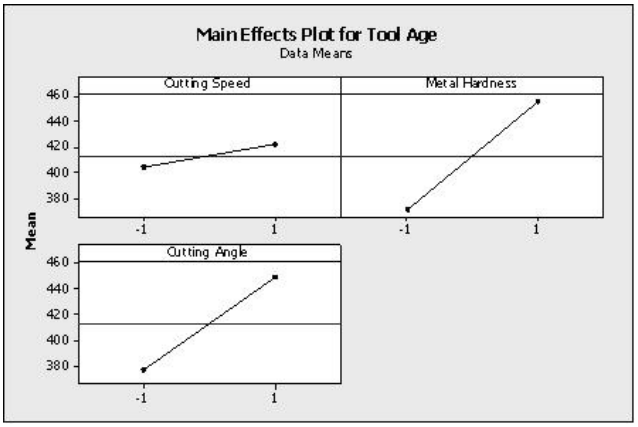
B. False

Suggested Answer: *A*

Currently there are no comments in this discussion, be the first to comment!

Question #140 *Topic 1*

Which statement(s) are correct about the DOE Factorial plot output here? (Note: There are 3 correct answers).



A. Two factors were operated at 3 levels each

B. The highest tool age was achieved with metal hardness at high level while keeping the cutting speed at the low level

C. The design indicated above is a 32 factorial design

D. The cutting speed and cutting angle are at the low level for the least tool age achieved

E. All factors had 2 levels in the experiment

Suggested Answer: *BCE*

Currently there are no comments in this discussion, be the first to comment!

Question #141 *Topic 1*

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
TurbineOutput = 16.5 + 3.21 Air-Fuel Ratio + 0.386 % methane
              + 0.0166 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

Suggested Answer: *DE*

Currently there are no comments in this discussion, be the first to comment!

Question #142 *Topic 1*

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
TurbineOutput = 16.5 + 3.21 Air-Fuel Ratio + 0.386 % methane
              + 0.0166 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

Suggested Answer: *B*

Currently there are no comments in this discussion, be the first to comment!