Essentials of Statistics for Business and Economics 10th edition Camm Test Bank

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Name:_____ Class:_____ Date:_____

Ch. 01: Data and Statistics

Multiple Choice

1. Different methods of developing useful information from large data bases are dealt with under

a. data manipulation.
b. data warehousing.
c. big data.
d. data mining.

ANSWER: d

2. The process of capturing, storing, and maintaining data is known as

a. data manipulation.
b. data mining.
c. data warehousing.
d. big data.

ANSWER: c

3. The subject of data mining deals with

a. methods for developing useful decision-making information from large data bases.
b. keeping data secure so that unauthorized individuals cannot access the data.
c. computational procedure for data analysis.
d. computing the average for data.

ANSWER: a

4. In a questionnaire, respondents are asked to mark their gender as male or female. The scale of measurement for gender is _____ scale.

a. ordinal
b. nominal
c. ratio
d. interval

ANSWER: b

5. The scale of measurement that is used to rank order the observation for a variable is called the _____ scale.

a. ratio
b. ordinal
c. nominal
d. interval

ANSWER: b

6. A restaurant asks their customers to fill out a questionnaire indicating whether their service was excellent, very good, good, or poor. The rating scale used is an example of the _____ scale.

a. ordinal
b. ratio
c. nominal

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d. interval

ANSWER: a

7. The data measured on ordinal scale exhibits all the properties of data measured on

a. ratio scale.
b. interval scale.
c. nominal scale.
d. nominal and interval scales.

ANSWER: c

8. Measurement of body temperature is an example of a variable that uses
a. the ratio scale.
b. the interval scale.
c. the ordinal scale.
d. either the ratio or the ordinal scale.

ANSWER: b

9. Arithmetic operations provide meaningful results for variables that
a. use any scale of measurement except nominal and ordinal.
b. appear as non-numerical values.
c. are quantitative.
d. have non-negative values.

ANSWER: c

10. Height is an example of a variable that uses the _____ scale.
a. ratio
b. interval
c. nominal
d. ordinal

ANSWER: a

11. Data measured in a nominal scale
a. must be alphabetic.
b. can be either numeric or nonnumeric.
c. must be numeric.
d. must rank order the data.

ANSWER: b

12. The scale of measurement that has an inherent zero value defined is the _____ scale.
a. ratio
b. nominal
c. ordinal
d. interval

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ANSWER: a

13. The measurement scale suitable for quantitative data is _____ scale.

a. the ordinal
b. the nominal
c. either the interval or ratio
d. only the interval

ANSWER: c

14. Data are

a. always numeric.
b. always non-numeric.
c. the raw material of statistics.
d. always categorical.

ANSWER: c

15. The entities on which data are collected are

a. elements.
b. populations.
c. samples.
d. observations.

ANSWER: a

16. The set of measurements collected for a particular element are called

a. variables.
b. observations.
c. samples.
d. populations.

ANSWER: b

17. A characteristic of interest for the elements is called a

a. sample.
b. data set.
c. variable.
d. quality.

ANSWER: c

18. All the data collected in a particular study are referred to as the

a. sample.
b. variable.
c. data set.
d. population.

ANSWER: c

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19. Quantitative data
    a. are always non-numeric.
    b. may be either numeric or non-numeric.
    c. are always numeric.
    d. are never numeric.

ANSWER: c

20. In a questionnaire, respondents are asked to mark their marital status as single, married, divorced, or widowed. Marital status is an example of a(n) _____ variable.
    a. categorical
    b. quantitative
    c. interval-scale
    d. ordinal-scale

ANSWER: a

21. The number of observations will always be the same as the
    a. number of variables.
    b. number of elements.
    c. population size.
    d. sample size.

ANSWER: b

22. Categorical data
    a. must be numeric.
    b. must be nonnumeric.
    c. cannot be numeric.
    d. may be either numeric or nonnumeric.

ANSWER: d

23. Categorical data
    a. indicate either how much or how many.
    b. cannot be numeric
    c. are labels used to identify attributes of elements.
    d. must be nonnumeric.

ANSWER: c

24. Ordinary arithmetic operations are meaningful
    a. only with categorical data.
    b. only with quantitative data.
    c. either with quantitative or categorical data.
    d. with neither quantitative nor categorical data.

