

CSSBB Dumps

Certified Six Sigma Black Belt

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NEW QUESTION 1

- (Topic 1)

Deming called the technique of studying a sample to gain understanding of the distribution of a population an “enumerative study.” His main objection to these studies was:

- A. they are too difficult to perform correctly
- B. they require extensive use of computers
- C. they assume a stable distribution
- D. random samples are expensive to obtain
- E. these studies have a high probability of Type II error

Answer: C

NEW QUESTION 2

- (Topic 1)

In a series of linked processes and associated feedback loops the product or service flows _____ and the information flows _____ .

- A. rapidly, slower
- B. downstream, upstream
- C. evenly, digitally
- D. sooner, later
- E. to the customer, from the supplier
- F. none of the above

Answer: B

NEW QUESTION 3

- (Topic 1)

The median is a better choice than the mean for a measure of central tendency if the data:

- A. is bimodal
- B. often has outliers
- C. is normally distributed
- D. is exponentially distributed

Answer: B

NEW QUESTION 4

- (Topic 1)

The preferred method for determining statistically whether factor A or B is significant requires what additional information?

Run #	A	B	Ave. Response
1	-	-	129
2	-	+	133
3	+	-	86
4	+	+	80

- A. value of noise factors
- B. values of responses in replicate runs
- C. number of repetitions
- D. ambient conditions during the experiment
- E. blocking pattern

Answer: B

NEW QUESTION 5

- (Topic 1)

Find the value of (1) in the ANOVA table. Assume:

$$\alpha = 0.10:$$

ANOVA Table

Source	SS	df	MS	F ratio	F crit	P-value
x	1.48	1	(1)	(2)	(3)	(4)
Y	18.6	1	(5)	(6)	(7)	(8)
xxY	12.2	1	(9)	(10)	(11)	(12)
Error	2.1	4	(13)			

- A. 16.4
- B. 3.2
- C. 18.6
- D. 23.2
- E. 4.54
- F. 12.2
- G. 0.525
- H. 2.82
- I. 1.48
- J. 35.4
- K. $0.10 < P < 1$
- L. $0.05 < P < 0.10$
- M. $0.01 < P < 0.05$
- N. $0.005 < P < 0.01$
- O. $0 < P < 0.005$

Answer: I

NEW QUESTION 6

- (Topic 1)

(Refer to the previous problem) The variance of the five replications for each run is calculated. Most of these variances are approximately equal but two are significantly lower than the others. The experimenters would be especially interested in those two runs if they want to optimize:

- A. dissolution time
- B. interactions
- C. main effects
- D. robustness
- E. degrees of freedom

Answer: D

NEW QUESTION 7

- (Topic 1)

A random sample of 2500 printed brochures is found to have a total of three ink splashes. The rate of ink splashes in PPM is:

- A. $1,000,000 \div 2500 \times 3$
- B. $2500 \div 1,000,000 \times 3$
- C. $3 \div 2500 \times 1,000,000$
- D. $3 \times 2500 \div 1,000,000$

Answer: C

NEW QUESTION 8

- (Topic 1)

A population is bimodal with a variance of 5.77. One hundred samples of size 30 are randomly collected and the 100 sample means are calculated. The standard deviation of these sample means is approximately:

- A. 5.77
- B. 2.40
- C. 1.05
- D. 0.44
- E. 0.19

Answer: E

NEW QUESTION 9

- (Topic 1)

The team in the above problem draws arrows from Post-It® notes that are causes to notes that are the effects of these causes. This step is best described by which approach to problem solving?

- A. Affinity diagram
- B. Inter-relationship digraph
- C. Tree diagram
- D. Process decision program chart
- E. Matrix diagram

- F. Prioritization matrix
- G. Activity network diagram

Answer: B

NEW QUESTION 10

- (Topic 1)

Find the value of (9) in the ANOVA table. Assume:

$$\alpha = 0.10;$$

ANOVA Table

Source	SS	df	MS	F ratio	F crit	P-value
x	1.48	1	(1)	(2)	(3)	(4)
Y	18.6	1	(5)	(6)	(7)	(8)
xxY	12.2	1	(9)	(10)	(11)	(12)
Error	2.1	4	(13)			

- A. 16.4
- B. 3.2
- C. 18.6
- D. 23.2
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- F. 12.2
- G. 0.525
- H. 2.82
- I. 1.48
- J. 35.4
- K. $0.10 < P < 1$
- L. $0.05 < P < 0.10$
- M. $0.01 < P < 0.05$
- N. $0.005 < P < 0.01$
- O. $0 < P < 0.005$

Answer: F

NEW QUESTION 10

- (Topic 1)

A team wants a technique for doing an initial study of a process that not every team member is familiar with. They should use:

- A. written and diagrammed work instructions
- B. flow charts and process maps
- C. cause and effect diagrams
- D. Pareto chart
- E. relationship matrix

Answer: B

NEW QUESTION 14

- (Topic 1)

A team is investigating ways to reduce power outages. They determine that an outage can occur in only three ways: grid failure, local transformer failure or local overload. They then investigate each of these three events for possible causes, etc. They draw a diagram that “fans out” using the power outage as the handle of the fan. These improvements are best described by which approach to problem solving?

- A. Affinity diagram
- B. Inter-relationship digraph
- C. Tree diagram
- D. Process decision program chart
- E. Matrix diagram
- F. Prioritization matrix
- G. Activity network diagram

Answer: C

NEW QUESTION 17

- (Topic 1)

A team's goal is to improve information flow in a payroll function. They make thirty-three Post-It® notes, each listing an issue for further investigation. After some discussion, they group them into four categories: mandated record keeping, privacy concerns, insurance concerns and transfer concerns. This grouping process is best described by which approach to problem solving?

