Business Statistics A First Course 7th edition Levine Test Bank

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Northern Arizona University

BUSINESS STATISTICS: A FIRST COURSE

SEVENTH EDITION

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Two Bridges Instructional Technology

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Preface

The ***Test Item File*** contains a variety of multiple-choice, true-false, problem and fill-in questions based on the definitions, concepts, and ideas developed in each chapter. In addition, numerical problems and Microsoft® Excel computer output problems are also given with solutions provided in multiple-choice, true-false, problem and fill-in format.

The ***Test Item File*** is intended to assist instructors in preparing examinations. The questions included herein highlight the key topics covered throughout each chapter. The keywords after each question, and the Keywords to Subsections Cross-reference and Subsections to Keywords Cross-reference are intended to help instructors easily locate questions on a specific topic or concept. Explanation is provided when the rationale of the correct answer to a difficult question is rather obscure. The format for the ***Test Item File*** will facilitate grading and should be helpful to instructors who teach very large sections.

The intended difficulty level (easy, moderate, difficult) of each question in the ***Test Item File*** is stated in order to facilitate test item selection by instructors wishing to create specific types of exams. However, some words of caution must be given. The classification of question difficulty level is very subjective and each question should be evaluated based on the emphasis the particular topic was given in class and how much emphasis is to be given to numerical results obtained by calculator rather than computerized results obtained from Microsoft® Excel. As an operational definition that is used here, items are classified as easy if they pertain directly to definitions and fundamental concepts. Test items are classified as moderate if they require some numerical calculations with more than a minimal number of steps or if they require a broader understanding of the topic. Test items that are classified as difficult are done so because of the level of rigor of the subject, the length of the narrative, the amount of effort required for solution, or for responses that require more thought and analysis.

Instructors are also advised that all answers in the ***Test Item File*** are computed using Microsoft® Excel or PHStat2 with no rounding involved in the intermediate steps. If students use rounding with formulae and a calculator, their answers might be different from those provided in the answer keys. Likewise, if students use the statistical tables at the end of the book instead of Microsoft® Excel or PHStat2, their answers might also differ from those provided in the answer keys due to rounding. Whenever possible, we provide answers obtained using both Microsoft® Excel/PHStat2 and the statistical tables if they are very different.

This ***Test Item File*** and others that are similar suffer from one major weakness. They do not permit an evaluation of the students' written communication skill. The authors highly recommend that, if possible, instructors who use this ***Test Item File*** supplement it with at least one short essay type question so that an assessment can be made of the students' understanding of concepts as well as how they can make connections across various topics.

The following tabular display is a breakdown of the number of questions in each chapter by type.

Business Statistics A First Course 7th edition Levine Test Bank

Chapter	Multiple Choice	True/False	Fill in	Problem	Total
GS	8	19	6	0	33
1	82	49	39	0	170
2	59	51	84	24	218
3	41	34	38	78	191
4	60	20	38	53	171
5	21	12	61	49	143
6	19	12	32	83	146
7	30	37	41	31	139
8	30	111	37	30	208
9	79	89	39	22	229
10	131	58	60	65	314
11	49	41	24	18	132
12	80	46	78	46	250
13	107	84	48	36	275
14	44	59	38	18	159
Total	840	722	663	553	2778

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Keywords to Subsections Cross-reference

Keyword	Chapter	Section
a priori probability	4	1
A2 factor	14	5
addition rule	4	1
adjusted coefficient of determination	13	2
adjusted r-square	13	2
analysis of means	10	5
analysis of proportions	11	2
arithmetic mean	3	1
assumption	9	1
assumption	10	1
assumption	10	2
assumption	10	4
assumption	10	5
assumption	11	2
assumption	11	3
assumption	12	4
assumption	12	5
assumption	13	3
autocorrelation	12	4
autocorrelation	12	5
autocorrelation	12	6
bar chart	2	3
Bayes' theorem	4	3
beta-risk	9	1
big data	GS	3
binomial distribution	5	2
boxplot	3	3
business analytics	GS	3
c chart	14	4
capability index	14	6
categorical variable	1	1
center line	14	2
center line	14	4
center line	14	5
central limit theorem	7	2
central limit theorem	8	1
central limit theorem	8	2
central limit theorem	8	3
challenges in visualizing data	2	7
Chebyshev rule	3	4
chi-square test	11	1
chi-square test	11	2
chi-square test	11	3
Chi-square test for difference in two proportions	11	1
Chi-square test of independence	11	3
choice of chart	2	3
choice of chart	2	4

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Keyword	Chapter	Section
choice of chart	2	5
class boundaries	2	2
class interval	2	2
class midpoint	2	2
cluster sample	1	3
coefficient of correlation	12	7
coefficient of determination	12	3
coefficient of multiple determination	13	2
coefficient of variation	3	2
collective exhaustive	4	1
column percentages	2	1
combination	4	4
common causes of variation	14	1
common causes of variation	14	2
common causes of variation	14	3
common causes of variation	14	6
complement	4	1
completely randomized design	10	5
conclusion	9	1
conclusion	9	2
conclusion	9	3
conclusion	9	4
conclusion	10	1
conclusion	10	2
conclusion	10	3
conclusion	10	4
conclusion	10	5
conclusion	11	1
conclusion	11	2
conclusion	11	3
conclusion	12	7
conclusion	13	2
conclusion	13	4
conclusion	13	5
conditional probability	4	2
confidence coefficient	9	1
confidence interval	8	1
confidence interval	8	2
confidence interval	8	3
confidence interval	9	1
confidence interval	9	2
confidence interval	9	4
confidence interval	10	1
confidence interval	10	2
confidence interval	10	3
confidence interval	12	7
confidence interval	12	8
confidence interval	13	4
contingency table	2	1
contingency table	2	6

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Keyword	Chapter	Section
contingency table	4	1
contingency table	11	1
contingency table	11	2
contingency table	11	3
continuous variable	1	1
control chart	14	1
control chart	14	2
control chart	14	4
control chart	14	5
control limit	14	1
control limit	14	2
control limit	14	4
control limit	14	5
convenience sample	1	3
counting rule	4	4
covariance	3	5
coverage error	1	4
Cp index	14	6
Cpk index	14	6
CPL index	14	6
CPU index	14	6
critical value	8	1
critical value	8	2
critical value	8	3
critical value	9	1
critical value	9	2
critical value	9	3
critical value	9	4
critical value	10	1
critical value	10	2
critical value	10	3
critical value	10	4
critical value	10	5
critical value	11	1
critical value	11	2
critical value	11	3
critical value	12	7
critical value	13	2
critical value	13	4
critical value	13	5
cumulative distribution	2	2
cumulative percentage distribution	2	2
cumulative percentage distribution	2	4
cumulative percentage polygon (ogive)	2	4
cumulative relative frequency	2	4
d2 factor	14	5
d3 factor	14	5
D3 factor	14	5
D4 factor	14	5
data	GS	2

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Keyword	Chapter	Section
DCOVA framework	GS	1
decision	9	1
decision	9	2
decision	9	3
decision	9	4
decision	10	1
decision	10	2
decision	10	3
decision	10	4
decision	10	5
decision	11	1
decision	11	2
decision	11	3
decision	12	7
decision	13	2
decision	13	4
decision	13	5
degrees of freedom	10	1
degrees of freedom	10	2
degrees of freedom	10	4
degrees of freedom	10	5
degrees of freedom	11	1
degrees of freedom	11	2
degrees of freedom	11	3
degrees of freedom	12	7
degrees of freedom	13	2
degrees of freedom	13	4
Deming's 14 points	14	7
descriptive statistics	GS	2
difference among more than two means	10	5
difference between two means	10	1
difference between two means	10	2
difference between two proportions	10	3
difference between two variances	10	4
discrete variable	1	1
dummy variable	13	5
Durbin-Watson statistic	12	6
empirical probability	4	1
empirical rule	3	4
estimation	12	7
estimation	12	8
estimation	13	1
estimation of mean values	12	8
estimation of mean values	13	1
ethical issues	1	4
ethical issues	8	5
ethical issues	9	5
F distribution	10	4
F test	10	4
F test for factor	10	5

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Keyword	Chapter	Section
F test on slope	12	7
F test on the entire regression	13	2
five-number summary	3	3
form of hypothesis	9	1
form of hypothesis	9	2
form of hypothesis	9	3
form of hypothesis	9	4
form of hypothesis	10	1
form of hypothesis	10	2
form of hypothesis	10	3
form of hypothesis	10	4
form of hypothesis	10	5
form of hypothesis	11	1
form of hypothesis	11	2
form of hypothesis	11	3
form of hypothesis	12	7
form of hypothesis	13	2
form of hypothesis	13	4
form of hypothesis	13	5
frame	1	3
frequency distribution	2	2
histogram	2	4
homoscedasticity	12	4
homoscedasticity	12	5
homoscedasticity	13	3
independence	4	2
inferential statistics	GS	2
interaction	13	5
intercept	12	2
intercept	13	1
interpretation	2	1
interpretation	2	2
interpretation	2	3
interpretation	2	4
interpretation	3	5
interpretation	8	1
interpretation	8	2
interpretation	8	3
interpretation	10	5
interpretation	12	2
interpretation	12	3
interpretation	12	4
interpretation	12	7
interpretation	13	1
interpretation	13	2
interpretation	13	4
interpretation	13	5
interquartile range	3	3
joint probability	4	1
judgment sample	1	3