ANSWER: b

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Ch. 01: Data and Statistics

25. A student's dormitory room number is an example of
    a. a quantitative variable.
    b. either a quantitative or a categorical variable.
    c. an exchange variable.
    d. a categorical variable.

ANSWER: d

26. Goals scored in a soccer game is an example of
    a. a categorical variable.
    b. a quantitative variable.
    c. either a quantitative or categorical variable.
    d. neither a quantitative nor categorical variable.

ANSWER: b

27. For ease of data entry into a university database, 1 denotes that the student is a freshman, 2 indicates a sophomore, 3 indicates a junior, and 4 indicates that the student is a senior. In this case, data are
    a. categorical.
    b. quantitative.
    c. either categorical or quantitative.
    d. neither categorical nor quantitative.

ANSWER: a

28. Arithmetic operations are inappropriate for
    a. categorical data.
    b. quantitative data.
    c. both categorical and quantitative data.
    d. large data sets.

ANSWER: a

29. Cost of a theater ticket is an example of
    a. categorical data.
    b. either categorical or quantitative data.
    c. nominal data.
    d. quantitative data.

ANSWER: d

30. Data collected at the same, or approximately the same point in time are _____ data.
    a. time series
    b. approximate time series
    c. cross-sectional
    d. approximate

ANSWER: c

31. Data collected over several time periods are _____ data.

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a. time series
b. time controlled
c. cross-sectional
d. periodic

ANSWER: a

32. Statistical studies in which researchers do not control variables of interest are _____ studies.
a. experimental
b. random variable
c. inferential
d. observational

ANSWER: d

33. Statistical studies in which researchers control variables of interest are _____ studies.
a. experimental
b. random variable
c. inferential
d. observational

ANSWER: a

34. The summaries of data, which may be tabular, graphical, or numerical, are referred to as _____ statistics.
a. inferential
b. descriptive
c. observational
d. experimental

ANSWER: b

35. Statistical inference
a. refers to the process of drawing inferences about the sample based on the characteristics of the population.
b. is the same as descriptive statistics.
c. is the process of drawing inferences about the population based on the information taken from the sample.
d. is the same as a census.

ANSWER: c

36. The collection of all elements of interest in a study is
a. the population.
b. the sample.
c. a survey.
d. a census.

ANSWER: a

37. A portion selected to represent the whole is called a
a. survey.
b. population.

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c. census.
d. sample.

ANSWER: d

38. In a sample of 800 students in a university, 240 or 30% are Business majors. The 30% is an example of
a. a sample.
b. a population.
c. statistical inference.
d. descriptive statistics.

ANSWER: d

39. In a sample of 400 students in a university, 80 or 20% are Business majors. Based on the above information, the school's paper reported that "20% of all the students at the university are Business majors." This report is an example of
a. a sample.
b. a population.
c. statistical inference.
d. descriptive statistics.

ANSWER: c

40. Five hundred residents of a city with a population of 240,495 are polled to obtain information on voting intentions in an upcoming city election. The five hundred residents in this study is an example of a(n)
a. census.
b. sample.
c. observation.
d. population.

ANSWER: b

41. A statistics professor asked students in a class their ages. Based on this information, the professor states that the average age of all the students in the university is 24 years. This is an example of
a. an observational study.
b. descriptive statistics.
c. an experiment.
d. statistical inference.

ANSWER: d

42. The owner of a factory regularly requests a graphical summary of all employees' salaries. The graphical summary of salaries is an example of _____ statistics.
a. inferential
b. descriptive
c. experimental
d. observational

ANSWER: b

43. The Department of Transportation of a city has calculated that on the average there are 17 accidents per day. The average number of accidents is an example of

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a. descriptive statistics.
b. statistical inference.
c. a sample.
d. a population.

ANSWER: a

44. The process of analyzing sample data in order to draw conclusions about the characteristics of a population is called
a. descriptive statistics.
b. statistical inference.
c. data analysis.
d. data summarization.

ANSWER: b

45. In a post office, the mailboxes are numbered from 1 to 4,500. These numbers represent
a. categorical data.
b. quantitative data.
c. either categorical or quantitative data.
d. since the numbers are sequential, the data is quantitative.

