

# ASQ

## Exam Questions CSSBB

Certified Six Sigma Black Belt



### NEW QUESTION 1

- (Topic 1)

Find the value of (8) 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:** O

### NEW QUESTION 2

- (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 3

- (Topic 1)

Calculate the interaction effect

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

- A. 1.5
- B. 205
- C. –5
- D. 17
- E. –17

**Answer:** C

### NEW QUESTION 4

- (Topic 1)

Samples of size  $n=36$  are randomly selected from a population with mean = 125 and variance 12. Find the variance of the distribution of sample means.

- A. .333

- B. .577
- C. 2
- D. 3.464
- E. 12

**Answer:** A

#### NEW QUESTION 5

- (Topic 1)

(Refer to the previous problem) To estimate the within treatment variance the experimenters would calculate the variances of:

- A. all 80 readings
- B. the five replications for each run
- C. the runs for which a factor is at its lowest level

**Answer:** B

#### NEW QUESTION 6

- (Topic 1)

The management team in the above problem assigns each goal a numerical value designating its importance. The “bulls eyes,” circles and triangles are replaced by the values 3, 2 and 1 respectively. Entries are made in each box by multiplying the 3, 2 or 1 by the goal value. The importance of each activity is calculated by adding the entries in its row.

	#1 (5)	#2 (8)	#3 (2)	Total
Activity #1	3 (15)			45
Activity #1		1 (8)	2 (4)	12
Activity #1	2 (10)	3 (24)		34
etc.				

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

**Answer:** F

#### NEW QUESTION 7

- (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 8

- (Topic 1)

A population is bimodal. One hundred samples of size 30 are randomly collected and the 100 sample means are calculated. The distribution of these sample means is:

- A. bimodal
- B. approximately exponential
- C. approximately Poisson
- D. approximately normal
- E. approximately uniform

**Answer:** D

#### NEW QUESTION 9

- (Topic 1)

A higher resolution number for an experimental design indicates that:

- A. results are more clear
- B. confounding between main effects and interaction effects are less likely to be significant
- C. a higher number of replications have been used
- D. all factors have been tested at all levels

E. the design is more balanced

**Answer: B**

#### NEW QUESTION 10

- (Topic 1)

A team has been asked to reduce the cycle time for a process. The team decides to collect baseline data. It will do this by:

- A. seeking ideas for improvement from all stakeholders
- B. researching cycle times for similar processes within the organization
- C. obtaining accurate cycle times for the process as it currently runs
- D. benchmarking similar processes outside the organization

**Answer: C**

#### NEW QUESTION 10

- (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 11

- (Topic 1)

A team working with a plant relocation is tasked with designing a process for moving 180 pieces of equipment. Incoming orders may need to be filled during the move at either the old site or the new one. Transportation equipment availability is uncertain. Construction schedules at the new site is very weather dependent. The team designs a chart that attempts to cover these and other contingencies with appropriate measures dealing with each. The tool best fitted for this task is:

- 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: D**

#### NEW QUESTION 15

- (Topic 1)

A quality engineer employed by a hospital is asked to improve the process of medication storage in locked cabinets near patient doors. One defect that occurs rarely is that the medication caddy is left out when the cabinet is relocked. The engineer installs a gravity activated arm that will not permit the door to close when the caddy isn't inside. This improvement is best described by which approach to problem solving?

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

**Answer: B**

#### NEW QUESTION 16

- (Topic 1)

The word “champion” in the context of Six Sigma projects refers to:

- A. the team that has had the most impact on the bottom line.
- B. the person who has coordinated teams most effectively
- C. the individual who has outpaced all others in six sigma knowledge
- D. none of the above

**Answer: D**

#### NEW QUESTION 18

- (Topic 1)

George is an employee of Black, Inc. John is George’s internal customer. Which statement is true?

- A. John is employed by Black, Inc.
- B. John is employed by another company that supplies material to Black, Inc.
- C. John is employed by a company that purchases material from black, Inc.
- D. John is employed by another company that has a fiduciary agreement with Black, Inc.
- E. John is employed by another company as an internal auditor.

**Answer: A**

#### NEW QUESTION 19

- (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 22

- (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
- 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: F**

#### NEW QUESTION 24

- (Topic 1)

If the probability that event A occurs is .51, the probability that event B occurs is .64 and events A and B are statistically independent then:

- A. A and B are mutually exclusive
- B. the probability that both A and B occur is 0.3264

- C. A and B can't both occur
- D. the probability that A occurs is 1-(probability that B occurs)
- E. A and B have different standard deviations

**Answer: B**

#### NEW QUESTION 27

- (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 29

- (Topic 1)

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

This table displays the inventory of fasteners in a storage cabinet. An item is selected at random from the fastener cabinet. Find the approximate probability it is larger than 1/2.