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Keyword	Chapter	Section
lean six sigma	14	8
least squares	12	2
level of significance	9	1
level of significance	9	2
level of significance	9	3
level of significance	9	4
marginal probability	4	1
marginal probability	4	2
mean	3	1
mean	6	2
mean	7	2
mean	8	1
mean	8	2
mean	9	1
mean	9	2
mean	9	3
mean (expected value)	5	1
mean (expected value)	5	2
mean (expected value)	5	3
mean difference	10	2
mean squares	10	5
mean squares	13	2
measure of central tendency	3	1
measure of variation	3	2
measurement error	1	4
median	3	1
mode	3	1
multidimensional contingency table	2	6
multiplication rule	4	2
mutually exclusive	4	1
nonprobability sample	1	3
nonresponse error	1	4
normal distribution	3	4
normal distribution	6	2
normal distribution	6	3
normal probability plot	6	3
normality	13	3
number of classes	2	2
one-tailed test	9	3
one-way analysis of variance	10	5
p chart	14	2
parameter	1	2
parameter	8	1
parameter	8	2
parameter	8	3
parameter	9	1
parameter	9	2
parameter	9	3
parameter	9	4
Pareto chart	2	3

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Keyword	Chapter	Section
percentage distribution	2	2
percentage polygon	2	4
permutation	4	4
pie chart	2	3
point estimate	8	1
point estimate	10	1
point estimate	10	3
Poisson distribution	5	3
polygon	2	4
pooled variance	10	1
population	1	2
population mean	3	4
population standard deviation	3	4
population variance	3	4
power	9	1
prediction interval	12	8
prediction of individual values	12	8
prediction of individual values	13	2
probability	6	2
probability	7	2
probability	7	3
probability distribution	5	1
probability distribution	5	2
probability distribution	5	3
probability sample	1	3
probability sample	1	4
process capability	14	6
properties	5	2
properties	5	3
properties	6	2
properties	7	1
properties	8	1
properties	8	2
properties	8	3
properties	8	4
properties	10	4
properties	10	5
properties	11	1
properties	11	2
properties	11	3
properties	12	2
properties	12	3
properties	12	4
properties	12	5
properties	12	6
properties	12	7
properties	12	8
properties	13	2
properties	13	3
properties	13	5

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Keyword	Chapter	Section
proportion	7	3
proportion	8	3
proportion	9	4
p-value	9	1
p-value	9	2
p-value	9	3
p-value	9	4
p-value	10	1
p-value	10	2
p-value	10	3
p-value	10	4
p-value	10	5
p-value	11	1
p-value	11	2
p-value	11	3
p-value	12	7
p-value	13	2
p-value	13	4
quartile	3	3
R chart	14	5
random number	1	3
range	3	2
reasons for learning statistics	GS	1
reasons for sampling	1	3
red bead experiment	14	3
rejection region	9	1
rejection region	9	2
rejection region	9	3
rejection region	9	4
rejection region	10	1
rejection region	10	2
rejection region	10	3
rejection region	10	4
rejection region	10	5
relative frequency distribution	2	2
residual	12	5
residual	13	3
residual plot	12	5
residual plot	13	3
resistant to outliers	3	1
resistant to outliers	3	2
row percentages	2	1
sample	1	2
sample	1	3
sample size	9	1
sample size	10	1
sample size	10	2
sample size	10	3
sample size	10	4
sample size determination	8	4

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Keyword	Chapter	Section
sample space	4	1
sampling distribution	10	2
sampling error	1	4
sampling error	8	1
sampling error	8	4
sampling method	1	3
sampling with replacement	1	3
sampling with replacement	4	2
sampling without replacement	1	3
sampling without replacement	4	2
scatter chart	2	5
scatter chart	12	1
scatter chart	12	2
scatter chart	12	6
scatter chart	12	7
scatter chart	12	9
selection bias	1	3
selection bias	1	4
shape	3	3
Shewhart Deming cycle	14	7
side-by-side chart	2	3
simple random sample	1	3
six sigma management	14	8
slope	12	2
slope	12	7
slope	13	1
slope	13	4
source of data	1	2
special causes of variation	14	1
special causes of variation	14	2
special causes of variation	14	3
special causes of variation	14	4
special causes of variation	14	5
special causes of variation	14	6
special causes of variation	14	7
standard deviation	3	2
standard deviation	3	4
standard error	7	2
standard error	7	3
standard error	10	1
standard error	10	2
standard error	10	3
standard error	12	7
standard error	14	2
standard error of estimate	12	3
standard error of estimate	13	
standardized normal distribution	6	2
standardized normal distribution	8	1
standardized normal distribution	8	3
standardized normal distribution	8	4

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Keyword	Chapter	Section
statistic	1	2
statistical control	14	1
statistical control	14	2
statistical control	14	4
statistical control	14	5
statistical independence	4	2
statistical package	GS	1
statistics	7	1
stem-and-leaf display	2	4
stratified sample	1	3
subjective probability	4	1
sum of squares	10	5
sum of squares	12	3
sum of squares	13	2
survey worthiness	1	4
systematic sample	1	3
t distribution	8	2
t test	9	2
t test	9	3
t test	10	1
t test	10	2
t test for correlation coefficient	12	7
t test on slope	12	7
t test on slope	13	4
test statistic	9	1
test statistic	9	2
test statistic	9	3
test statistic	9	4
test statistic	10	1
test statistic	10	2
test statistic	10	3
test statistic	10	4
test statistic	10	5
test statistic	11	1
test statistic	11	2
test statistic	11	3
test statistic	12	6
test statistic	12	7
test statistic	13	2
test statistic	13	4
test statistic	13	5
testing	8	3
time-series plot	2	5
total percentages	2	1
trade-off	8	4
Tukey-Kramer procedure	10	5
two-tail test	9	1
two-tail test	9	2
two-tail test	9	4
type I error	9	1

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Keyword	Chapter	Section
type I error	9	2
type I error	9	3
type I error	9	4
type II error	9	1
types of data	1	1
unbiased	7	2
unbiased	10	1
value	6	2
value	7	2
value	7	3
variable	GS	2
variance	3	2
variance	3	4
variance	6	2
variation	3	2
width	8	4
XBar chart	14	5
Z scores	3	2
Z test	9	1
Z test	9	4
Z test	10	3

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Subsections to Keywords Cross-reference

Chapter	Section	Keyword
GS	1	DCOVA framework
GS	1	reasons for learning statistics
GS	1	statistical package
GS	2	data
GS	2	descriptive statistics
GS	2	inferential statistics
GS	2	variable
GS	3	big data
GS	3	business analytics
1	1	categorical variable
1	1	continuous variable
1	1	discrete variable
1	1	types of data
1	2	parameter
1	2	population
1	2	sample
1	2	source of data
1	2	statistic
1	3	cluster sample
1	3	convenience sample
1	3	frame
1	3	judgment sample
1	3	nonprobability sample
1	3	probability sample
1	3	random number
1	3	reasons for sampling
1	3	sample
1	3	sampling method
1	3	sampling with replacement
1	3	sampling without replacement
1	3	selection bias
1	3	simple random sample
1	3	stratified sample
1	3	systematic sample
1	4	coverage error
1	4	ethical issues
1	4	measurement error
1	4	nonresponse error
1	4	probability sample
1	4	sampling error
1	4	selection bias
1	4	survey worthiness
2	1	column percentages
2	1	contingency table
2	1	interpretation
2	1	row percentages

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Chapter	Section	Keyword
2	1	total percentages
2	2	class boundaries
2	2	class interval
2	2	class midpoint
2	2	cumulative distribution
2	2	cumulative percentage distribution
2	2	frequency distribution
2	2	interpretation
2	2	number of classes
2	2	percentage distribution
2	2	relative frequency distribution
2	3	bar chart
2	3	choice of chart
2	3	interpretation
2	3	Pareto chart
2	3	pie chart
2	3	side-by-side chart
2	4	choice of chart
2	4	cumulative percentage distribution
2	4	cumulative percentage polygon (ogive)
2	4	cumulative relative frequency
2	4	histogram
2	4	interpretation
2	4	percentage polygon
2	4	polygon
2	4	stem-and-leaf display
2	5	choice of chart
2	5	scatter chart
2	5	time-series plot
2	6	contingency table
2	6	multidimensional contingency table
2	7	challenges in visualizing data
3	1	arithmetic mean
3	1	mean
3	1	measure of central tendency
3	1	median
3	1	mode
3	1	resistant to outliers
3	2	coefficient of variation
3	2	measure of variation
3	2	range
3	2	resistant to outliers
3	2	standard deviation
3	2	variance
3	2	variation
3	2	Z scores
3	3	boxplot
3	3	five-number summary
3	3	interquartile range

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Chapter	Section	Keyword
3	3	quartile
3	3	shape
3	4	Chebyshev rule
3	4	empirical rule
3	4	normal distribution
3	4	population mean
3	4	population standard deviation
3	4	population variance
3	4	standard deviation
3	4	variance
3	5	covariance
3	5	interpretation
4	1	a priori probability
4	1	addition rule
4	1	collective exhaustive
4	1	complement
4	1	contingency table
4	1	empirical probability
4	1	joint probability
4	1	marginal probability
4	1	mutually exclusive
4	1	sample space
4	1	subjective probability
4	2	conditional probability
4	2	independence
4	2	marginal probability
4	2	multiplication rule
4	2	sampling with replacement
4	2	sampling without replacement
4	2	statistical independence
4	3	Bayes' theorem
4	4	combination
4	4	counting rule
4	4	permutation
5	1	mean (expected value)
5	1	probability distribution
5	2	binomial distribution
5	2	mean (expected value)
5	2	probability distribution
5	2	properties
5	3	mean (expected value)
5	3	Poisson distribution
5	3	probability distribution
5	3	properties
6	2	mean
6	2	normal distribution
6	2	probability
6	2	properties
6	2	standardized normal distribution