- A. Affinity diagram
- B. Inter-relationship digraph
- C. Tree diagram
- D. Process decision program chart
- E. Matrix diagram

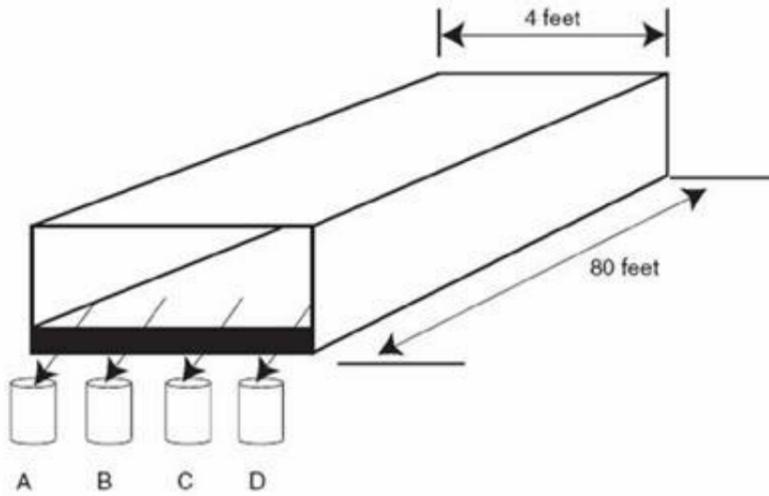
- F. Prioritization matrix
- G. Activity network diagram

Answer: A

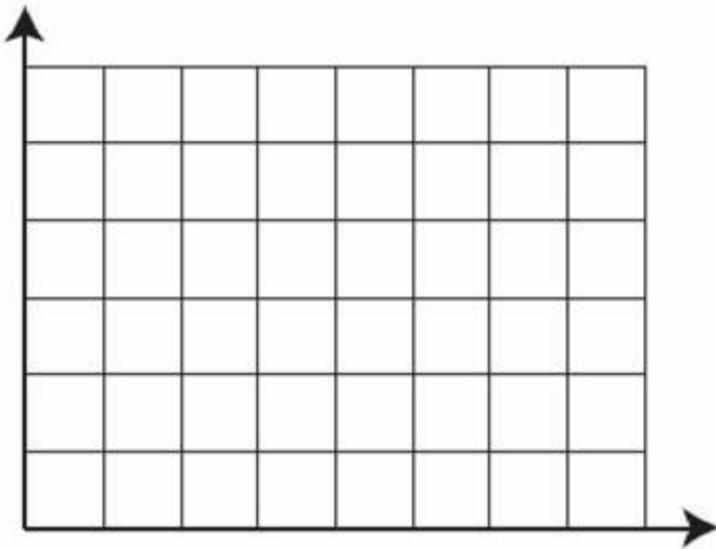
NEW QUESTION 18

- (Topic 1)

SCENARIO A Six Sigma team is measuring the moisture content of corn starch as it leaves the conveyor belt of a dryer. They collect one sample four cups of starch at times indicated in the chart at fixed locations labeled A, B, C, and D across the end of the belt. See the diagram below.



Find the equation of the regression line for these sample data points: (1, 7) (3, 3) (3, 2) (5, -1)



- A. $y = 10.8 - 2.9x$
- B. $y = 12.9 + 5.2x$
- C. $y = 16 - 3.7x$
- D. $y = 8.75 - 2x$
- E. $y = 22.6 - 4.8x$

Answer: D

NEW QUESTION 22

- (Topic 1)

The quality leader responsible for the term Total Quality Management (TQM):

- A. Juran
- B. Ishikawa
- C. Crosby
- D. Feigenbaum
- E. Taguchi
- F. none of the above

Answer: D

NEW QUESTION 27

- (Topic 1)

Find the value of (4) in the ANOVA table. Assume:

$\alpha = 0.10$:

ANOVA Table

Source	SS	df	MS	F ratio	F crit	P-value
x	1.48	1	(1)	(2)	(3)	(4)
Y	18.6	1	(5)	(6)	(7)	(8)
xxY	12.2	1	(9)	(10)	(11)	(12)
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- I. 1.48
- J. 35.4
- K. $0.10 < P < 1$
- L. $0.05 < P < 0.10$
- M. $0.01 < P < 0.05$
- N. $0.005 < P < 0.01$
- O. $0 < P < 0.005$

Answer: K

NEW QUESTION 28

- (Topic 1)

An experiment has seven factors with two levels each. The experiment has eight runs. This experimental design is called:

- A. full factorial design
- B. half fractional factorial design
- C. interaction
- D. none of the above

Answer: D

NEW QUESTION 31

- (Topic 1)

There are 14 different defects that can occur on a completed time card. The payroll department collects 328 cards and finds a total of 87 defects. DPU =

- A. $87 \div 328$
- B. $87 \div (328 \times 14)$
- C. $14 \div 87$
- D. $87 \div 14$
- E. $328 \div 87$
- F. $87 \times 1,000,000 \div (14 \times 328)$

Answer: A

NEW QUESTION 33

- (Topic 1)

Intuitively, which factor A or B seems most likely to be significant?