ANSWER: a

46. The average age in a sample of 190 students at City College is 22. As a result of this sample, it can be concluded that the average age of all the students at City College
a. must be more than 22, since the population is always larger than the sample.
b. must be less than 22, since the sample is only a part of the population.
c. could not be 22.
d. is around 22.

ANSWER: d

47. Since a sample is a subset of the population, the sample mean _____ the mean of the population.
a. is always smaller than
b. is always larger than
c. must be equal to
d. varies around

ANSWER: d

48. The scale of measurement used for variable data that is simply a label for the purpose of identifying the attribute of an element is the _____ scale.
a. ratio
b. nominal
c. ordinal
d. interval

ANSWER: b

49. In a data set, the number of elements will always be the same as the number of

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a. independent variables.
b. observations.
c. data points.
d. dependent variables.

ANSWER: b

50. Which of the following is ***not*** a scale of measurement?
a. Nominal
b. Ordinal
c. Interval
d. Observational

ANSWER: d

51. Which of the following is a scale of measurement?
a. Ratio
b. Proportion
c. Sample
d. Inferential

ANSWER: a

52. Which scale of measurement can be either numeric or non-numeric?
a. Nominal
b. Ratio
c. Interval
d. Quantitative

ANSWER: a

53. Which of the following variables use the ratio scale of measurement?
a. Driver's license number
b. Temperature
c. Gender
d. Weight

ANSWER: d

54. The numbers on football jerseys are an example of _____ data.
a. categorical
b. either categorical or quantitative
c. neither categorical nor quantitative
d. quantitative

ANSWER: a

55. The height of a building, measured in feet, is an example of _____ data.
a. categorical
b. either categorical or quantitative

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c. neither categorical or quantitative
d. quantitative

ANSWER: d

56. An interviewer has made an error in recording the data. This type of error is known as a(n) _____ error.
a. experimental
b. data acquisition
c. non-experimental
d. conglomerate

ANSWER: b

57. Census refers to a(n)
a. experimental study to collect data on the entire population.
b. experimental study to collect data on a sample.
c. survey to collect data on a sample.
d. survey to collect data on the entire population.

ANSWER: d

58. In experimental studies, the variable of interest
a. is not controlled.
b. is controlled.
c. must be numerical.
d. cannot be numerical.

ANSWER: b

59. In observational studies, the variable of interest
a. is not controlled.
b. is controlled.
c. must be numerical.
d. cannot be numerical.

ANSWER: a

60. How many scales of measurement exist?
a. 2
b. 4
c. 6
d. 8

ANSWER: b

61. Which of the following scales of measurement are appropriate for quantitative data?
a. Interval and ordinal
b. Ratio and ordinal
c. Nominal and ordinal
d. Interval and ratio

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ANSWER: d

62. The sample size
    a. can be larger than the population size.
    b. is always smaller than the population size.
    c. can be larger or smaller than the population size.
    d. is always equal to the size of the population.

ANSWER: b

63. A population is
    a. the same as a sample.
    b. the selection of a random sample.
    c. the collection of all items of interest in a study.
    d. always the same size as the sample.

ANSWER: c

64. In a random sample of 200 items, 5 items were defective. An estimate of the percentage of defective items in the population is
    a. 5%.
    b. 2.5%.
    c. 20%.
    d. 10%.

ANSWER: b

65. On a street, the houses are numbered from 300 to 450. The house numbers are examples of _____ data.
    a. categorical
    b. quantitative
    c. both quantitative and categorical
    d. neither quantitative nor categorical

ANSWER: a

66. A survey to collect data on the entire population is a(n)
    a. census.
    b. sample.
    c. population.
    d. inference.

ANSWER: a

67. In a sample of 1,600 registered voters, 912 or 57% approve of the way the President is doing his job. The 57% approval is an example of
    a. a sample.
    b. descriptive statistics.
    c. statistical inference.
    d. a population.

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ANSWER: b

68. In a sample of 1,600 registered voters, 912 or 57% approve of the way the President is doing his job. A political pollster estimates: "Fifty-seven percent of all voters approve of the President." This statement is an example of
a. a sample.
b. descriptive statistics.
c. statistical inference.
d. a population.