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Chapter	Section	Keyword
6	2	value
6	2	variance
6	3	normal distribution
6	3	normal probability plot
7	1	properties
7	1	statistics
7	2	central limit theorem
7	2	mean
7	2	probability
7	2	standard error
7	2	unbiased
7	2	value
7	3	probability
7	3	proportion
7	3	standard error
7	3	value
8	1	central limit theorem
8	1	confidence interval
8	1	critical value
8	1	interpretation
8	1	mean
8	1	parameter
8	1	point estimate
8	1	properties
8	1	sampling error
8	1	standardized normal distribution
8	2	central limit theorem
8	2	confidence interval
8	2	critical value
8	2	interpretation
8	2	mean
8	2	parameter
8	2	properties
8	2	t distribution
8	3	central limit theorem
8	3	confidence interval
8	3	critical value
8	3	interpretation
8	3	parameter
8	3	properties
8	3	proportion
8	3	standardized normal distribution
8	3	testing
8	4	properties
8	4	sample size determination
8	4	sampling error
8	4	standardized normal distribution
8	4	trade-off
8	4	width

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Chapter	Section	Keyword
8	5	ethical issues
9	1	assumption
9	1	beta-risk
9	1	conclusion
9	1	confidence coefficient
9	1	confidence interval
9	1	critical value
9	1	decision
9	1	form of hypothesis
9	1	level of significance
9	1	mean
9	1	parameter
9	1	power
9	1	p-value
9	1	rejection region
9	1	sample size
9	1	test statistic
9	1	two-tail test
9	1	type I error
9	1	type II error
9	1	*Z* test
9	2	conclusion
9	2	confidence interval
9	2	critical value
9	2	decision
9	2	form of hypothesis
9	2	level of significance
9	2	mean
9	2	parameter
9	2	p-value
9	2	rejection region
9	2	t test
9	2	test statistic
9	2	two-tail test
9	2	type I error
9	3	conclusion
9	3	critical value
9	3	decision
9	3	form of hypothesis
9	3	level of significance
9	3	mean
9	3	one-tailed test
9	3	parameter
9	3	p-value
9	3	rejection region
9	3	t test
9	3	test statistic
9	3	type I error
9	4	conclusion

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Chapter	Section	Keyword
9	4	confidence interval
9	4	critical value
9	4	decision
9	4	form of hypothesis
9	4	level of significance
9	4	parameter
9	4	proportion
9	4	p-value
9	4	rejection region
9	4	test statistic
9	4	two-tail test
9	4	type I error
9	4	Z test
9	5	ethical issues
10	1	assumption
10	1	conclusion
10	1	confidence interval
10	1	critical value
10	1	decision
10	1	degrees of freedom
10	1	difference between two means
10	1	form of hypothesis
10	1	point estimate
10	1	pooled variance
10	1	p-value
10	1	rejection region
10	1	sample size
10	1	standard error
10	1	t test
10	1	test statistic
10	1	unbiased
10	2	assumption
10	2	conclusion
10	2	confidence interval
10	2	critical value
10	2	decision
10	2	degrees of freedom
10	2	difference between two means
10	2	form of hypothesis
10	2	mean difference
10	2	p-value
10	2	rejection region
10	2	sample size
10	2	sampling distribution
10	2	standard error
10	2	t test
10	2	test statistic
10	3	conclusion
10	3	confidence interval

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Chapter	Section	Keyword
10	3	critical value
10	3	decision
10	3	difference between two proportions
10	3	form of hypothesis
10	3	point estimate
10	3	p-value
10	3	rejection region
10	3	sample size
10	3	standard error
10	3	test statistic
10	3	Z test
10	4	assumption
10	4	conclusion
10	4	critical value
10	4	decision
10	4	degrees of freedom
10	4	difference between two variances
10	4	F distribution
10	4	F test
10	4	form of hypothesis
10	4	properties
10	4	p-value
10	4	rejection region
10	4	sample size
10	4	test statistic
10	5	analysis of means
10	5	assumption
10	5	completely randomized design
10	5	conclusion
10	5	critical value
10	5	decision
10	5	degrees of freedom
10	5	difference among more than two means
10	5	F test for factor
10	5	form of hypothesis
10	5	interpretation
10	5	mean squares
10	5	one-way analysis of variance
10	5	properties
10	5	p-value
10	5	rejection region
10	5	sum of squares
10	5	test statistic
10	5	Tukey-Kramer procedure
11	1	chi-square test
11	1	Chi-square test for difference in two proportions
11	1	conclusion
11	1	contingency table
11	1	critical value

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Chapter	Section	Keyword
11	1	decision
11	1	degrees of freedom
11	1	form of hypothesis
11	1	properties
11	1	p-value
11	1	test statistic
11	2	analysis of proportions
11	2	assumption
11	2	chi-square test
11	2	conclusion
11	2	contingency table
11	2	critical value
11	2	decision
11	2	degrees of freedom
11	2	form of hypothesis
11	2	properties
11	2	p-value
11	2	test statistic
11	3	assumption
11	3	chi-square test
11	3	Chi-square test of independence
11	3	conclusion
11	3	contingency table
11	3	critical value
11	3	decision
11	3	degrees of freedom
11	3	form of hypothesis
11	3	properties
11	3	p-value
11	3	test statistic
12	1	scatter chart
12	2	intercept
12	2	interpretation
12	2	least squares
12	2	properties
12	2	scatter chart
12	2	slope
12	3	coefficient of determination
12	3	interpretation
12	3	properties
12	3	standard error of estimate
12	3	sum of squares
12	4	assumption
12	4	autocorrelation
12	4	homoscedasticity
12	4	interpretation
12	4	properties
12	5	assumption
12	5	autocorrelation

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Chapter	Section	Keyword
12	5	homoscedasticity
12	5	properties
12	5	residual
12	5	residual plot
12	6	autocorrelation
12	6	Durbin-Watson statistic
12	6	properties
12	6	scatter chart
12	6	test statistic
12	7	coefficient of correlation
12	7	conclusion
12	7	confidence interval
12	7	critical value
12	7	decision
12	7	degrees of freedom
12	7	estimation
12	7	F test on slope
12	7	form of hypothesis
12	7	interpretation
12	7	properties
12	7	p-value
12	7	scatter chart
12	7	slope
12	7	standard error
12	7	t test for correlation coefficient
12	7	t test on slope
12	7	test statistic
12	8	confidence interval
12	8	estimation
12	8	estimation of mean values
12	8	prediction interval
12	8	prediction of individual values
12	8	properties
12	9	scatter chart
13	1	estimation
13	1	estimation of mean values
13	1	intercept
13	1	interpretation
13	1	slope
13	2	adjusted coefficient of determination
13	2	adjusted r-square
13	2	coefficient of multiple determination
13	2	conclusion
13	2	critical value
13	2	decision
13	2	degrees of freedom
13	2	F test on the entire regression
13	2	form of hypothesis
13	2	interpretation

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Chapter	Section	Keyword
13	2	mean squares
13	2	prediction of individual values
13	2	properties
13	2	p-value
13	2	sum of squares
13	2	test statistic
13	3	assumption
13	3	homoscedasticity
13	3	normality
13	3	properties
13	3	residual
13	3	residual plot
13	4	conclusion
13	4	confidence interval
13	4	critical value
13	4	decision
13	4	degrees of freedom
13	4	form of hypothesis
13	4	interpretation
13	4	p-value
13	4	slope
13	4	t test on slope
13	4	test statistic
13	5	conclusion
13	5	critical value
13	5	decision
13	5	dummy variable
13	5	form of hypothesis
13	5	interaction
13	5	interpretation
13	5	properties
13	5	test statistic
13		standard error of estimate
14	1	common causes of variation
14	1	control chart
14	1	control limit
14	1	special causes of variation
14	1	statistical control
14	2	center line
14	2	common causes of variation
14	2	control chart
14	2	control limit
14	2	p chart
14	2	special causes of variation
14	2	standard error
14	2	statistical control
14	3	common causes of variation
14	3	red bead experiment
14	3	special causes of variation

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Chapter	Section	Keyword
14	4	c chart
14	4	center line
14	4	control chart
14	4	control limit
14	4	special causes of variation
14	4	statistical control
14	5	A2 factor
14	5	center line
14	5	control chart
14	5	control limit
14	5	d2 factor
14	5	d3 factor
14	5	D3 factor
14	5	D4 factor
14	5	R chart
14	5	special causes of variation
14	5	statistical control
14	5	XBar chart
14	6	capability index
14	6	common causes of variation
14	6	Cp index
14	6	Cpk index
14	6	CPL index
14	6	CPU index
14	6	process capability
14	6	special causes of variation
14	7	Deming's 14 points
14	7	Shewhart Deming cycle
14	7	special causes of variation
14	8	lean six sigma
14	8	six sigma management

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GETTING STARTED: IMPORTANT THINGS TO LEARN FIRST

1. The process of using data collected from a small group to reach conclusions about a large group is called
    a) statistical inference.
    b) DCOVA framework.
    c) operational definition.
    d) descriptive statistics.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: inferential statistics

2. Those methods involving the collection, presentation, and characterization of a set of data in order to properly describe the various features of that set of data are called
    a) statistical inference.
    b) DCOVA framework.
    c) operational definition.
    d) descriptive statistics.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: descriptive statistics

3. The collection and summarization of the socioeconomic and physical characteristics of the employees of a particular firm is an example of
    a) inferential statistics.
    b) descriptive statistics.
    c) operational definition.
    d) DCOVA framework.