Run #	A	B	Ave. Response
1	-	-	129
2	-	+	133
3	+	-	86
4	+	+	80

- A. A
- B. B
- C. C
- D. neither
- E. both about equally significant

Answer: A

NEW QUESTION 38

- (Topic 1)

Calculate the main effect of factor A (i. e. $A+ - A-$).

Run #	A	B	Ave. Response
1	-	-	129
2	-	+	133
3	+	-	86
4	+	+	80

- A. 46
- B. 129
- C. 83
- D. -46
- E. none of the above

Answer: E

NEW QUESTION 39

- (Topic 1)

= 0.05 A machine tool vender wants to sell an injection molding machine. The current machine produces 3.2% defectives. A sample of 1100 from the vender 's machine has 2.9% defective. Do these numbers indicate that the proposed machine has a lower rate of defectives?

- A. yes
- B. no

Answer: A

NEW QUESTION 40

- (Topic 1)

The primary metric for a project is reduced cost for process A . Baseline data might include:

- A. current maintenance costs
- B. current selling price for the products or services output by process A
- C. current suggestions from stakeholders of process A
- D. all the above
- E. none of the above

Answer: A

NEW QUESTION 43

- (Topic 1)

If the probability that event A occurs is 0.51, the probability that event B occurs is 0.64 and that probability that both A and B occur is 0.23 then:

- A. events A and B are complementary
- B. events A and B are mutually exclusive
- C. events A and B are supplementary
- D. events A and B are not mutually exclusive
- E. events A and B are statistically independent

Answer: D

NEW QUESTION 47

- (Topic 1)

An automatic gaging system is to be installed in a process. The gage will insert data values into a data base from which machine adjustments will be made automatically. A critical factor in specifying the equipment is:

- A. communication link between gage and computer
- B. compatibility of software in the gage and in the computer
- C. adequate manual over-rides
- D. all of the above

Answer: D

NEW QUESTION 49

- (Topic 1)

= 0.05 The average weight of castings produced at the Nebraska foundry is 3.7 lbs. A new supplier from Kansas has submitted a batch of castings known to have normally distributed weights. A random sample of 10 has an average weight of 3.6 lbs. and standard deviation 0.06 lbs. Do these data indicate that the Kansas foundry produce lighter castings on average?

- A. yes
- B. no

Answer: A

NEW QUESTION 52

- (Topic 1)

$P(A) = .42$, $P(B) = .58$, $P(A \& B) = .10$. Are A and B (statistically) independent?

- A. yes
- B. no

Answer: B

NEW QUESTION 55

- (Topic 1)

$P(A) = .42$, $P(B) = .58$, $P(A \& B) = .10$ Find $P(A \text{ or } B)$.

- A. .90
- B. 1.00
- C. .24
- D. none of the above

Answer: A

NEW QUESTION 57

- (Topic 1)

This table displays the inventory of fasteners in a storage cabinet. A bolt is selected at random from the fastener cabinet. Find the approximate probability it is size 7/8.

	size			
	.500	.625	.750	.875
Nut	146	300	74	41
Washer	280	276	29	32
Bolt	160	214	85	55

- A. 11
- B. .08
- C. .09
- D. .30
- E. none of the above

Answer: A

NEW QUESTION 61

- (Topic 1)

A population of size 1,000,000 has mean 42 and standard deviation 6. Sixty random samples, each of size 15 are selected. According to the Central Limit Theorem the distribution of the sixty sample means has a mean of approximately:

- A. 42
- B. $42/6$
- C. $42/15$
- D. $42/15$
- E. none of the above

Answer: A

NEW QUESTION 63

- (Topic 1)

If DPU = 0.022, the RTU is approximately:

- A. 0.022
- B. 0.078
- C. 0.0022
- D. 0.98
- E. 0.098
- F. 0.0098

Answer: D

NEW QUESTION 64

- (Topic 1)

The primary metric for a project is reduced cost for process A .A consequential metric could be:

- A. reduced cycle time
- B. reduced scrap rate
- C. reduced set-up time
- D. all the above
- E. none of the above

Answer: D

NEW QUESTION 67

- (Topic 1)

In a resolution III fractional factorial experimental design, main effects are confounded with:

- A. one factor interactions
- B. two factor and higher interactions
- C. three factor and higher interactions
- D. no other effects

Answer: B

NEW QUESTION 72

- (Topic 1)

A team wants a technique for displaying the connection between various customer needs and various features on a product. They should use:

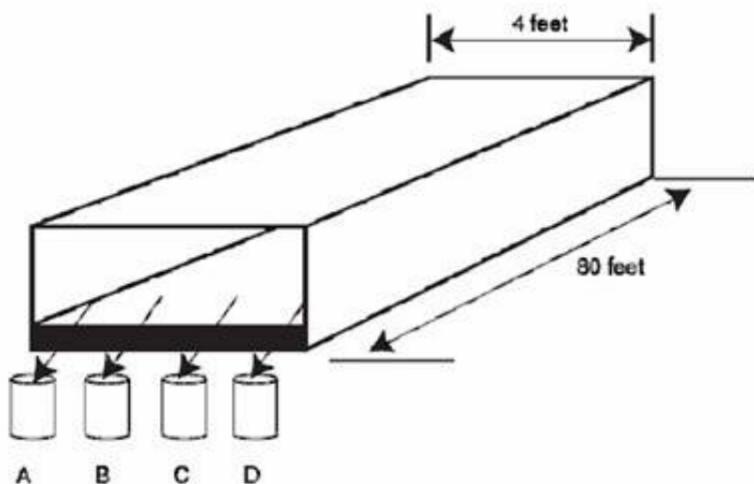
- A. written and diagrammed work instructions
- B. flow charts and process maps
- C. cause and effect diagrams
- D. Pareto chart
- E. relationship matrix