- A. .35
- B. .65
- C. .1106
- D. .47
- E. none of the above

**Answer: B**

#### NEW QUESTION 31

- (Topic 1)

A team wants a technique for determining and displaying priorities based on frequency of various defect types. 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: D**

#### NEW QUESTION 36

- (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 39

- (Topic 1)

When comparing two vendors' machines it is found that a sample of 1000 parts from machine A has 23 defectives and a sample of 1300 parts from machine B has 36 defectives. Do the data indicate that machine B has a higher rate of defectives?

- A. yes
- B. no
- C. all of the above

**Answer:** A

#### NEW QUESTION 41

- (Topic 1)

The Central Limit Theorem states that the distribution of sample means approximates a normal distribution if:

- A. the population is normally distributed
- B. the sample is normally distributed
- C. the sample is randomly selected
- D. the sample size is sufficiently large
- E. the means are carefully calculated

**Answer:** D

#### NEW QUESTION 43

- (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 47

- (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 49

- (Topic 1)

Find the value of (7) 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:** E



#### 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 57

- (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 58

- (Topic 1)

A medicine with efficacy of .52 is given to five patients. Find the approximate probability that at least one of the patients is cured. (Hint: Use the binomial formula.)

- A. .975
- B. .480
- C. .531
- D. .416
- E. none of the above

**Answer:** A

#### NEW QUESTION 59

- (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 62

- (Topic 1)

$\sigma = 0.05$  A sample of size 50 from machine A has a mean of 18.2 and standard deviation 3.1. A sample of size 40 from machine B has mean 17.6 and standard deviation 2.8. Do these data indicate that the population for machine A has a larger mean? Assume the populations are normal.

- A. yes
- B. no

**Answer:** B

#### NEW QUESTION 64

- (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 65

- (Topic 1)

Customer segmentation refers to:

- A. dividing a particular customer into parts that are more easily understood
- B. grouping customers by one or more criteria
- C. maintaining secure customer listings to minimize communication among them
- D. eliminating or "cutting off" customers with poor credit history

**Answer:**



B

NEW QUESTION 66

- (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 69

- (Topic 1)  
Find Cp and Cpk.

- A. 1.21 and .85
- B. .85 and 1.21
- C. .35 and .63
- D. .63 and .42
- E. none of the above

Answer: D

NEW QUESTION 70

- (Topic 1)  
 $P(A) = .42$ ,  $P(B) = .58$   $P(A \& B) = .10$ . Are A and B mutually exclusive (or disjoint)?

- A. yes
- B. no

Answer: B

NEW QUESTION 72

- (Topic 1)  
The term “expected value” is closest to the term:

- A. median
- B. probabilistic model
- C. mean
- D. Markov value
- E. regressive value

Answer: C

NEW QUESTION 76

- (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 81**

- (Topic 1)

A stable, normally distributed process with specification  $3.50 \pm 0.03$  has  $\bar{x} = 3.51$  and  $s = 0.016$ . What percent of the production violates specification?

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

**Answer:** D

**NEW QUESTION 86**

- (Topic 1)

A project that lacks a clear definition of its scope and boundaries runs the risk of:

- A. straying from the intended path
- B. trying to solve unrelated problems
- C. having difficulty in collecting baseline data
- D. suffering morale problems
- E. all the above
- F. none of the above

**Answer:** E

**NEW QUESTION 91**

- (Topic 2)

Use the reliability formula from the previous problem to find the reliability at MTBF.

- A. 0.94
- B. 0.78
- C. 0.37
- D. 0.26
- E. none of the above

**Answer:** C

**NEW QUESTION 93**

- (Topic 2)

In a certain sampling situation,  $\alpha = 0$ ,  $\beta = 0.08$ . The power of the sampling plan in this case is:

- A. 0.08
- B. 1.00
- C. 0.92

**Answer:** D

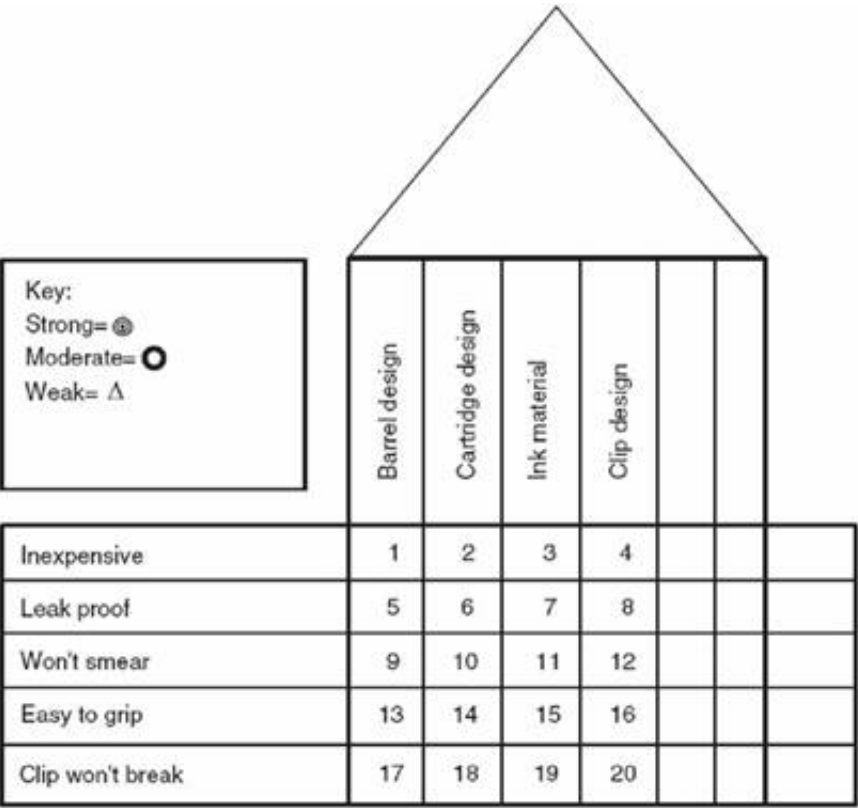
**Explanation:**

The formula for power of sampling plan is  $(1 - \beta) = 1 - 0.08 = 0.92$

**NEW QUESTION 94**

- (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 96

- (Topic 2)  
A correct statement about the relationship between the terms parameter and statistic is:

- A. a population statistic is more accurate than a parameter
- B. a sample parameter is used to estimate a statistic
- C. a sample statistic is used to estimate a population parameter
- D. standard deviation calculations requires both statistics and parameters

Answer: C

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 105

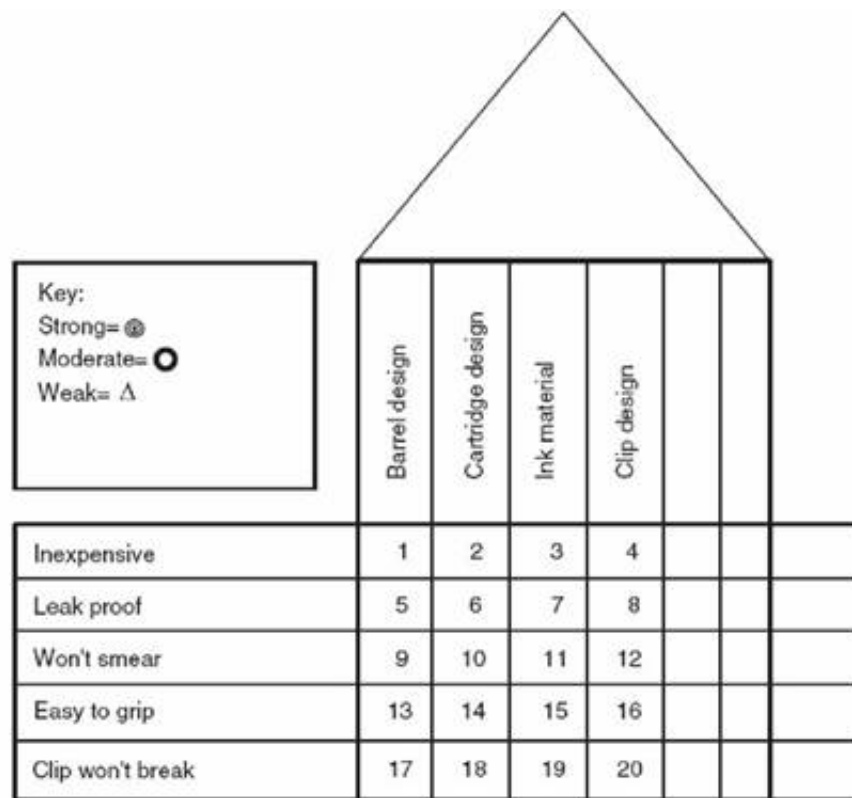
- (Topic 2)  
Nominal Group Technique is used to:

- 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 110

- (Topic 2)  
This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 2?



- A.
- B.
- C.