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: descriptive statistics

4. The estimation of the population average family expenditure on food based on the sample average expenditure of 1,000 families is an example of
    a) inferential statistics.
    b) descriptive statistics.
    c) DCOVA framework.
    d) operational definition.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: inferential statistics

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5. Which of the following is **not** an element of descriptive statistical problems?
    a) An inference made about the population based on the sample.
    b) The population or sample of interest.
    c) Tables, graphs, or numerical summary tools.
    d) Identification of patterns in the data.

ANSWER:
a
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: descriptive statistics

6. A study is under way in Yosemite National Forest to determine the adult height of American pine trees. Specifically, the study is attempting to determine what factors aid a tree in reaching heights greater than 60 feet tall. It is estimated that the forest contains 25,000 adult American pines. The study involves collecting heights from 250 randomly selected adult American pine trees and analyzing the results. Identify the variable of interest in the study.
    a) The age of an American pine tree in Yosemite National Forest.
    b) The height of an American pine tree in Yosemite National Forest.
    c) The number of American pine trees in Yosemite National Forest.
    d) The species of trees in Yosemite National Forest.

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: variable

7. Most analysts focus on the cost of tuition as the way to measure the cost of a college education. But incidentals, such as textbook costs, are rarely considered. A researcher at Drummand University wishes to estimate the textbook costs of first-year students at Drummand. To do so, she monitored the textbook cost of 250 first-year students and found that their average textbook cost was $600 per semester. Identify the variable of interest to the researcher.
    a) The textbook cost of first-year Drummand University students.
    b) The year in school of Drummand University students.
    c) The age of Drummand University students.
    d) The cost of incidental expenses of Drummand University students.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: variable

8. True or False: Problems may arise when statistically unsophisticated users who do not understand the assumptions behind the statistical procedures or their limitations are misled by results obtained from computer software.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: statistical package

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9. True or False: Managers need an understanding of statistics to be able to present and describe information accurately, draw conclusions about large populations based on small samples, improve processes, and make reliable forecasts.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: reasons for learning statistics

10. True or False: A professor computed the sample average exam score of 20 students and used it to estimate the average exam score of the 1,500 students taking the exam. This is an example of inferential statistics.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: descriptive statistics, inferential statistics

11. True or False: Using the number of registered voters who turned out to vote for the primary in Iowa to predict the number of registered voters who will turn out to vote in Vermont's primary is an example of descriptive statistics.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: descriptive statistics, inferential statistics

12. True or False: Compiling the number of registered voters who turned out to vote for the primary in Iowa is an example of descriptive statistics.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: descriptive statistics, inferential statistics

13. The Human Resources Director of a large corporation wishes to develop an employee benefits package and decides to select 500 employees from a list of all (N = 40,000) workers in order to study their preferences for the various components of a potential package. In this study, methods involving the collection, presentation, and characterization of the data are called _____.

ANSWER:
descriptive statistics/methods
TYPE: FI DIFFICULTY: Easy
KEYWORDS: descriptive statistics

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14. The Human Resources Director of a large corporation wishes to develop an employee benefits package and decides to select 500 employees from a list of all ($N = 40{,}000$) workers in order to study their preferences for the various components of a potential package. In this study, methods that result in decisions concerning population characteristics based only on the sample results are called _____.

ANSWER:
inferential statistics/methods
TYPE: FI DIFFICULTY: Easy
KEYWORDS: inferential statistics

15. The oranges grown in corporate farms in an agricultural state were damaged by some unknown fungi a few years ago. Suppose the manager of a large farm wanted to study the impact of the fungi on the orange crops on a daily basis over a 6-week period. On each day a random sample of orange trees was selected from within a random sample of acres. The daily average number of damaged oranges per tree and the proportion of trees having damaged oranges were calculated. In this study, drawing conclusions on any one day about the true population characteristics based on information obtained from the sample is called _____.

ANSWER:
inferential statistics/methods
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: inferential statistics

16. The oranges grown in corporate farms in an agricultural state were damaged by some unknown fungi a few years ago. Suppose the manager of a large farm wanted to study the impact of the fungi on the orange crops on a daily basis over a 6-week period. On each day a random sample of orange trees was selected from within a random sample of acres. The daily average number of damaged oranges per tree and the proportion of trees having damaged oranges were calculated. In this study, the presentation and characterization of the two main measures calculated each day (i.e., average number of damaged oranges per tree and proportion of trees having damaged oranges) is called _____ .

ANSWER:
descriptive statistics/methods
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: descriptive statistics

17. The Commissioner of Health in New York State wanted to study malpractice litigation in New York. A sample of 31 thousand medical records was drawn from a population of 2.7 million patients who were discharged during 2010. Using the information obtained from the sample to predict population characteristics with respect to malpractice litigation is an example of _____.

ANSWER:
inferential statistics
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: inferential statistics

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18. The Commissioner of Health in New York State wanted to study malpractice litigation in New York. A sample of 31 thousand medical records was drawn from a population of 2.7 million patients who were discharged during 2010. The collection, presentation, and characterization of the data from patient medical records are examples of _____.

ANSWER:
descriptive statistics/methods
TYPE: FI DIFFICULTY: Easy
KEYWORDS: descriptive statistics

19. True or False: Business analytics combine "traditional" statistical methods with methods and techniques from management science and information systems to form an interdisciplinary tool that supports fact-based management decision making.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: business analytics

20. Which of the following is **not** true about business analytics?
    a) It enables you to use statistical methods to analyze and explore data to uncover unforeseen relationships.
    b) It enables you to use management science methods to develop optimization models that impact an organization's strategy, planning, and operations.
    c) It enables you to use complex mathematics to replace the need for organizational decision making and problem solving.
    d) It enables you to use information systems methods to collect and process data sets of all sizes.

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: business analytics

21. True or False: "Big data" is a concrete concept with a precise operational definition.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: big data

22. True or False: "Big data" are data being collected in huge volumes and at very fast rates, and they typically arrive in a variety of forms, organized and unorganized.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: big data

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23. True or False: In the current data-driven environment of business, the decisions you make will be increasingly based on gut or intuition supported by personal experience.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: business analytics

24. True or False: The D in the DCOVA framework stands for "data".

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

25. True or False: The D in the DCOVA framework stands for "define".

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

26. True or False: The C in the DCOVA framework stands for "categorize".

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

27. True or False: The C in the DCOVA framework stands for "collect".

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

28. True or False: The O in the DCOVA framework stands for "operationalize".

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

29. True or False: The O in the DCOVA framework stands for "organize".

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

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30. True or False: The V in the DCOVA framework stands for "verify".

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

31. True or False: The V in the DCOVA framework stands for "visualize".

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

32. True or False: The A in the DCOVA framework stands for "apply".

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

33. True or False: The V in the DCOVA framework stands for "analyze".

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: DCOVA framework

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CHAPTER 1: DEFINING AND COLLECTING DATA

1. Which of the following is a discrete quantitative (numerical) variable?
    a) The Dow Jones Industrial average
    b) The volume of water released from a dam
    c) The distance you drove yesterday.
    d) The number of employees of an insurance company

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

2. Which of the following is a continuous quantitative (numerical) variable?
    a) The color of a student's eyes
    b) The number of employees of an insurance company
    c) The amount of milk in a 2-liter carton.
    d) The number of gallons of milk sold at the local grocery store yesterday

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: continuous variable, types of data

3. To monitor campus security, the campus police office is taking a survey of the number of students in a parking lot each 30 minutes of a 24-hour period with the goal of determining when patrols of the lot would serve the most students. If X is the number of students in the lot each period of time, then X is an example of
    a) a categorical variable.
    b) a discrete variable.
    c) a continuous variable.
    d) a statistic.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: discrete variable, types of data

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4. Researchers are concerned that the weight of the average American school child is increasing implying, among other things, that children's clothing should be manufactured and marketed in larger sizes. If X is the weight of school children sampled in a nationwide study, then X is an example of
    a) a categorical variable.
    b) a discrete variable.
    c) a continuous variable.
    d) a table of random numbers.

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: continuous variable, types of data

5. The classification of student class designation (freshman, sophomore, junior, senior) is an example of
    a) a categorical variable.
    b) a discrete variable.
    c) a continuous variable.
    d) a table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

6. The classification of student major (accounting, economics, management, marketing, other) is an example of
    a) a categorical variable.
    b) a discrete variable.
    c) a continuous variable.
    d) a table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

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7. The chancellor of a major university was concerned about alcohol abuse on her campus and wanted to find out the proportion of students at her university who visited campus bars on the weekend before the final exam week. Her assistant took a random sample of 250 students. The answer on "whether you visited campus bars on the weekend before the final exam week" from students in the sample is an example of _____.
    a) a categorical variable.
    b) a discrete variable.
    c) a continuous variable.
    d) a table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

SCENARIO 1-1

The manager of the customer service division of a major consumer electronics company is interested in determining whether the customers who have purchased a Blu-ray player made by the company over the past 12 months are satisfied with their products.

8. Referring to Scenario 1-1, the possible responses to the question "How many Blu-ray players made by other manufacturers have you used?" are values from a
    a) discrete variable.
    b) continuous variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

9. Referring to Scenario 1-1, the possible responses to the question "Are you happy, indifferent, or unhappy with the performance per dollar spent on the Blu-ray player?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

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10. Referring to Scenario 1-1, the possible responses to the question "What is your annual income rounded to the nearest thousands?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: discrete variable, types of data
EXPLANATION: Even though money is usually considered as a continuous variable, it should be considered as a discrete variable when rounded to the nearest thousands.