ANSWER: c

69. The type of analytics whose models yield a best course of action to take is _____ analytics.
a. descriptive
b. prescriptive
c. predictive
d. inferential

ANSWER: b

70. Data dash-board is an analytical technique that falls in the category of _____ analytics.
a. prescriptive
b. predictive
c. descriptive
d. diagnostic

ANSWER: c

71. Optimization models, which generate solutions that maximize or minimize some objective subject to a set of constraints, fall into the category of _____ analytics.
a. prescriptive
b. predictive
c. descriptive
d. diagnostic

ANSWER: a

72. Simulation, which is the use of probability and statistical computer models to better understand risk, falls under the category of _____ analytics.
a. prescriptive
b. predictive
c. descriptive
d. diagnostic

ANSWER: b

73. The set of analytical techniques that yield a best course of action is _____ analytics.
a. prescriptive
b. predictive
c. descriptive

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d. diagnostic

ANSWER: a

74. Analytics is generally thought to comprise three broad categories of techniques that include all of the following except _____ analytics.

a. prescriptive
b. predictive
c. descriptive
d. diagnostic

ANSWER: d

75. The largest experimental statistical study ever conducted is believed to be for

a. Cholera.
b. Polio.
c. Diphtheria.
d. Malaria.

ANSWER: b

76. Which of the following is a categorical variable?

a. Your age when you began college
b. Your Social Security Number
c. Your statistics class start time
d. Your birth year

ANSWER: b

77. The major applications of data mining have been made by companies with a strong _____ focus.

a. wholesale
b. manufacturing
c. consumer
d. research and development

ANSWER: c

78. Dr. Kurt Thearling, a leading practitioner in the field, defines data mining as "the _____ extraction of _____ information from databases."

a. thorough, insightful
b. timely, accurate
c. automated, predictive
d. intentional, useful

ANSWER: c

79. Which of the following is not an example of a firm that sells or leases business database services to clients?

a. Dun & Bradstreet
b. Bloomberg
c. Census Bureau

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d. Dow Jones & Co.

ANSWER: c

80. Which of the following variables uses the interval scale of measurement?
a. Standardized test score
b. Time duration
c. Student ID number
d. Vehicle miles-per-gallon

ANSWER: a

81. The number observations in a complete data set having 15 elements and 5 variables is
a. 5.
b. 10.
c. 15.
d. 75.

ANSWER: c

82. Which of the following is not an example of descriptive statistics?
a. A histogram depicting the age distribution for 30 randomly selected students
b. An estimate of the number of Alaska residents who have visited Canada
c. A table summarizing the data collected in a sample of new-car buyers
d. The proportion of mailed-out questionnaires that were returned

ANSWER: b

83. Facts and figures that are collected, analyzed and summarized for presentation and interpretation are
a. variables.
b. elements.
c. time series data.
d. data.

ANSWER: d

84. The most common type of observational study is a(n)
a. experiment.
b. survey.
c. debate.
d. statistical inference.

ANSWER: b

Subjective Short Answer

85. After graduation ceremonies at a university, six graduates were asked whether they were in favor of (identified by 1) or against (identified by 0) abortion. Some information about these graduates is shown below.

Graduate	**Sex**	**Age**	**Abortion Issue**	**Class Rank**
Marissa	F	24	1	1

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Jason	M	22	1	2
Wendy	F	41	0	3
Edward	M	38	0	20
Jennifer	F	25	1	4
Tim	M	19	0	8

a. How many elements are in the data set?
b. How many variables are in the data set?
c. How many observations are in the data set?
d. Which of the above variables (Sex, Age, Abortion Issue, Class rank) are categorical and which are quantitative variables?
e. Are arithmetic operations appropriate for the variable "abortion issue"?

ANSWER:

a. 6
b. 4
c. 6
d. Sex: categorical
Age: quantitative
Abortion Issue: categorical
Class Rank: categorical
e. No

86. A recent issue of Fortune Magazine reported that the following companies had the lowest sales per employee among the Fortune 500 companies.

Company	**Sales per Employee (In $1,000s)**	**Sales Rank**
Seagate Technology	42.20	285
SSMC	42.19	414
Russel	41.99	480
Maxxam	40.88	485
Dibrell Brothers	22.56	470

a. How many elements are in the above data set?
b. How many variables are in the above data set?
c. How many observations are in the above data set?
d. Name the variables and indicate whether they are categorical or quantitative.