A. none of the above

**Answer:** B

#### NEW QUESTION 111

- (Topic 2)

When Tricia empties a box of capacitors she places it at a designated spot on her work table. Sam notices the empty box and brings a full box of capacitors from the stock room. This is an example of:

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

**Answer:** B

#### NEW QUESTION 116

- (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 117

- (Topic 2)

If item A is more likely to be detected than item B which will have the highest Detection value?

- A. item A
- B. item B
- C. cannot be determined

**Answer:** B

#### NEW QUESTION 121

- (Topic 2)

A team wants a technique for obtaining a large number of possible reasons for excess variation in a dimension. 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:** C

#### NEW QUESTION 123

- (Topic 2)

The null hypothesis should be:

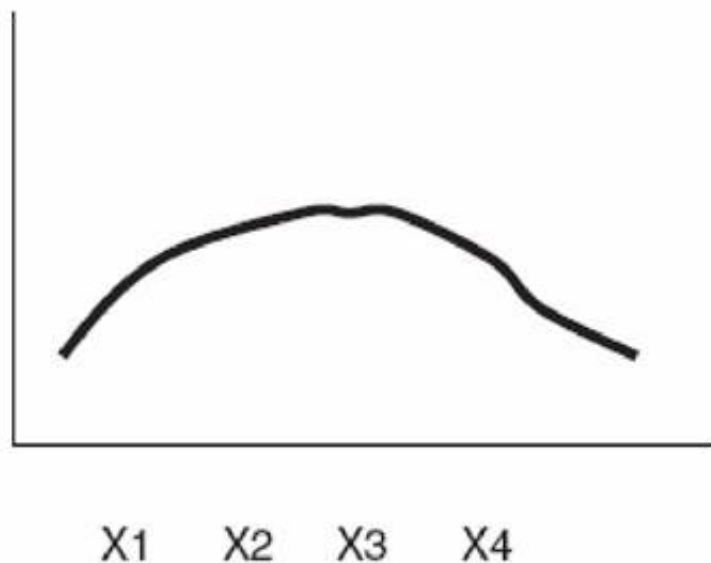
- A. rejected
- B. not rejected
- C. accepted

**Answer:** A

#### NEW QUESTION 127

- (Topic 2)

Which value of x will minimize transmitted noise?



- A. X1
- B. X2
- C. X3
- D. X4

**Answer:** C

#### 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 131

- (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 136

- (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 141

- (Topic 2)

A normal probability plot is used to:

- A. determine whether the distribution is normal
- B. plot z values
- C. determine process capability
- D. find percent out of specification

**Answer:** A

**NEW QUESTION 144**

- (Topic 2)  
 Quality Function Deployment is a tool to aid in:

- A. analyzing non-paired data
- B. determining if quality procedures being followed on the shop floor
- C. ascertaining which processes are functioning correctly
- D. linking customer requirements to product features
- E. all of the above
- F. none of the above

**Answer:** D

**NEW QUESTION 149**

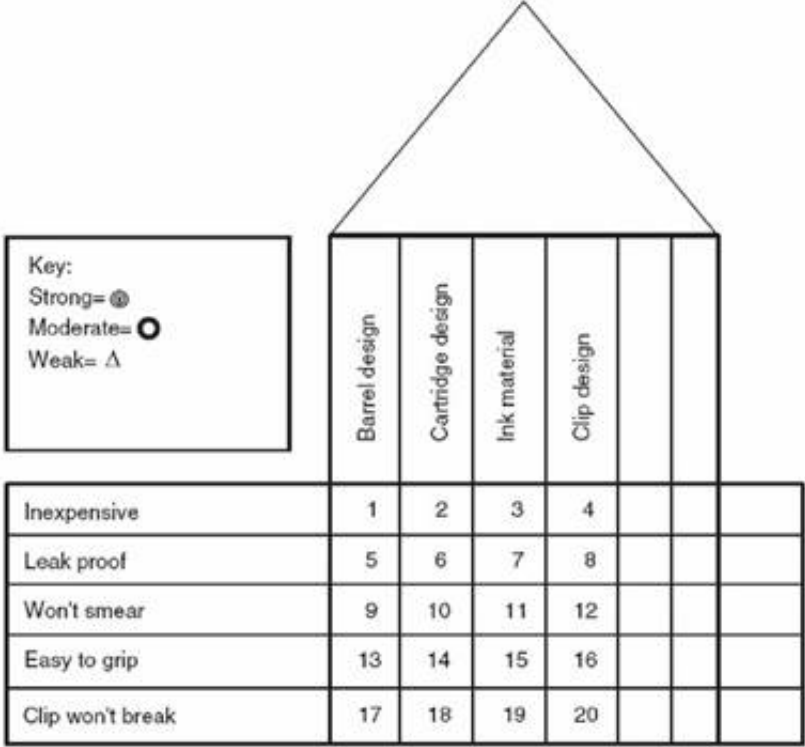
- (Topic 2)  
 Is this a left-tail, right-tail or two-tail test?