Answer: E

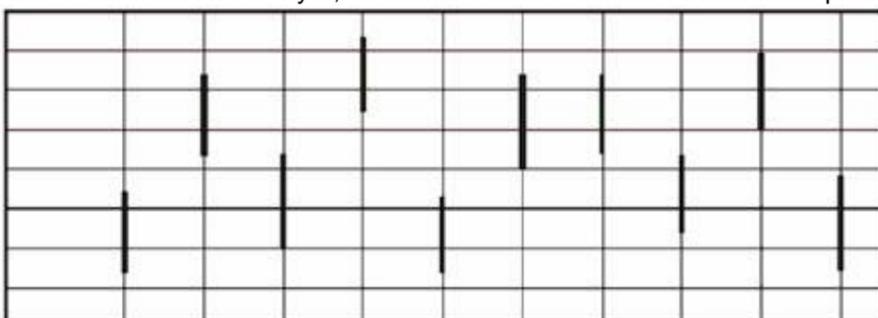
NEW QUESTION 77

- (Topic 1)

SCENARIO A Six Sigma team is measuring the moisture content of corn starch as it leaves the conveyer belt of a dryer. They collect one sample four cups of starch at times indicated in the chart at fixed locations labeled A, B, C, and D across the end of the belt. See the diagram below.



After some work on the dryer, additional data are collected which when plotted looks like this:



Which type of variation dominates?

- A. within sample
- B. sample to sample within the hour
- C. hour to hour
- D. none of the above

Answer: B

NEW QUESTION 78

- (Topic 1)

According to the Central Limit Theorem:

- A. the median and the mean have the same value in a symmetric distribution
- B. the mode of a normal distribution is also the mean
- C. the mean of an exponential distribution is smaller than the median
- D. the mean, median and mode of a normal distribution all have the same value
- E. none of the above

Answer: E

NEW QUESTION 81

- (Topic 1)

There are 14 different defects that can occur on a completed time card. The payroll department collects 328 cards and finds a total of 87 defects. DPMO =:

- A. $87 \div 328$
- B. $87 \div (328 \times 14)$
- C. $14 \div 87$
- D. $87 \div 14 \times 1,000,000$
- E. $328 \div 87$
- F. $87 \times 1,000,000 \div (14 \times 328)$

Answer: F

NEW QUESTION 84

- (Topic 1)

A team studies a coil steel banding process and makes five changes resulting in productivity improvements of 2%, 2.8%, 2.4%, 2% and 3% respectively. These improvements are best described by which approach to problem solving?

- A. 5S
- B. Poka yoke
- C. Kaizen
- D. PDCA
- E. Re-engineering

Answer: C

NEW QUESTION 87

- (Topic 1)

The support for an important quality initiative was lacking in congress until Reagan's Secretary of Commerce was killed in a horseback riding accident in 1987. That initiative was:

- A. assigning National Institute for Standards and Technology (NIST) quality oversight duties
- B. "consensus of the House" proclamation for Deming's 14 points
- C. changing National Bureau of Standards to NIST.
- D. authorizing the American National Standards Institute (ANSI) to join with the International Standards Organization (ISO) to promulgate standards.
- E. none of the above.

Answer: E

NEW QUESTION 88

- (Topic 1)

Find the value of (2) in the ANOVA table. Assume:

$$\alpha = 0.10;$$

ANOVA Table

Source	SS	df	MS	F ratio	F crit	P-value
x	1.48	1	(1)	(2)	(3)	(4)
Y	18.6	1	(5)	(6)	(7)	(8)
xxY	12.2	1	(9)	(10)	(11)	(12)
Error	2.1	4	(13)			

- A. 16.4
- B. 3.2
- C. 18.6

- D. 23.2
- E. 4.54
- F. 12.2
- G. 0.525
- H. 2.82
- I. 1.48
- J. 35.4
- K. $0.10 < P < 1$
- L. $0.05 < P < 0.10$
- M. $0.01 < P < 0.05$
- N. $0.005 < P < 0.01$
- O. $0 < P < 0.005$

Answer: H

NEW QUESTION 91

- (Topic 1)

A stable, normally distributed process with specification 3.50 ± .03 has $\bar{x} = 3.51$ and $s = .016$. What percent of the production violates specification?

- A. 16.43%
- B. 12.62%
- C. 18.58%
- D. 11.18%

Answer: D

NEW QUESTION 94

- (Topic 1)

Perform a risk analysis to determine the expected profit or (loss) from a project which has four possible disjoint outcomes: Outcome A shows a profit of \$340,000 and has a probability of 0.25 Outcome B shows a profit of \$120,000 and has a probability of 0.40 Outcome C shows a loss of \$40,000 and has a probability of 0.10 Outcome D shows a profit of \$100,000 and has a probability of 0.25