ANSWER:

a. 5
b. 2
c. 5
d. Sales per employee: quantitative; Sales rank: categorical

87. The following shows the temperatures (high, low) and weather conditions on a given Sunday for some selected world cities. For the weather conditions, the following notations are used: c = clear; cl = cloudy; sh = showers; pc = partly cloudy.

City	**Hi**	**Lo**	**Condition**
Acapulco	99	77	pc
Bangkok	92	78	pc
Mexico City	77	57	sh
Montreal	72	56	pc
Paris	77	58	c

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Rome	88	68	cl
Toronto	78	61	c

a. How many elements are in this data set?
b. How many variables are in this data set?
c. How many observations are in this data set?
d. Name the variables and indicate whether they are categorical or quantitative.
e. For which variables are arithmetic operations appropriate and for which are they not appropriate?

ANSWER:

a. 7
b. 3
c. 7
d. Hi: quantitative, Lo: quantitative, Condition: categorical
e. Hi: appropriate, Lo: appropriate, Condition: not appropriate

88. The following data shows the yearly income distribution of a sample of 200 employees at MNM, Inc.

Yearly Income (In $1,000s)	**Number of Employees**
20 - 24	2
25 - 29	48
30 - 34	60
35 - 39	80
40 - 44	10

a. What percentage of employees have yearly incomes of $35,000 or more?
b. Does the figure computed in part a exemplify statistical inference? If no, what kind of statistical information does it represent?
c. Based on this sample, the president of the company said that "45% of all our employees' yearly incomes are $35,000 or more." What kind of statistical information does the president's statement represent?
d. With the statement made in Part c, can we be assured that more than 45% of all employees' yearly incomes are at least $35,000? Explain.
e. What percentage of employees of the sample have yearly incomes of $29,000 or less?
f. How many variables are presented in the above data set?
g. How many observation results are represented in the above data set?

ANSWER:

a. 45%
b. No, it is descriptive statistics.
c. statistical inference
d. No, this is simply an inference and approximation based on the sample information.
e. 25%
f. 1
g. 200

89. A recent issue of a national magazine reported that in a national public opinion survey conducted among 2,000 individuals, 56% were in favor of gun control, 40% opposed gun control, and 4% had no opinion on the subject.

a. What is the sample in this survey?

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b. Based on the sample, what percentage of the population would you think is in favor of gun control?
c. Based on the sample, what percentage of the population would you think have no opinion on the subject?

ANSWER:

a. The 2000 individuals who were approached
b. 56%
c. 4%

90. The following table shows the starting salaries of a sample of recent business graduates.

Income (In $1,000s)	**Number of Graduates**
15 - 19	40
20 - 24	60
25 - 29	80
30 - 34	18
35 - 39	2

a. What percentage of graduates in the sample had starting salaries of at least $25,000?
b. Of the graduates in the sample, what percentage had starting salaries of less than $20,000?
c. Based on this sample, what percentage of all business graduates do you estimate to have starting salaries of at least $30,000?

ANSWER:

a. 50%
b. 20%
c. 10%

91. Michael, Inc., a manufacturer of electric guitars, is a small firm with 50 employees. The table below shows the hourly wage distribution of the employees.

Hourly Wages (In Dollars)	**Number of Employees**
10 - 13	8
14 - 17	12
18 - 21	20
22 - 25	10

a. How many employees receive hourly wages of at most $18?
b. What percentage of the employees have hourly wages of at least $22?
c. What percentage of the employees have hourly wages of less than $14?

ANSWER:

a. 20
b. 20%
c. 16%

92. The following information regarding the top ten Fortune 500 companies was presented in an issue of *Fortune Magazine*.

Company	**Sales $ Millions**	**Sales Rank**	**Profit $ Millions**	**Profit Rank**
General Motors	161,315	1	2,956	30
Ford Motor	144,416	2	22,071	2

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Wal-Mart Stores	139,208	3	4,430	14
Exxon	100,697	4	6,370	5
General Electric	100,469	5	9,269	3
Int'l Business Machines	81,667	6	6,328	6
Citigroup	76,431	7	5,807	8
Philip Morris	57,813	8	5,372	9
Boeing	56,154	9	1,120	82
AT&T	53,588	10	6,398	4

a. How many elements are in the above data set?
b. How many variables are in this data set?
c. How many observations are in this data set?
d. Which variables are categorical and which are quantitative variables?
e. What measurement scale is used for each variable?