- A. no
- B. left-tail
- C. right-tail
- D. two-tail

**Answer:** C

**NEW QUESTION 152**

- (Topic 2)  
 This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 6?

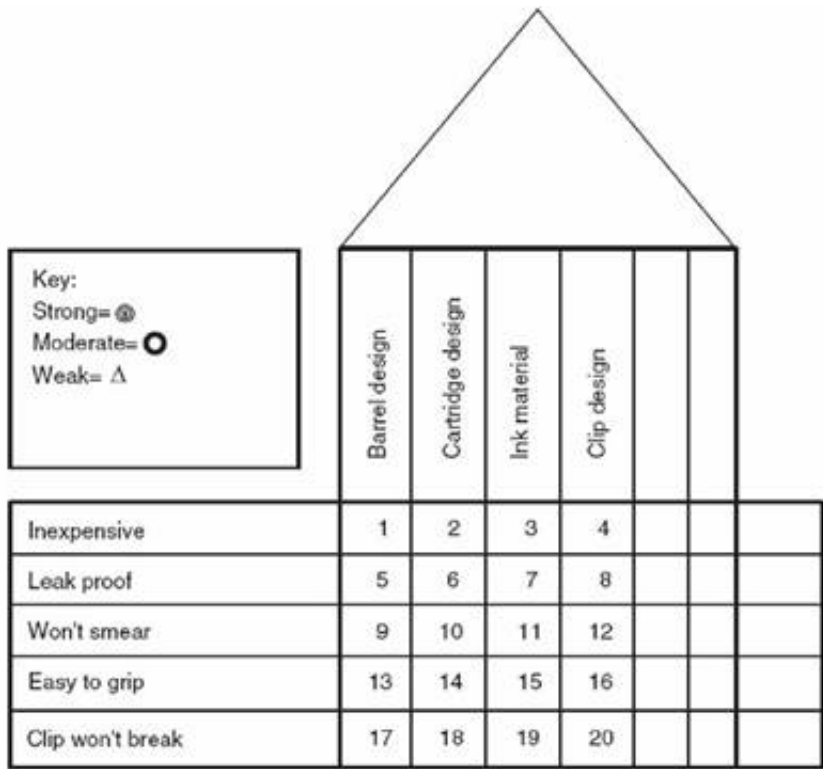


- A.
- B.
- C.
- A. none of the above

**Answer:** B

**NEW QUESTION 155**

- (Topic 2)  
 This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 5?



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

**Answer:** A

**NEW QUESTION 159**

- (Topic 2)  
 A Six Sigma project designed to solve a particular problem needs a definition/scope statement to help avoid:

- A. going beyond the problem into other problems
- B. failing to cover the entire problem
- C. misunderstanding and disagreement between team members regarding problem boundaries
- D. all of the above
- E. none of the above

**Answer:** D

**NEW QUESTION 161**

- (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 164**

- (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:

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

$$= 1.864 \times 0.18 = 0.33$$

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

$$= 0.1111 \times 0.18 = 0.02$$



n	D <sub>4</sub>	n	D <sub>4</sub>	n	D <sub>4</sub>
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 168

- (Topic 2)

Calculate the interaction effect:

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

**Answer: F**

#### NEW QUESTION 173

- (Topic 2)

A team wants to make a schedule for a project showing which tasks must be done sequentially and which may be done simultaneously. Which tool is most appropriate?

- A. matrix diagram
- B. cause and effect diagram
- C. process decision program chart
- D. affinity diagram
- E. activity network diagram
- F. tree diagram
- G. prioritization matrix
- H. matrix diagram
- I. interrelationship digraph

**Answer: E**

#### NEW QUESTION 176

- (Topic 2)

SMED is an acronym for activity that:

- A. involves housekeeping in the work area
- B. makes mistakes of a certain type impossible
- C. emphasizes the pull of the customer
- D. reduces set up time
- E. none of the above
- F. all of the above

**Answer: D**

#### NEW QUESTION 178

- (Topic 2)

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

- A. true
- B. false

**Answer: B**

#### NEW QUESTION 180

- (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 182

- (Topic 2)