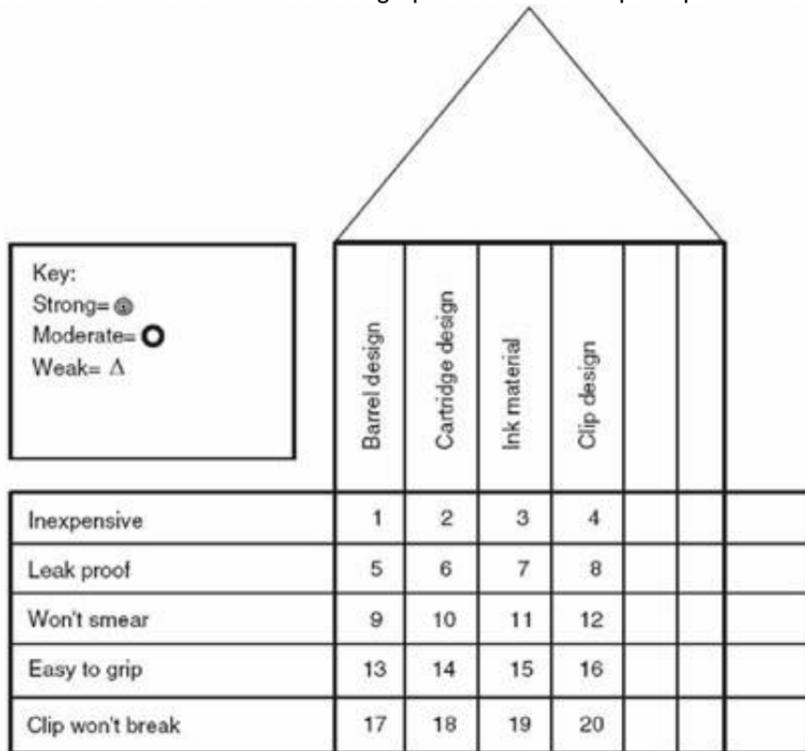
- A. \$130,000
- B. \$520,000
- C. \$154,000
- D. (\$168,000)
- E. none of the above

Answer: C

NEW QUESTION 96

- (Topic 2)

This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 11?



- A.
- B.
- C.
- A. none of the above

Answer: B

NEW QUESTION 98

- (Topic 2)

A set of data from a process has 8 readings per sample and 50 samples. The mean of the 50 sample means is 12.62. The mean of the 50 ranges is 0.18. A customer requires that SPC charts be done on their forms which have spaces for only 5 readings per sample. In preparation for calculating the new control limits

the following question is asked, "Will the new average range be larger or smaller than the current average range?". The answer is:

- A. yes
- B. no
- C. maybe
- D. smaller
- E. larger
- F. same size
- G. none of the above

Answer: D

NEW QUESTION 100

- (Topic 2)
TRIZ is an acronym which refers to:

- A. a set of problem solving tools
- B. an organization of quality professionals
- C. an experiment using transitional results
- D. a Russian general responsible for creative thinking

Answer: A

NEW QUESTION 104

- (Topic 2)
What percent of population falls below the lower specification limits?

- A. 9.18%
- B. 22.66%
- C. 6.68 %
- D. 1.83%

Answer: A

NEW QUESTION 109

- (Topic 2)
This will be a:

- A. left-tail test
- B. right-tail test
- C. two-tail test

Answer: B

NEW QUESTION 110

- (Topic 2)
Nominal Group Technique is used to:

- A. help a group reach consensus
- B. generate a group on new ideas
- C. provide a consistent stable group leadership
- D. provide a name for the group

Answer: A

NEW QUESTION 113

- (Topic 2)
The following is a set of individual measurements: 3 5 4 5 6 3 4 3 2 4 5 6 5 7 6 4 5 5 8 7 6 6 7 7 4
Find the control limits for the individuals chart.

- A. .7 and 11.2
- B. 1.6 and 8.6
- C. 2.7 and 7.5
- D. none of the above

Answer: D

NEW QUESTION 116

- (Topic 2)
Find the upper control limit for a range chart if $n = 4$ and the average range is 2.282.

- A. 2.282
- B. 4.564
- C. 5.208
- D. 3.423

Answer: C

Explanation:

The following formula is for calculating upper control limit for a range chart n = 4

$$UCL_{\bar{R}} = D_4 \bar{R}$$

$$= 2.282 \times 2.282 = 5.208$$

Use the following constants (D4) in the computation

n	D ₄	n	D ₄	n	D ₄
2	3.267	7	1.924	12	1.717
3	2.574	8	1.864	13	1.693
4	2.282	9	1.816	14	1.672
5	2.114	10	1.777	15	1.653
6	2.004	11	1.744		

NEW QUESTION 118

- (Topic 2)

A meeting is called for all three shifts to determine the settings to be used on machine #45. This is an example of:

- A. visual factory
- B. kanban
- C. poka-yoke
- D. standard work
- E. set up time reduction (SMED)

Answer: D

NEW QUESTION 119

- (Topic 2)

An important step in determining the VOC is:

- A. establish viable or comprehensive process feedback loops
- B. ascertain the principles that are values of the corporation
- C. identify the customer
- D. measure the virtual operating continuum potential
- E. all of the above
- F. none of the above

Answer: C

NEW QUESTION 124

- (Topic 2)

A process produced 1394 units. During this time 11 defects were detected. The Rolled Throughput Yield (RTU) is approximately:

- A. 0.992
- B. 7.89
- C. 0.00789
- D. 1.008
- E. all of the above
- F. none of the above

Answer: A

NEW QUESTION 127

- (Topic 2)

The overall tolerance for three components in series in an electrical circuit is + 10 . Assuming normal, stable, capable processes produce the components, use stack tolerance techniques to find a set of tolerances for the three components.