ANSWER:

a. 10
b. 4
c. 10
d. Sales and Profits are quantitative
Sales Rank, and Profits Rank are categorical
e. Sales: ratio
Sales Rank: ordinal
Profits: ratio
Profits Rank: ordinal

93. The following information regarding a sample of seven students is provided.

Student	Identification Number	Grade Point Average	Classification	Gender	Rank in Class
Adam	1234	2.89	Senior	Male	15
Brandon	8978	2.01	Junior	Male	25
Jason	6578	3.97	Freshman	Male	3
Marissa	2345	3.98	Sophomore	Female	2
Michelle	8901	2.67	Senior	Female	18
Wendy	7789	4.00	Senior	Female	1
Webster	6780	3.77	Freshman	Male	4

a. How many elements are in the above data set?
b. How many variables are in this data set?
c. How many observations are in this data set?
d. Which variables are categorical and which are quantitative variables?
e. What measurement scale is used for each variable?

ANSWER:

a. 7
b. 5
c. 7
d. Grade point average is quantitative. All others are categorical.
e. Identification Number: nominal
Grade Point Average: interval
Classification: ordinal
Gender: nominal
Rank in Class: ordinal

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94. The following information regarding the ten richest Americans was reported in a recent issue of *Forbes*.

Name	Ranking	Worth ($Billions)	Age	Marital Status	Source
Gates, William	1	59.0	51	married	Microsoft
Buffett, Warren	2	52.0	77	married	Berkshire Hathaway
Adelson, Sheldon	3	28.0	74	married	casinos, hotels
Ellison, L. J.	4	26.0	63	married	Oracle
Brin, Sergey	5	18.5	34	married	Google
Page, Larry	5	18.5	34	single	Google
Kerkorian, Kirk	7	18.0	90	divorced	investments, casinos
Dell, Michael	8	17.2	42	married	Dell
Koch, Charles	9	17.0	71	married	oil, commodities
Koch, David	9	17.0	67	married	oil, commodities

a. How many elements are in the above data set?
b. How many variables are in this data set?
c. How many observations are in this data set?
d. Which variables are categorical and which are quantitative?
e. What measurement scale is used for each variable?

ANSWER: a. 10
b. 5
c. 10
d. Worth and Age are quantitative
Ranking, Marital Status, and Source are categorical
e. Ranking: ordinal
Worth: ratio
Age: ratio
Marital Status: nominal
Source: nominal

95. The following national weather report gives the temperatures and weather conditions on the previous day in cities across the nation.

City	Hi	Lo	Condition
Albany, N.Y.	88	60	cloudy
Chicago	92	64	clear
Dallas-Ft.Worth	89	72	cloudy
Denver	75	54	clear
Hartford	88	61	cloudy
Honolulu	86	70	clear
Kansas City	93	74	clear
Los Angeles	80	62	cloudy
Nashville	94	72	rain
New York City	90	69	rain
Philadelphia	90	67	rain

a. How many elements are in this data set?
b. How many variables are in this data set?
c. How many observations are there in the above data set?
d. Which variables are categorical and which are quantitative?

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e. What measurement scale is used for temperature and weather conditions?

ANSWER: a. 11
b. 3
c. 11
d. Temperature is quantitative
Weather Condition is categorical
e. Temperature (Hi and Lo): interval
Weather Condition: nominal

96. The following table shows the age distribution of a sample of 180 students at a local college.

Age of Students	**Number of Students**
15 - 19	36
20 - 24	44
25 - 29	60
30 - 34	38
35 - 39	2
Total	180

a. Of the students in the sample, what percentage is younger than 30 years of age?
b. What percentage is at least 20 years of age?
c. Based on this sample, what percentage of the students at the college do you estimate to be younger than 20 years of age?

ANSWER: a. 77.78%
b. 80%
c. 20%

97. The highway patrol is interested in determining the average speed of automobiles traveling on I-75 between Chattanooga and Atlanta. To accomplish this task, the speed of every tenth car passing a particular point on I-75 is recorded.

a. What is the population for this study?
b. What constitutes the sample?
c. Is speed a categorical or a quantitative variable?
d. What type of measurement scale is used?

ANSWER: a. All the automobiles on I-75
b. All the tenth cars
c. quantitative
d. ratio

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