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

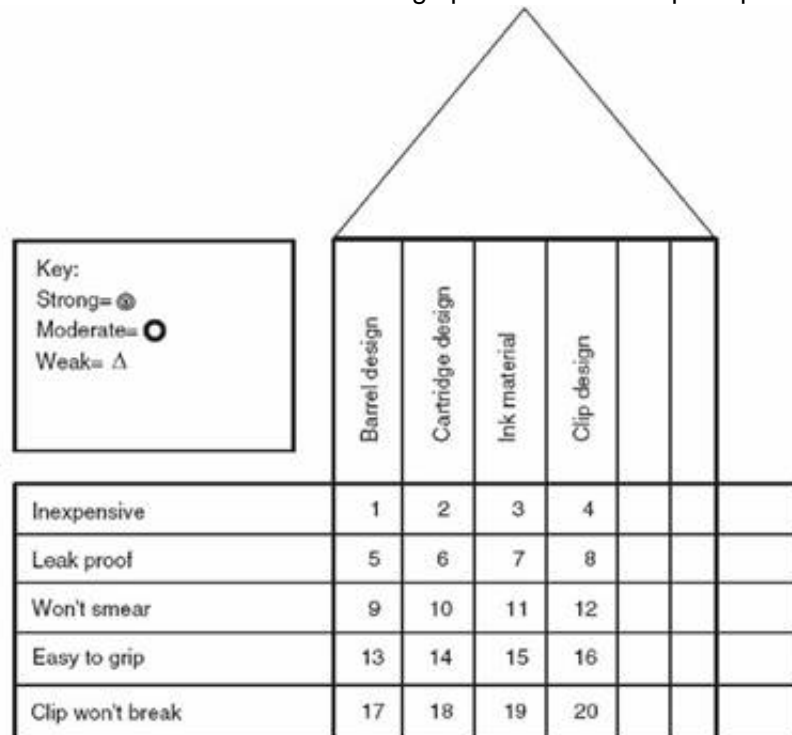
- A. multiple replications
- B. multiple levels
- C. multiple factors

**Answer:** A

#### NEW QUESTION 185

- (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 190

- (Topic 2)

As opposed to earlier emphases lean manufacturing tends to stress:

- A. making value added activities more efficient
- B. eliminating, simplifying or reducing non-value added activities

**Answer:** B

#### NEW QUESTION 192

- (Topic 2)

At a particular time, three components are in series and each has a reliability of 0.98. What is the reliability of the system?

- A. 0.98
- B. 0.94
- C. 0.37
- D. 0.26
- E. none of the above

**Answer:** B

#### NEW QUESTION 193

- (Topic 2)

The mean, median and mode of a distribution have the same value. What can be said about the distribution:

- A. it is exponential
- B. it is normal
- C. it is uniform
- D. none of the above

**Answer:** D

#### NEW QUESTION 198

- (Topic 2)

What is the value of the test statistic?

- A. 0.898
- B. 1.251
- C. 0.429
- D. 3.57
- E. none of the above

Answer: E

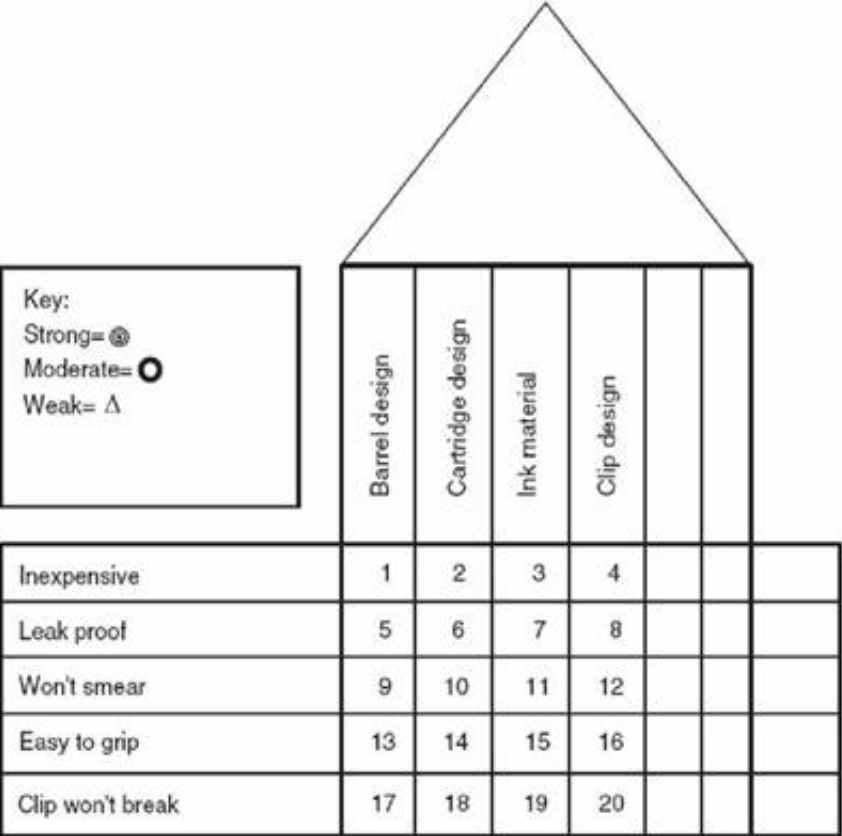
Explanation:

As per reference to the given table in the URL, the 0.05 at 6 is 2.447. Hence none of the answers are correct.  
Reference: <http://www.medcalc.org/manual/t-distribution.php>

NEW QUESTION 203

- (Topic 2)

This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 3?



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

Answer: B

NEW QUESTION 205

- (Topic 2)

If the value of the test statistic had been 7.03, what action should have been taken regarding the null hypothesis?

- A. rejected
- B. accepted
- C. not rejected
- D. none of the above

Answer: A

NEW QUESTION 206

- (Topic 2)

In an experimental design context, replication refers to:

- A. duplicating experimental results at another location
- B. repeating a test with the same factor levels
- C. obtaining the same or similar results from different factors
- D. repeating an experiment but using at least one different factor level

Answer: C

NEW QUESTION 208

- (Topic 2)

If item A is more likely to be detected than item B which will have the highest Severity value?

- A. item A
- B. item B
- C. cannot be determined

Answer: C

NEW QUESTION 213

- (Topic 2)

Find the value of b or b0:

- A. 3.33
- B. −3.33
- C. 4.08
- D. −4.08
- E. 1.24
- F. −1.24

Answer: B

NEW QUESTION 215

- (Topic 2)

A helpful time to use a Quality Function Deployment matrix is:

- A. while planning for a new or redesigned process
- B. while planning for new or redesigned parts
- C. while planning for a new or redesigned product
- D. all of the above
- E. none of the above

Answer: D

NEW QUESTION 216

- (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?

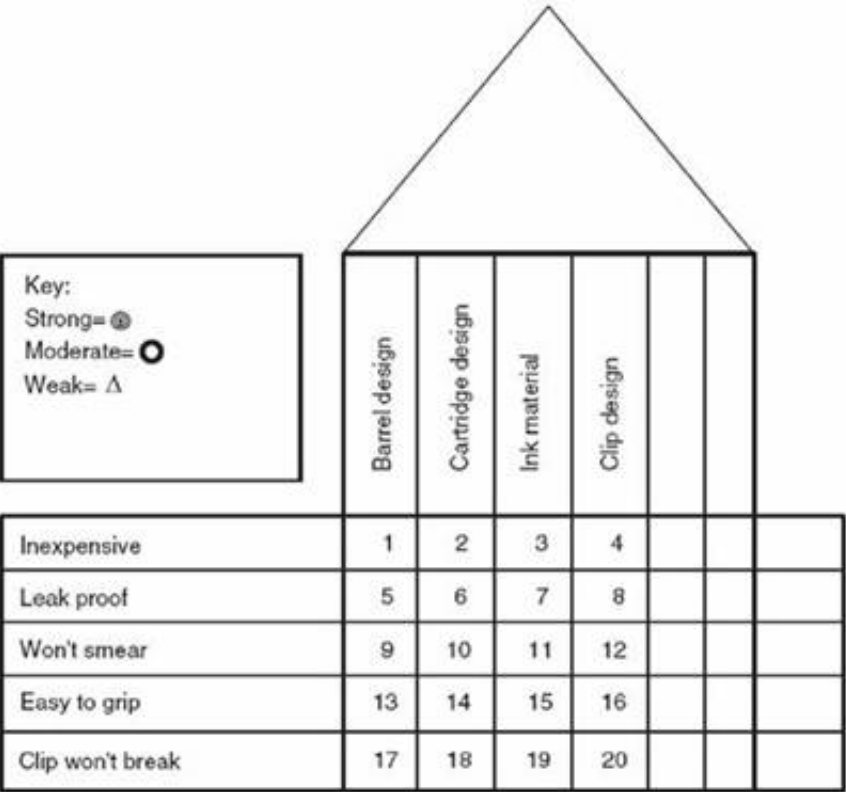
- A. x-bar and R
- B. median
- C. individual and moving range
- D. p
- E. np
- F. c
- G. u
- H. none of the above

Answer: E

NEW QUESTION 220

- (Topic 2)

This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 16?



- A.
- B.
- C.