- A. 3, 3 and 4 respectively
- B. 7, 7 and 6 respectively
- C. 8, 8 and 8 respectively
- D. 10, 10 and 14 respectively

Answer: D

NEW QUESTION 128

- (Topic 2)

Find the value of (13) in the ANOVA table. Assume:

$\alpha = 0.10:$

ANOVA Table

Source	SS	df	MS	F ratio	F crit	P-value
x	1.48	1	(1)	(2)	(3)	(4)
Y	18.6	1	(5)	(6)	(7)	(8)
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- M. $0.01 < P < 0.05$
- N. $0.005 < P < 0.01$
- O. $0 < P < 0.005$

Answer: G

NEW QUESTION 129

- (Topic 2)

A control chart is to be used to display the number of non-conducting diodes. Each point on the chart represent the number of bad diodes in a box of 1000. The appropriate control chart to use is:

- A. x-bar and R
- B. median
- C. individual and moving range
- D. p
- E. np
- F. u
- G. c

Answer: E

NEW QUESTION 132

- (Topic 2)

Find the value of (12) in the ANOVA table. Assume:

$\alpha = 0.10:$

ANOVA Table

Source	SS	df	MS	F ratio	F crit	P-value
x	1.48	1	(1)	(2)	(3)	(4)
Y	18.6	1	(5)	(6)	(7)	(8)
xxY	12.2	1	(9)	(10)	(11)	(12)
Error	2.1	4	(13)			

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- H. 2.82
- I. 1.48
- J. 35.4
- K. $0.10 < P < 1$
- L. $0.05 < P < 0.10$
- M. $0.01 < P < 0.05$
- N. $0.005 < P < 0.01$
- O. $0 < P < 0.005$

Answer: N

NEW QUESTION 135

- (Topic 2)

Calculate the main effect of factor A:

	A	B	Res.
1	-	-	20
2	-	+	30
3	+	-	40
4	+	+	50

- A. 20
- B. 25
- C. 30
- D. 40
- E. none of the above

Answer: A

Explanation:

A factorial experiment can be analyzed using ANOVA or regression analysis[citation needed]. It is relatively easy to estimate the main effect for a factor. To compute the main effect of a factor "A", subtract the average response of all experimental runs for which A was at its low (or first) level from the average response of all experimental runs for which A was at its high (or second) level.

NEW QUESTION 137

- (Topic 2)

A process shows the following number of defectives. Each sample size for this process is 85. 3 8 2 7 7 6 8 8 9 5 Find the control limits.

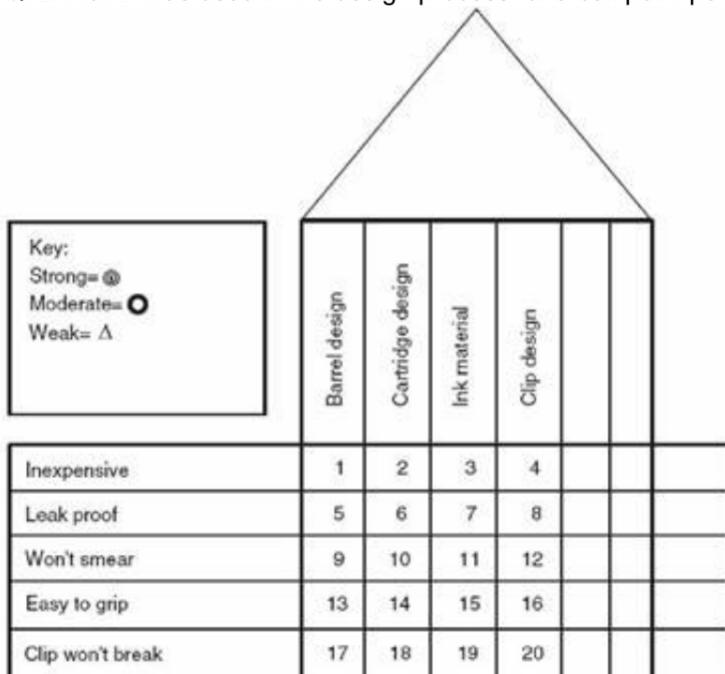
- A. none and 13.5
- B. 12.6 and 25.2
- C. none and 25.2
- D. none of the above

Answer: A

NEW QUESTION 140

- (Topic 2)

This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 9?



- A.
- B.
- C.
- A. none of the above

Answer: D

NEW QUESTION 141

- (Topic 2)

The temperature in a storage location is logged once every 30 minutes. The control chart that is appropriate for displaying these values is:

- A. x-bar and R
- B. median
- C. individual and moving range
- D. p
- E. np
- F. u
- G. c

Answer: C

NEW QUESTION 144

- (Topic 2)

Find the mean, median and mode of the following data set: 9, 11, 12, 12, 14, 18, 18, 18, 20, 23:

- A. 15.5, 18, 18
- B. 15, 14, 18
- C. 14, 16, 18
- D. 15, 12, 18
- E. 15.5, 16, 18

Answer: E

NEW QUESTION 145

- (Topic 2)

An advantage of using standard deviation rather than range for measuring dispersion of a large sample is that:

- A. standard deviation has a simpler formula
- B. calculators have a standard deviation key but not a range key
- C. standard deviation uses information from each measurement
- D. range calculations are not normally distributed

Answer: C

NEW QUESTION 150

- (Topic 2)

For a line in an FMEA form a team has established the following: Cost: \$82 Severity: 7 Occurrence: 9 Detection: 4 Target date: 7 days What should the risk priority number (RPN) be for this line:

- A. 144,648
- B. 252
- C. 1764
- D. 63
- E. none of the above

Answer: B

NEW QUESTION 154

- (Topic 2)

An x-bar and R chart is used to monitor a process. One week ago a new type of raw material was introduced and since that time 60 points have been plotted on the xbar chart and all are in the middle third of the chart. The corresponding 60 points on the R chart are all below the average range. This indicates that:

- A. the operator has been plotting the points incorrectly
- B. it is time to recalibrate the gage used
- C. it is time to recalculate the control limits
- D. the material manager should be asked to go back to the previous raw material so the charts will more accurately reflect the process

Answer: C

NEW QUESTION 157

- (Topic 2)

A set of data from a process has 8 readings per sample and 50 samples. The mean of the 50 sample means is 12.62. The mean of the 50 ranges is 0.18. Find the control limits for the xbar chart.