11. Referring to Scenario 1-1, the possible responses to the question "How much time do you use the Blu-ray player every week on the average?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: continuous variable, types of data

12. Referring to Scenario 1-1, the possible responses to the question "How many people are there in your household?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

13. Referring to Scenario 1-1, the possible responses to the question "How would you rate the quality of your purchase experience with 1 = excellent, 2 = good, 3 = decent, 4 = poor, 5 = terrible?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

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14. Referring to Scenario 1-1, the possible responses to the question "What brand of Blu-ray player did you purchase?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

15. Referring to Scenario 1-1, the possible responses to the question "Out of a 100 point score with 100 being the highest and 0 being the lowest, what is your satisfaction level on the videocassette recorder that you purchased?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: discrete variable, types of data

16. Referring to Scenario 1-1, the possible responses to the question "In which year were you born?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: discrete variable, types of data

17. True or False: The possible responses to the question “How long have you been living at your current residence?” are values from a continuous variable.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: continuous variable, types of data

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18. True or False: The possible responses to the question "How many times in the past three months have you visited a city park?" are values from a discrete variable.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: discrete variable, types of data

19. True or False: A continuous variable may take on any value within its relevant range even though the measurement device may not be precise enough to record it.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: continuous variable, types of data

20. True or False: Faculty rank (professor to lecturer) is an example of discrete numerical data.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

21. True or False: Student grades (A to F) are an example of continuous numerical data.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: categorical variables, types of data

22. True or False: The amount of coffee consumed by an individual in a day is an example of a discrete numerical variable.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: continuous variables, types of data

23. An insurance company evaluates many numerical variables about a person before deciding on an appropriate rate for automobile insurance. The number of claims a person has made in the last 3 years is an example of a _____ numerical variable.

ANSWER:
discrete
TYPE: FI DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

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24. An insurance company evaluates many numerical variables about a person before deciding on an appropriate rate for automobile insurance. The distance a person drives in a year is an example of a _____ variable.

ANSWER:
continuous
TYPE: FI DIFFICULTY: Easy
KEYWORDS: continuous variable, types of data

25. An insurance company evaluates many numerical variables about a person before deciding on an appropriate rate for automobile insurance. A person's age is an example of a _____ numerical variable.

ANSWER:
continuous
TYPE: FI DIFFICULTY: Easy
KEYWORDS: continuous variable, types of data

26. An insurance company evaluates many numerical variables about a person before deciding on an appropriate rate for automobile insurance. How long a person has been a licensed driver is an example of a _____ numerical variable.

ANSWER:
continuous
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: continuous variable, types of data

27. An insurance company evaluates many numerical variables about a person before deciding on an appropriate rate for automobile insurance. The number of tickets a person has received in the last 3 years is an example of a _____ numerical variable.

ANSWER:
discrete
TYPE: FI DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

28. In purchasing an automobile, there are a number of variables to consider. The body style of the car (sedan, coupe, wagon, etc.) is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

29. In purchasing an automobile, there are a number of variables to consider. The classification of the car as a subcompact, compact, standard, or luxury size is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

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30. In purchasing an automobile, there are a number of variables to consider. The color of the car is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

31. Most colleges admit students based on their achievements in a number of different areas. Whether a student has taken any advanced placement courses is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

32. Most colleges admit students based on their achievements in a number of different areas. The grade obtained in senior level English. (A, B, C, D, or F) is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: categorical variable, types of data

33. Most colleges admit students based on their achievements in a number of different areas. The total SAT score achieved by a student is an example of a _____ numerical variable.

ANSWER:
discrete
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: discrete variable, types of data

34. The Dean of Students conducted a survey on campus. The gender of the student is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

35. The Dean of Students conducted a survey on campus. Class designation (Freshman, Sophomore, Junior, Senior) is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

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36. The Dean of Students conducted a survey on campus. Major area of study is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

37. The Dean of Students conducted a survey on campus. SAT score in mathematics is an example of a _____ numerical variable.

ANSWER:
discrete
TYPE: FI DIFFICULTY: Easy
KEYWORDS: continuous variable, types of data

38. The Dean of Students conducted a survey on campus. Grade point average (GPA) is an example of a _____ numerical variable.

ANSWER:
continuous
TYPE: FI DIFFICULTY: Easy
KEYWORDS: continuous variable, types of data

39. The Dean of Students conducted a survey on campus. Number of credits currently enrolled for is an example of a _____ numerical variable.

ANSWER:
discrete
TYPE: FI DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

40. The Dean of Students conducted a survey on campus. Number of clubs, groups, teams, and organizations affiliated with on campus is an example of a _____ numerical variable.

ANSWER:
discrete
TYPE: FI DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

41. A personal computer user survey was conducted. Computer brand primarily used is an example of a _____ variable.

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

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42. A personal computer user survey was conducted. Number of personal computers owned is an example of a _____ numerical variable.

ANSWER:
discrete
TYPE: FI DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

43. A personal computer user survey was conducted. The number of years using a personal computer is an example of a _____ numerical variable.

ANSWER:
continuous
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: continuous variable, types of data

44. A personal computer user survey was conducted. Hours of personal computer use per week is an example of a _____ numerical variable

ANSWER:
continuous
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: continuous variable, types of data

45. A personal computer user survey was conducted. Primary word processing package used is an example of a _____ variable

ANSWER:
categorical
TYPE: FI DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

46. A personal computer user survey was conducted. The number of computer magazine subscriptions is an example of a _____ numerical variable.

ANSWER:
discrete
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: discrete variable, types of data

47. The grade level (K-12) of a student is an example of a numerical variable.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: categorical variable

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48. The level of satisfaction ("Very unsatisfied", "Fairly unsatisfied", "Fairly satisfied", and "Very satisfied") in a class is an example of a categorical variable.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: categorical variable

49. The quality ("terrible", "poor", "fair", "acceptable", "very good" and "excellent") of a day care center is an example of a numerical variable.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: categorical variable

50. The amount of alcohol consumed by a person per week is an example of a continuous variable.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: continuous variable

51. The number of defective apples in a single box is an example of a continuous variable.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: discrete variable, continuous variable

52. The amount of calories contained in a 12-ounce package of cheese is an example of a discrete variable.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: discrete variable, continuous variable

53. The amount of time a student spent studying for an exam is an example of a continuous variable.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: continuous variable

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SCENARIO 1-2

A *Wall Street Journal* poll asked 2,150 adults in the U.S. a series of questions to find out their view on the U.S. economy.

54. Referring to Scenario 1-2, the population of interest is
    a) all the males living in the U.S. when the polled was taken.
    b) all the females living in the U.S. when the polled was taken.
    c) all the adults living in the U.S. when the poll was taken.
    d) all the people living in the U.S. when the poll was taken.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: population

55. Referring to Scenario 1-2, the 2,150 adults make up
    a) the population
    b) the sample
    c) the primary data source
    d) the secondary data source

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sample

56. Referring to Scenario 1-2, the possible responses to the question "How satisfied are you with the U.S. economy today with 1 = very satisfied, 2 = moderately satisfied, 3 = neutral, 4 = moderately dissatisfied and 5 = very dissatisfied?" are values from a
    a) discrete variable.
    b) continuous variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

57. Referring to Scenario 1-2, the possible responses to the question "How many people in your household are unemployed currently?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

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58. Referring to Scenario 1-2, the possible responses to the question "What do you think is the current number of people unemployed in the country?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: discrete variable, types of data

59. Referring to Scenario 1-2, the possible responses to the question "How many more months do you think the U.S. economy will require to get out of a recession?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

60. Referring to Scenario 1-2, the possible responses to the question "How many out of every 10 U.S. voters do you think feel that the U.S. economy is in a good shape?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
EXPLANATION: The percentage of voters is the ratio of two discrete variables and, hence, the retio is also a discrete variable.
KEYWORDS: discrete variable, types of data

61. Referring to Scenario 1-2, the possible responses to the question "How would you rate the condition of the U.S. economy with 1 = excellent, 2 = good, 3 = decent, 4 = poor, 5 = terrible?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

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62. Referring to Scenario 1-2, the possible responses to the question "Are you 1. Currently employed, 2. Unemployed but actively looking for job, 3. Unemployed and quit looking for job?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: categorical variable, types of data

63. Referring to Scenario 1-2, the possible responses to the question "In which year do you think the last recession in the U.S. started?" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: discrete variable, types of data

64. Referring to Scenario 1-2, the possible responses to the question "On the scale of 1 to 100 with 1 being extremely anxious and 100 being total not anxious, rate your level of anxiety in this U.S. economy" are values from a
    a) discrete numerical variable.
    b) continuous numerical variable.
    c) categorical variable.
    d) table of random numbers.

ANSWER:
a
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: discrete variable, types of data

65. The universe or "totality of items or things" under consideration is called
    a) a sample.
    b) a population.
    c) a primary data source.
    d) a secondary data source.

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: population

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66. The portion of the universe that has been selected for analysis is called
    a) a sample.
    b) a frame.
    c) a primary data source.
    d) a secondary data source.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sample

67. Which of the following is most likely a population as opposed to a sample?
    a) respondents to a newspaper survey.
    b) the first 5 students completing an assignment.
    c) every third person to arrive at the bank.
    d) registered voters in a county.