A. none of the above

Answer: C

NEW QUESTION 222

- (Topic 2)

An x-bar control chart has been established with control limits of 3.245 and 3.257, n = 5. An engineer collects the following sample and plots the average on the control chart: 3.257, 3,256, 3. 258, 3.259

- A. the process is out of control
- B. the process is not out of control
- C. the engineer misused the control chart
- D. the control limits are incorrect

**Answer:** C

**NEW QUESTION 227**

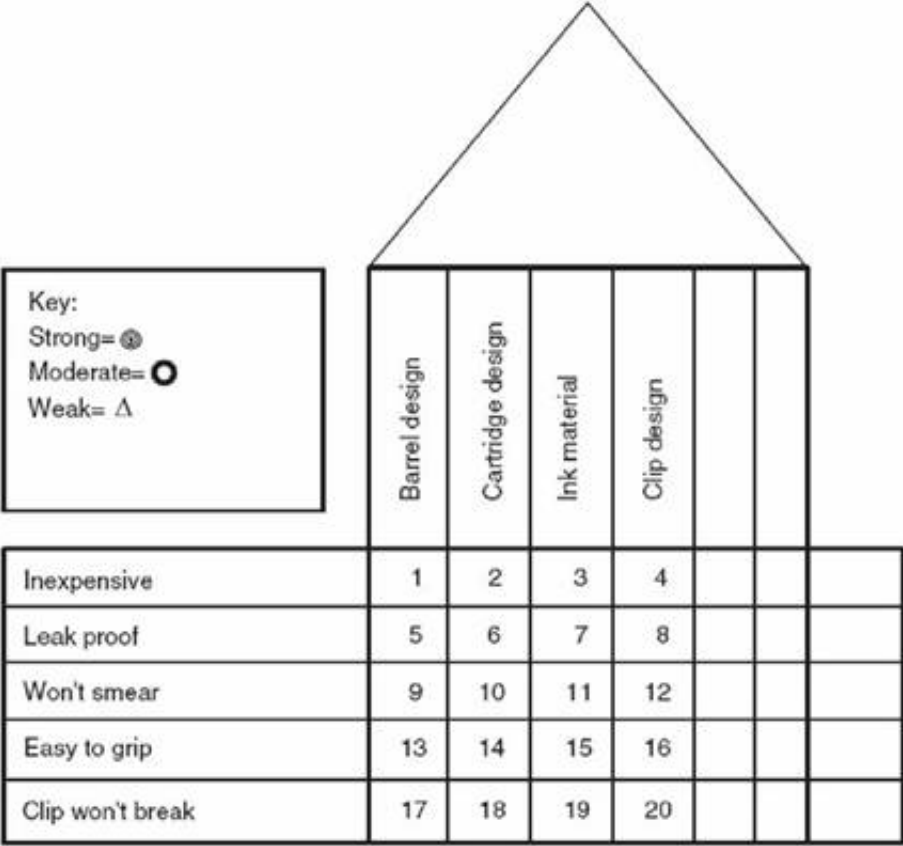
- (Topic 2)  
 If item A is more likely to be detected than item B which will have the highest Occurrence value?

- A. item A
- B. item B
- C. cannot be determined

**Answer:** C

**NEW QUESTION 231**

- (Topic 2)  
 This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 15?



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

**Answer:** D

**NEW QUESTION 234**

- (Topic 2)  
 A principle advantage of fractional factorial experimental designs is:

- A. reduced cost
- B. improved accuracy
- C. increased confounding
- D. higher confidence level
- E. reduced probability of type II errors

**Answer:** A

**NEW QUESTION 236**

- (Topic 2)  
 The average number of defects is 21.6. Find the upper control limit for the c-chart.

- A. 26.4
- B. 24.6
- C. 18.8
- D. 26.2
- E. none of the above

**Answer:** E

**NEW QUESTION 240**

- (Topic 2)

A principle disadvantage of fractional factorial experimental designs is:

- A. reduced cost
- B. improved accuracy
- C. confounding of effects
- D. higher confidence level
- E. reduced probability of type II errors

**Answer: C**

**NEW QUESTION 243**

- (Topic 2)

A newspaper article describes a high positive correlation between obesity and orange juice consumption among six-year-olds. Parents who restrict the use of orange juice for their children have:

- A. made a type I error
- B. made a type II error
- C. misunderstood margin of error
- D. confused correlation with causation

**Answer: D**

**NEW QUESTION 247**

- (Topic 2)

An approach that would remove the contradiction identified in x.28 would be:

- A. find an inexpensive way to apply multiple coats
- B. find an inexpensive material that will provide an excellent finish with one coat.
- C. all of the above
- D. none of the above

**Answer: C**

**NEW QUESTION 248**

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