- A. 12.55 and 12.69
- B. 12.11 and 13.13
- C. 12.54 and 12.70
- D. none of the above

Answer: A

Explanation:

This formula is using control limit for the x bar chart

$$UCL_{\bar{X}} = \bar{\bar{X}} + A_2 \bar{R}$$

$$= 12.62 + (0.373)(0.18)$$

$$= 12.62 + 0.06714$$

$$= 12.69$$

$$LCL_{\bar{X}} = \bar{\bar{X}} - A_2 \bar{R}$$

$$= 12.62 - (0.373)(0.18)$$

$$= 12.62 - 0.06714$$

$$= 12.55$$

UCL is 12.69 and LCL is 12.55

n	A ₂	n	A ₂	n	A ₂
2	1.880	7	0.419	12	0.266
3	1.023	8	0.373	13	0.249
4	0.729	9	0.337	14	0.235
5	0.577	10	0.308	15	0.223
6	0.483	11	0.285		

NEW QUESTION 162

- (Topic 2)

A and B are events. P(A) = 0.80 and P(B) = 0.90.

- A. events A and B are disjoint or mutually exclusive
- B. events A and B are not disjoint or mutually exclusive
- C. P(A and B) = 0
- D. P(A and B) = 1.7

Answer: B

NEW QUESTION 163

- (Topic 2)

A set of data from a process has 8 readings per sample and 50 samples. The mean of the 50 sample means is 12.62. The mean of the 50 ranges is 0.18. Find control limits for the R chart.

- A. 0.10 and 0.25
- B. none and 0.33
- C. 0.02 and 0.33
- D. none of the above

Answer: C

Explanation:

The formula required to calculate control limits for the R chart are as follows:

$$UCL_R = D_4 \bar{R}$$

$$= 1.864 \times 0.18 = 0.33$$

$$LCL_R = D_3 \bar{R}$$

$$= 0.1111 \times 0.18 = 0.02$$

n	D ₄	n	D ₄	n	D ₄
2	3.267	7	1.924	12	1.717
3	2.574	8	1.864	13	1.693
4	2.282	9	1.816	14	1.672
5	2.114	10	1.777	15	1.653
6	2.004	11	1.744		

NEW QUESTION 166

- (Topic 2)

Dr. W. Edwards Deming:

- A. lectured in Japan after World War II
- B. was an author of several books in the US
- C. lectured widely in the US

- D. is considered an expert in the quality field
- E. all of the above
- F. none of the above

Answer: E

NEW QUESTION 169

- (Topic 2)

If the value of the test statistic had been 0.185, what action should have been taken regarding the null hypothesis?

- A. rejected
- B. accepted
- C. none of the above
- D. all of the above

Answer: C

NEW QUESTION 174

- (Topic 2)

Work performed by the payroll department is considered value added activity.

- A. true
- B. false

Answer: B

NEW QUESTION 177

- (Topic 2)

One of the approaches used by TRIZ is referred to as “removing the contradiction.” A project team is asked to determine how many coats of paint should be applied to a panel. In this case the contradiction is:

- A. additional coats cost money but give a better finish
- B. the customer wants an excellent finish at a low cost
- C. the company wants to reduce costs but have an excellent finish

Answer: A

NEW QUESTION 180

- (Topic 2)

An indication of the experimental error is available because the design has:

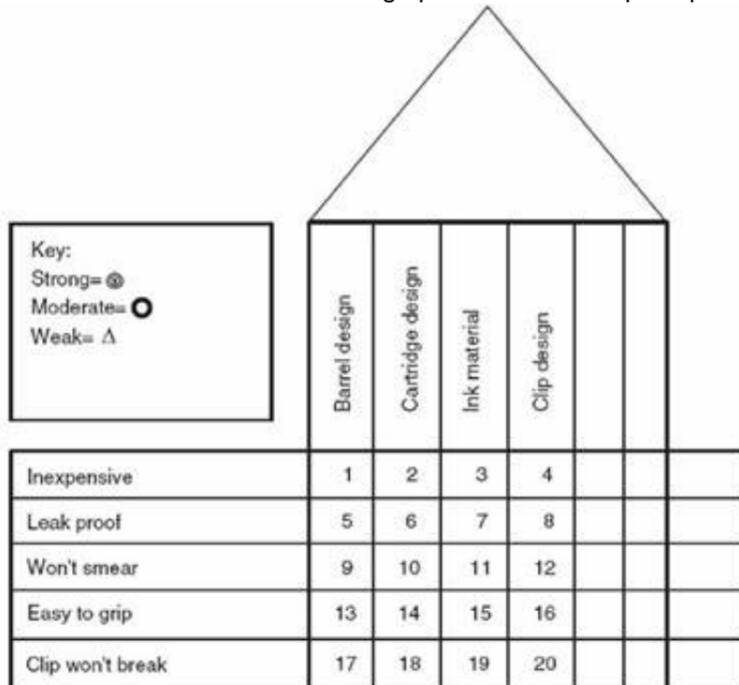
- A. multiple replications
- B. multiple levels
- C. multiple factors

Answer: A

NEW QUESTION 184

- (Topic 2)

This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 14?