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: population, sample

68. A study is under way in Yosemite National Forest to determine the adult height of American pine trees. Specifically, the study is attempting to determine what factors aid a tree in reaching heights greater than 60 feet tall. It is estimated that the forest contains 25,000 adult American pines. The study involves collecting heights from 250 randomly selected adult American pine trees and analyzing the results. Identify the population from which the study was sampled.
    a) The 250 randomly selected adult American pine trees.
    b) The 25,000 adult American pine trees in the forest.
    c) All the adult American pine trees taller than 60 feet.
    d) All American pine trees, of any age, in the forest.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: population, sample

69. A study is under way in Yosemite National Forest to determine the adult height of American pine trees. Specifically, the study is attempting to determine what factors aid a tree in reaching heights greater than 60 feet tall. It is estimated that the forest contains 25,000 adult American pines. The study involves collecting heights from 250 randomly selected adult American pine trees and analyzing the results. Identify the sample in the study.
    a) The 250 randomly selected adult American pine trees.
    b) The 25,000 adult American pine trees in the forest.
    c) All the adult American pine trees taller than 60 feet.
    d) All American pine trees, of any age, in the forest.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: population, sample

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70. Most analysts focus on the cost of tuition as the way to measure the cost of a college education. But incidentals, such as textbook costs, are rarely considered. A researcher at Drummand University wishes to estimate the textbook costs of first-year students at Drummand. To do so, she monitored the textbook cost of 250 first-year students and found that their average textbook cost was $600 per semester. Identify the population of interest to the researcher.
    a) All Drummand University students.
    b) All college students.
    c) All first-year Drummand University students.
    d) The 250 students that were monitored.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: population, sample

71. Most analysts focus on the cost of tuition as the way to measure the cost of a college education. But incidentals, such as textbook costs, are rarely considered. A researcher at Drummand University wishes to estimate the textbook costs of first-year students at Drummand. To do so, she monitored the textbook cost of 250 first-year students and found that their average textbook cost was $600 per semester. Identify the sample in the study.
    a) All Drummand University students.
    b) All college students.
    c) All first-year Drummand University students.
    d) The 250 students that were monitored.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: population, sample

72. Researchers suspect that the average number of units earned per semester by college students is rising. A researcher at Calendula College wishes to estimate the number of units earned by students during the spring semester at Calendula. To do so, he randomly selects 100 student transcripts and records the number of units each student earned in the spring term. He found that the average number of semester units completed was 12.96 units per student. Identify the population of interest to the researcher.
    a) All Calendula College students.
    b) All college students.
    c) All Calendula College students enrolled in the spring.
    d) All college students enrolled in the spring.

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: population, sample

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73. The manager of the customer service division of a major consumer electronics company is interested in determining whether the customers who have purchased a Blu-ray player made by the company over the past 12 months are satisfied with their products. The population of interest is
    a) all the customers who have bought a Blu-ray player made by the company over the past 12 months.
    b) all the customers who have bought a Blu-ray player made by the company and brought it in for repair over the past 12 months.
    c) all the customers who have used a Blu-ray player over the past 12 months.
    d) all the customers who have ever bought a Blu-ray player made by the company.

ANSWER:
a
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: population

74. True or False: A population is the totality of items or things under consideration.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: population

75. True or False: A sample is the portion of the universe that is selected for analysis.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: sample

76. The Human Resources Director of a large corporation wishes to develop an employee benefits package and decides to select 500 employees from a list of all (N = 40,000) workers in order to study their preferences for the various components of a potential package. All the employees in the corporation constitute the _____.

ANSWER:
population
TYPE: FI DIFFICULTY: Easy
KEYWORDS: population

77. The Human Resources Director of a large corporation wishes to develop an employee benefits package and decides to select 500 employees from a list of all (N = 40,000) workers in order to study their preferences for the various components of a potential package. The 500 employees who will participate in this study constitute the _____.

ANSWER:
sample
TYPE: FI DIFFICULTY: Easy
KEYWORDS: sample

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78. A summary measure that is computed to describe a characteristic from only a sample of the population is called
    a) an ordered array.
    b) a summary table.
    c) a statistic.
    d) a parameter.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: statistic

79. A summary measure that is computed to describe a characteristic of an entire population is called
    a) a parameter.
    b) an ordered array.
    c) a statistic.
    d) a summary table.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: parameter

80. Which of the following is most likely a parameter as opposed to a statistic?
    a) The average score of the first five students completing an assignment.
    b) The proportion of females registered to vote in a county.
    c) The average height of people randomly selected from a database.
    d) The proportion of trucks stopped yesterday that were cited for bad brakes.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: parameter, statistic

81. The chancellor of a major university was concerned about alcohol abuse on her campus and wanted to find out the proportion of students at her university who visited campus bars on the weekend before the final exam week. Her assistant took a random sample of 250 students and computed the portion of students in the sample who visited campus bars on the weekend before the final exam. The portion of all students at her university who visited campus bars on the weekend before the final exam week is an example of
    a) a categorical variable.
    b) a discrete variable.
    c) a parameter.
    d) a statistic.

ANSWER:
c
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: parameter

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82. The chancellor of a major university was concerned about alcohol abuse on her campus and wanted to find out the proportion of students at her university who visited campus bars on the weekend before the final exam week. Her assistant took a random sample of 250 students. The portion of students in the sample who visited campus bars on the weekend before the final exam week is an example of _____.
    a) a summary table.
    b) a categorical variable.
    c) a parameter.
    d) a statistic

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: statistic

83. True or False: A statistic is usually used to provide an estimate for a usually unobserved parameter.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: statistic, parameter, inferential statistics

84. True or False: A statistic is usually unobservable while a parameter is usually observable.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: statistic, parameter, inferential statistic

85. The Human Resources Director of a large corporation wishes to develop an employee benefits package and decides to select 500 employees from a list of all (N = 40,000) workers in order to study their preferences for the various components of a potential package. The Director will use the data from the sample to compute _____.

ANSWER:
statistics
TYPE: FI DIFFICULTY: Easy
KEYWORDS: statistic

86. The Human Resources Director of a large corporation wishes to develop an employee benefits package and decides to select 500 employees from a list of all (N = 40,000) workers in order to study their preferences for the various components of a potential package. Information obtained from the sample will be used to draw conclusions about the true population _____.

ANSWER:
parameters
TYPE: FI DIFFICULTY: Easy
KEYWORDS: parameter

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87. The oranges grown in corporate farms in an agricultural state were damaged by some unknown fungi a few years ago. Suppose the manager of a large farm wanted to study the impact of the fungi on the orange crops on a daily basis over a 6-week period. On each day a random sample of orange trees was selected from within a random sample of acres. The daily average number of damaged oranges per tree and the proportion of trees having damaged oranges were calculated. The two main measures calculated each day (i.e., average number of damaged oranges per tree and proportion of trees having damaged oranges) are called _____.

ANSWER:
statistics
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: statistic

88. The oranges grown in corporate farms in an agricultural state were damaged by some unknown fungi a few years ago. Suppose the manager of a large farm wanted to study the impact of the fungi on the orange crops on a daily basis over a 6-week period. On each day a random sample of orange trees was selected from within a random sample of acres. The daily average number of damaged oranges per tree and the proportion of trees having damaged oranges were calculated. The two main measures calculated each day (i.e., average number of damaged oranges per tree and proportion of trees having damaged oranges) may be used on a daily basis to estimate the respective true population _____.

ANSWER:
parameters
TYPE: FI DIFFICULTY: Easy
KEYWORDS: parameters

89. The Quality Assurance Department of a large urban hospital is attempting to monitor and evaluate patient satisfaction with hospital services. Prior to discharge, a random sample of patients is asked to fill out a questionnaire to rate such services as medical care, nursing, therapy, laboratory, food, and cleaning. The Quality Assurance Department prepares weekly reports that are presented at the Board of Directors meetings and extraordinary/atypical ratings are easy to flag. Values computed from the sample results each week are called _____.

ANSWER:
statistics
TYPE: FI DIFFICULTY: Easy
KEYWORDS: statistic

90. The Quality Assurance Department of a large urban hospital is attempting to monitor and evaluate patient satisfaction with hospital services. Prior to discharge, a random sample of patients is asked to fill out a questionnaire to rate such services as medical care, nursing, therapy, laboratory, food, and cleaning. The Quality Assurance Department prepares weekly reports that are presented at the Board of Directors meetings and extraordinary/atypical ratings are easy to flag. True population characteristics estimated from the sample results each week are called _____.

ANSWER:
parameters
TYPE: FI DIFFICULTY: Easy
KEYWORDS: parameter

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91. The Commissioner of Health in New York State wanted to study malpractice litigation in New York. A sample of 31 thousand medical records was drawn from a population of 2.7 million patients who were discharged during 2010. The proportion of malpractice claims filed from the sample of 31 thousand patients is a _____.

ANSWER:
statistic
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: statistic

92. The Commissioner of Health in New York State wanted to study malpractice litigation in New York. A sample of 31 thousand medical records was drawn from a population of 2.7 million patients who were discharged during 2010. The true proportion of malpractice claims filed from the population of 2.7 million patients is a _____.

ANSWER:
parameter
TYPE: FI DIFFICULTY: Easy
KEYWORDS: parameter

93. Jared was working on a project to look at global warming and accessed an Internet site where he captured average global surface temperatures from 1866. Which of the four methods of data collection was he using?
    a) Published sources
    b) Experimentation
    c) Surveying
    d) Observation

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sources of data

94. The British Airways Internet site provides a questionnaire instrument that can be answered electronically. Which of the 4 methods of data collection is involved when people complete the questionnaire?
    a) Published sources
    b) Experimentation
    c) Surveying
    d) Observation

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sources of data

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95. A marketing research firm, in conducting a comparative taste test, provided three types of peanut butter to a sample of households randomly selected within the state. Which of the 4 methods of data collection is involved when people are asked to compare the three types of peanut butter?
    a) Published sources
    b) Experimentation
    c) Surveying
    d) Observation

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sources of data

96. Tim was planning for a meeting with his boss to discuss a raise in his annual salary. In preparation, he wanted to use the Consumer Price Index to determine the percentage increase in his real (inflation-adjusted) salary over the last three years. Which of the 4 methods of data collection was involved when he used the Consumer Price Index?
    a) Published sources
    b) Experimentation
    c) Surveying
    d) Observation

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sources of data

97. Which of the 4 methods of data collection is involved when a person counts the number of cars passing designated locations on the Los Angeles freeway system?
    a) Published sources
    b) Experimentation
    c) Surveying
    d) Observation

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: sources of data

98. A statistics student found a reference in the campus library that contained the median family incomes for all 50 states. She would report her data as being collected using
    a) a designed experiment.
    b) observational data.
    c) a random sample.
    d) a published source.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sources of data

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99. The personnel director at a large company studied the eating habits of the company's employees. The director noted whether employees brought their own lunches to work, ate at the company cafeteria, or went out to lunch. The goal of the study was to improve the food service at the company cafeteria. This type of data collection would best be considered as
    a) an observational study.
    b) a designed experiment.
    c) a random sample.
    d) a quota sample.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sources of data

100. A study attempted to estimate the proportion of Florida residents who were willing to spend more tax dollars on protecting the beaches from environmental disasters. Twenty-five hundred Florida residents were surveyed. What type of data collection procedure was most likely used to collect the data for this study?
    a) A designed experiment
    b) A published source
    c) A random sample
    d) Observational data

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sources of data

101. Which of the following is NOT a reason for the need for sampling?
    a) It is usually too costly to study the whole population.
    b) It is usually too time consuming to look at the whole population.
    c) It is sometimes destructive to observe the entire population.
    d) It is always more informative by investigating a sample than the entire population.

ANSWER:
d
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: reasons for sampling

102. Which of the following is NOT a reason for selecting a sample?
    a) A sample is less time consuming than a census.
    b) A sample is less costly to administer than a census.
    c) A sample is usually not a good representation of the target population.
    d) A sample is less cumbersome and more practical to administer.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: reasons for sampling

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103. Which of the following sampling methods is a probability sample?
    a) Convenience sample
    b) Quota sample
    c) Stratified sample
    d) Judgment sample

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: probability sample

104. At US Data Corporation's web site, they advertised that "Because of our commitment to quality and our vast amount of industry knowledge and experience, we have grown to be one of America's leading providers of mailing lists, marketing data, sales leads and research data. We maintain databases of information on consumers and businesses nationwide that set industry standards for mission critical currency, reliability and accuracy." Trying to reach 500 potential donors for their annual phone donation campaign, a local fire department purchased a list of donors from the company. This list is an example of a
    a) stratified sample
    b) systematic sample
    c) judgment sample
    d) frame

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: frame

105. The manager of the customer service division of a major consumer electronics company is interested in determining whether the customers who have purchased a Blu-ray player made by the company over the past 12 months are satisfied with their products. Which of the following will be a good frame for drawing a sample?
    a) Telephone directory.
    b) Voting registry.
    c) The list of customers who returned the registration card.
    d) A list of potential customers purchased from a database marketing company.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: frame

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106. A sample of 300 subscribers to a particular magazine is selected from a population frame of 9,000 subscribers. If, upon examining the data, it is determined that no subscriber had been selected in the sample more than once,
    a) the sample could not have been random.
    b) the sample may have been selected without replacement or with replacement.
    c) the sample had to have been selected with replacement.
    d) the sample had to have been selected without replacement.

ANSWER:
b
TYPE: MC DIFFICULTY: Moderate
KEYWORDS: sampling method, sampling with replacement, sampling without replacement

107. Which of the following scenarios will yield a nonprobability sample?
    a) The subjects of the sample are chosen on the basis of known probability.
    b) Items or individuals are chosen without regard to their probability of occurrence.
    c) Every individual or item from the frame has an equal chance of being selected. Selection may be with replacement or without replacement.
    d) Decide on a sample size, n; divide the frame of N individuals into groups of k individuals where $k = N/n$; randomly select one individual from the first group; select every kth individual thereafter.

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, nonprobabiity sample, sampling with replacement, sampling without replacement

108. To obtain a sample of 10 books in the store, the manager walked to the first shelf next to the cash register to pick the first 10 books on that shelf. This is an example of a
    a) systematic sample
    b) simple random sample
    c) stratified sample
    d) convenience sample

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, nonprobabiity sample, convenience sample

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109. To demonstrate a sampling method, the instructor in a class picked the first 5 students sitting in the last row of the class. This is an example of a
    a) systematic sample
    b) simple random sample
    c) stratified sample
    d) convenience sample

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, nonprobabiity sample, convenience sample

110. A company selling apparel online sends out emails every Monday to all its customers who made a purchase. This is an example of a
    a) systematic sample
    b) convenience sample
    c) simple random sample
    d) stratified sample

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, nonprobabiity sample, convenience sample

111. To gather information on the preferences of instructors at universities on topics for a business statistics textbook that it will publish, a publishing company invited 10 faculty members who have adopted one of the textbooks that it has published. This is an example of a
    a) systematic sample
    b) judgment sample
    c) simple random sample
    d) stratified sample

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, nonprobabiity sample, judgment sample

112. To find out the potential impact of a new zoning law on a neighborhood, the legislators conduct a focus group interview by inviting the members of the housing owners association of that neighborhood. This is an example of a
    a) systematic sample
    b) simple random sample
    c) judgment sample
    d) cluster sample

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, nonprobabiity sample, judgment sample

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113. Which of the following yields a systematic sample?
    a) All students in a class are divided into groups of 15. One student is randomly chosen from the 1st group, the remaining observations are every 15th student thereafter.
    b) The best 15 students, according to the opinion of the instructor, in a class are selected.
    c) All students in a class are grouped according to their gender. A random sample of 8 is selected from the males and a separate random sample of 7 is drawn from the females.
    d) A random sample of 15 students is selected from a class without replacement.

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, probability sample, systematic sample

114. Which of the following yields a stratified sample?
    a) All students in a class are divided into groups of 15. One student is randomly chosen from the 1st group, the remaining observations are every 15th student thereafter.
    b) The best 15 students, according to the opinion of the instructor, in a class are selected.
    c) All students in a class are grouped according to their gender. A random sample of 8 is selected from the males and a separate random sample of 7 is drawn from the females.
    d) The first 15 students in a class are selected without replacement.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, probability sample, stratified sample

115. Which of the following yields a cluster sample?
    a) All students in a class are divided into groups of 15. One student is randomly chosen from the 1st group, the remaining observations are every 15th student thereafter.
    b) The best 15 students, according to the opinion of the instructor, in a class are selected.
    c) All students in a class are grouped according to their gender. A random sample of 8 is selected from the males and a separate random sample of 7 is selected from the females.
    d) All students in a class are divided into groups according to the rows that they are seated. One of the groups is randomly selected.

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, probability sample, cluster sample

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116. Which of the following yields a simple random sample?
    a) All students in a class are divided into groups of 15. One student is randomly chosen from the 1st group, the remaining observations are every 15th student thereafter.
    b) The best 15 students, according to the opinion of the instructor, in a class are selected.
    c) The names of 50 students in a class are written on 50 different pieces of paper and put in a hat. The first 15 pieces of paper are selected blindly one at a time without replacing them back in the hat after shuffling the papers thoroughly.
    d) All students in a class are divided into groups according to the rows that they are seated. One of the groups is randomly selected.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, probability sample, simple random sample

117. Which of the following yields a simple random sample?
    a) All students in a class are grouped according to their gender. A random sample of 8 is selected from the males and a separate random sample of 7 is drawn from the females.
    b) The best 15 students, according to the opinion of the instructor, in a class are selected.
    c) The names of 50 students in a class are written on 50 different pieces of paper and put in a hat. The first 15 pieces of paper are selected blindly one at a time after shuffling the papers thoroughly and each of the selected pieces is placed back into the hat before the next piece is selected.
    d) All students in a class are divided into groups according to the rows that they are seated. One of the groups is randomly selected.

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: sampling method, probability sample, simple random sample

118. For a population frame containing $N = 1{,}007$ individuals, what code number should you assign to the first person on the list in order to use a table of random numbers?
    a) 0
    b) 1
    c) 01
    d) 0001

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: random number

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119. Which of the following types of samples can you use if you want to make valid statistical inferences from a sample to a population?
    a) A judgment sample
    b) A quota sample
    c) A convenience sample
    d) A probability sample

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: probability sample, sampling method

120. The evening host of a dinner dance reached into a bowl, mixed all the tickets around, and selected the ticket to award the grand door prize. What sampling method was used?
    a) Simple random sample
    b) Systematic sample
    c) Stratified sample
    d) Cluster sample

ANSWER:
a
TYPE: MC DIFFICULTY: Easy
KEYWORDS: simple random sample, probability sample, sampling method

121. The Dean of Students mailed a survey to a total of 400 students. The sample included 100 students randomly selected from each of the freshman, sophomore, junior, and senior classes on campus last term. What sampling method was used?
    a) Simple random sample
    b) Systematic sample
    c) Stratified sample
    d) Cluster sample

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: stratified sample, probability sample, sampling method

122. A telemarketer set the company's computerized dialing system to contact every 25th person listed in the local telephone directory. What sampling method was used?
    a) Simple random sample
    b) Systematic sample
    c) Stratified sample
    d) Cluster sample

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: systematic sample, probability sample, sampling method

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123. Since a _____ is not a randomly selected probability sample, there is no way to know how well it represents the overall population.
    a) Simple random sample
    b) Convenience sample
    c) Stratified sample
    d) Cluster sample