- A.
- B.
- C.

A. none of the above

Answer: D

NEW QUESTION 185

- (Topic 2)

A project whose definition does not include performance metrics:

- A. will typically be short term
- B. use statistical inference
- C. have a high risk of failure
- D. should not be approved
- E. none of the above

Answer: D

NEW QUESTION 189

- (Topic 2)

If $\alpha = 0.05$, what is the critical value?

- A. 2.365
- B. 2.306
- C. 1.860
- D. 1.895

Answer: D

Explanation:

See the F distribution critical values for $P=0.05$. The table is not available online.

NEW QUESTION 192

- (Topic 2)

A frequent cause of system sub optimization is:

- A. optimizing individual processes
- B. failing to draw a system flow chart
- C. using data with outliers
- D. failing to consider the normal distribution

Answer: A

NEW QUESTION 193

- (Topic 2)

A process shows the following number of defectives. Each sample size for this process is 85. 3 8 2 7 7 6 8 8 9 5
What control chart should be used?

- A. x-bar and R
- B. median
- C. individual and moving range
- D. p
- E. np
- F. c
- G. u
- H. none of the above

Answer: E

NEW QUESTION 198

- (Topic 2)

A robust design is one which:

- A. has high reliability
- B. has low maintenance frequency
- C. is simple to manufacture
- D. is resistant to varying environmental conditions

Answer: D

NEW QUESTION 203

- (Topic 2)

Find sd:

- A. 0.2875
- B. 0.3502
- C. 0.2714
- D. 0.2295

Answer: D

NEW QUESTION 207

- (Topic 2)

An x-bar and R chart has four part measurements per sample. The control limits on the averages chart are 2.996 and 3.256. Assume the process data form a normal distribution. What is the probability that the next plotted point falls outside the control limits?

- A. 0.00135
- B. 0.0027
- C. 0.0054
- D. none of the above

Answer: B

NEW QUESTION 209

- (Topic 2)

Data are collected in xy pairs and a scatter diagram shows the points are grouped very close to a straight line that tips down on its right hand end. A reasonable value for the coefficient of correlation is:

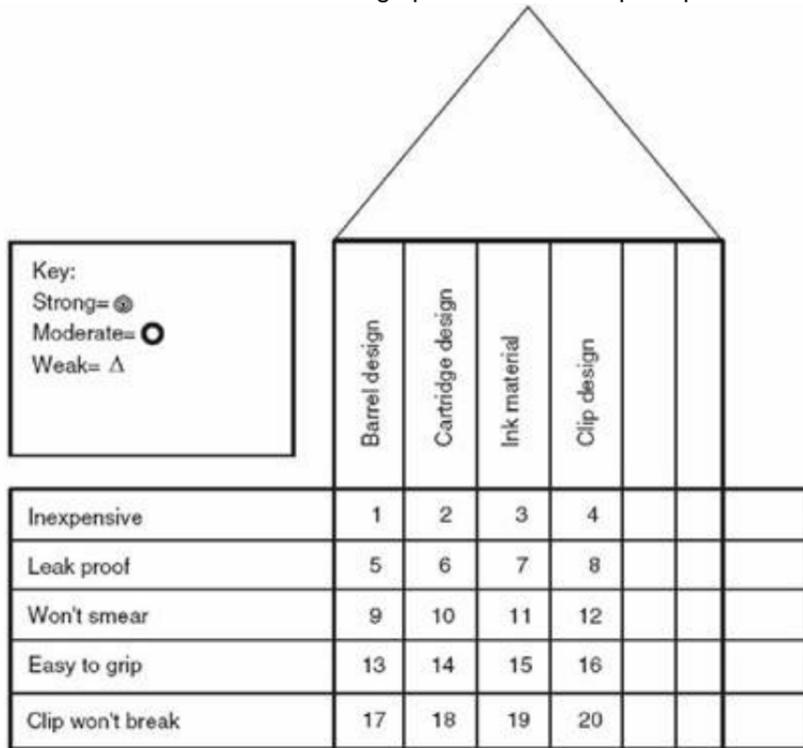
- A. .8
- B. -.9
- C. 1
- D. 1.3
- E. -1.8

Answer: C

NEW QUESTION 213

- (Topic 2)

This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 12?



- A.
- B.
- C.

A. none of the above

Answer: D

NEW QUESTION 216

- (Topic 2)

A team wants a technique for displaying the connection between various customer needs and various features on a product. They should use:

- A. written and diagrammed work instructions
- B. flow charts and process maps
- C. cause and effect diagrams
- D. Pareto chart
- E. relationship matrix

Answer: E

NEW QUESTION 220

- (Topic 2)

The following is a set of individual measurements: 3 5 4 5 6 3 4 3 2 4 5 6 5 7 6 4 5 5 8 7 6 6 7 7 4. Find the control limits for the range chart.

- A. none and 4.2

- B. none and 5.1
- C. 0.2 and 1.5
- D. none of the above

Answer: A

NEW QUESTION 224

- (Topic 2)

Approximately what percent of the data values are smaller than the mean?

- A. 25%
- B. 50%
- C. 75%
- D. it varies from 0% and 99+% inclusive

Answer: D

NEW QUESTION 228

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