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: convenience sample, nonprobability sample, sampling method

124. A population frame for a survey contains a listing of 72,345 names. Using a table of random numbers, how many digits will the code numbers for each member of your population contain?
    a) 3
    b) 4
    c) 5
    d) 6

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: random number

125. A population frame for a survey contains a listing of 6,179 names. Using a table of random numbers, which of the following code numbers will appear on your list?
    a) 06
    b) 0694
    c) 6946
    d) 61790

ANSWER:
b
TYPE: MC DIFFICULTY: Easy
KEYWORDS: random number

126. Which of the following can be reduced by proper interviewer training?
    a) Sampling error
    b) Measurement error
    c) Both of the above
    d) None of the above

ANSWER:
b
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: measurement error, survey worthiness

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127. Which of the following sampling methods will more likely be susceptible to ethical violation?
   a) Simple random sample
   b) Cluster sample
   c) Convenience sample
   d) Stratified sample

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: ethical issues, sampling method

128. Which of the following sampling methods will more likely be susceptible to ethical violation when used to form conclusions about the entire population?
   a) Simple random sample
   b) Cluster sample
   c) Judgment sample
   d) Stratified sample

ANSWER:
c
TYPE: MC DIFFICULTY: Easy
KEYWORDS: judgment sample, ethical issues, sampling method

129. Which of the following sampling methods will more likely be susceptible to ethical violation when used to form conclusions about the entire population?
   a) Simple random sample
   b) Cluster sample
   c) Systematic sample
   d) Convenience sample

ANSWER:
d
TYPE: MC DIFFICULTY: Easy
KEYWORDS: convenience sample, ethical issues, sampling method

130. True or False: As a population becomes large, it is usually better to obtain statistical information from the entire population.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: population, sample, reasons for samplings

131. True or False: If a simple random sample is chosen with replacement, each individual has the same chance of selection on every selection.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: simple random sample, probability sample, sampling method, sampling with replacement, sampling without replacement

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132. True or False: When dealing with human surveys, we are usually interested in sampling with replacement.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: sampling with replacement, sampling method, survey worthiness

133. True or False: The only reliable way a researcher can make statistical inferences from a sample to a population is to use nonprobability sampling methods.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: nonprobability, probability sample, sampling method

134. True or False: A sample is always a good representation of the target population.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: sample, population, sampling method

135. True or False: There can be only one sample selected from a population.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: sample, sampling method

136. True or False: Using different frames to generate data can lead to totally different conclusions.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: frame, sampling method

137. True or False: Sampling error can be completely eliminated by taking larger sample sizes.

ANSWER:
False
TYPE: TF DIFFICULTY: Difficult
KEYWORDS: sampling error

138. True or False: Sampling error can be reduced by taking larger sample sizes.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: sampling error

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139. True or False: A convenience sample is a type of probability sample.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: chunk sample

140. True or False: Items or individuals in a judgment sample are chosen according to their probability of occurrence.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: judgment sample, nonprobability sample

141. True or False: When participants are allowed to self-select into the sample, you have a nonprobability sample.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: nonprobability sample

142. True or False: Systematic samples are less efficient than a stratified sample.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: systematic sample, stratified sample

143. True or False: The professor of a business statistics class wanted to find out the mean amount of time per week her students spent studying for the class. Among the 50 students in her class, 20% were freshmen, 50% were sophomores and 30% were juniors. She decided to select 2 students randomly from the freshmen, 5 randomly from the sophomores and 3 randomly from the juniors. This is an example of a systematic sample.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: stratified sample

144. To estimate the mean number of hours a student at a major university spent in the library, a researcher obtained the list of students from the registrar's office, from which she can select a random sample 200 students. This list is a _____.

ANSWER:
frame
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frame

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145. _____ results from the exclusion of certain groups of subjects from a population frame.

ANSWER:
Coverage error
TYPE: FI DIFFICULTY: Difficult
KEYWORDS: coverage error, survey worthiness, frame

146. Coverage error results in a _____.

ANSWER:
selection bias
TYPE: FI DIFFICULTY: Difficult
KEYWORDS: selection bias, survey worthiness

147. _____ results from the failure to collect data on all subjects in the sample.

ANSWER:
Nonresponse error or bias
TYPE: FI DIFFICULTY: Moderate
KEYWORDS: nonresponse error, survey worthiness

148. The sampling process begins by locating appropriate data sources called _____.

ANSWER:
frames
TYPE: FI DIFFICULTY: Easy
KEYWORDS: frames, sampling method

149. True or False: If you randomly select a student from the first row of a business statistics class and then every other fifth student thereafter until you get a sample of 20 students, this is an example of a convenience sample.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: chunk sample

150. True or False: You stand at the main entrance to a departmental store and pick the first 20 customers that enter the store after it has opened its door for business on a single day. This is an example of a systematic sample.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: systematic sample

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151. True or False: An electronic appliance chain gathered customer opinions on their services using the customer feedback forms that are attached to the product registration forms. This is an example of a convenience sample.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: convenience sample

152. True or False: To gather opinions on the efficacy of U.S. foreign policies, a sample of 50 faculty members is selected from the pool of university professors who have taught political science at the graduate level. This is an example of a judgment sample.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: judgment sample

153. True or False: In a business statistics class students sit randomly without particular preferences. A sample is selected by including everybody who sits in the first row. This is an example of a cluster sample.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: cluster sample

154. True or False: The question "How many times have you abused illicit drugs in the last 6 months?" will most likely result in nonresponse error.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: nonresponse error, survey worthiness

155. True or False: The question "Is your household income last year somewhere between $50,000 and $100,000?" will most likely result in coverage error.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: coverage error, survey worthiness

156. True or False: The only way one can eliminate sampling error is to take the whole population as the sample.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: sampling error, survey worthiness

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157. True or False: Coverage error can become an ethical issue if a particular group is intentionally excluded from the frame.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ethical issue, coverage error, survey worthiness, frame

158. True or False: Measurement error will become an ethical issue when the findings are presented without reference to sample size and margin of error.

ANSWER:
False
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ethical issue, measurement error, sampling error, survey worthiness

159. True or False: Measurement error can become an ethical issue when a survey sponsor chooses leading questions that guide the responses in a particular direction.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ethical issue, measurement error, survey worthiness

160. True or False: Measurement error can become an ethical issue when an interviewer purposely guides the responses in a particular direction.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ethical issue, measurement error, survey worthiness

161. True or False: Sampling error becomes an ethical issue if the findings are purposely presented without reference to sample size and margin of error so that the sponsor can promote a viewpoint that might otherwise be truly insignificant.

ANSWER:
True
TYPE: TF DIFFICULTY: Easy
KEYWORDS: ethical issue, sampling error, survey worthiness

162. True or False: The professor of a business statistics class wanted to find out the mean amount of time per week her students spent studying for the class. She divided the students into the left, right and center groups according to the location they sat in the class that day. One of these 3 groups was randomly selected and everyone in the group was asked the mean amount of time per week he/she spent studying for the class. This is an example of a cluster sample.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: cluster sample

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163. True or False: The professor of a business statistics class wanted to find out the mean amount of time per week her students spent studying for the class. She divided the fifty students on her roster into ten groups starting from the first student on the roster. The first student was randomly selected from the first group. Then every tenth student was selected from the remaining students. This is an example of a cluster sample.

ANSWER:
False
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: systematic sample

164. True or False: Selection bias occurs more frequently in systematic samples than in simple random samples.

ANSWER:
True
TYPE: TF DIFFICULTY: easy
KEYWORDS: simple random sample, systematic sample

165. True or False: The question: "Have you used any form of illicit drugs over the past 2 months?" will most likely result in measurement error if the question is answered.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: measurement error, survey worthiness

166. True or False: The question: "How much did you earn last year rounded to the nearest hundreds of dollars?" will most likely result in measurement error.

ANSWER:
True
TYPE: TF DIFFICULTY: Moderate
KEYWORDS: measurement error, survey worthiness

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SCENARIO 1-3

The manager of the customer service division of a major consumer electronics company is interested in determining whether the customers who have purchased a Blu-ray player made by the company over the past 12 months are satisfied with their products.

167. Referring to Scenario 1-3, the manager decides to ask a sample of customers, who have bought a Blu-ray player made by the company and filed a complaint over the past year, to fill in a survey about whether they are satisfied with the product. This method will most likely suffer from
    a) nonresponse error.
    b) measurement error.
    c) coverage error.
    d) non-probability sampling.

ANSWER:
c
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: coverage error, survey worthiness

168. Referring to Scenario 1-3, if there are 4 different brands of Blu-ray players made by the company, the best sampling strategy would be to use a
    a) a simple random sample.
    b) a stratified sample.
    c) a cluster sample.
    d) a systematic sample.

ANSWER:
b
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: stratified sample, probability sample, sampling method

169. Referring to Scenario 1-3, which of the following questions in the survey will NOT likely induce a measurement error?
    a) How many times have you illegally copied copyrighted sporting events?
    b) What is your exact annual income?
    c) How many times have you brought the Blu-ray player back for service?
    d) How many times have you failed to set the time on the Blu-ray player?

ANSWER:
c
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: measurement error, survey worthiness

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170. Referring to Scenario 1-3, if a customer survey questionnaire is included in all the Blu-ray players made and sold by the company over the past 12 months, this method of collecting data will most like suffer from
    a) nonresponse error.
    b) measurement error.
    c) coverage error.
    d) nonprobability sampling.

ANSWER:
a
TYPE: MC DIFFICULTY: Difficult
KEYWORDS: nonresponse error, survey worthiness

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