1) Determine which of the following describes quantitative data. 1) A

i). the name of a chemical sample
ii). the mass of a chemical sample
iii). the color of a chemical sample

A) ii only B) i only C) i and ii only D) i, ii, and iii

Quantitative data is data that can be counted or measured in numerical values.

2) The amount of time needed to run the Boston marathon is an example of which type of variable? 2) D

A) temporal B) qualitative C) discrete D) continuous

A continuous variable is a variable whose value is obtained by measuring.

3) Determine which of the following describes qualitative data. 3) D

i). the volume of a shipping container, in gallons
ii). the name of the material from which the container is made
iii). the shape of the container

A) i and iii only B) i, ii, and iii C) i and ii only D) ii and iii only

Qualitative data describes qualities or characteristics.

4) Determine which of the following describes qualitative data. 4) C

i). the make of the car with license plate number VNS-862
ii). the license plate number VNS-862
iii). the number of vehicles whose license plate number begins with "VNS"

A) i only B) neither i, nor ii, nor iii
C) i and ii only D) iii only

Numbers on license plates do not represent quantities; they are identifications, labels.

5) Which one of the following data are discrete? 5) D

A) the latitude and longitude of a boat at sea
B) the latitude and longitude of the boat's port of departure
C) the speed of the boat's propeller, in revolutions per minute
D) the number of crew members on the boat

Data that can only take certain values is called discrete data or discrete values. This is data that can be counted and has a limited number of values.

6) Which one of the following data are continuous? 6) D

A) the rankings of the trees, from most numerous to least numerous
B) the number of representatives of each species in the park
C) the number of species of trees in a park
D) the average height of a sample of trees

Continuous data is a type of quantitative data that can take on an unlimited number of values. It's a type of data that can be measured, and it's very detailed.

7) When rolling two six-sided dice, your total roll ranges from 2 (double ones) to 12 (double sixes). Characterize the nature of the roll total. 7) D

A) qualitative and continuous B) qualitative and discrete
C) quantitative and continuous D) quantitative and discrete

Quantities that can be counted...

8) For the class 6-17, the class boundaries are 6 - 0.5, 17 + 0.5 8) A

A) 5.5 and 17.5 B) 6 and 17 C) 6.5 and 16.5 D) 5 and 18

9) What is the midpoint of the class 7-11? 9) B

A) 5 B) 9 C) 4 D) 9.5

$(7+11)/2 = 9$

10) A recent statistics exam yielded the following 25 scores. Construct a grouped frequency distribution with the class limits shown below. 10) A

67 89 75 54 64
53 83 69 68 92
87 84 43 80 88
76 83 76 98 55
73 80 41 85 95

A tally by class limits. Best strategy? arrange the given values:

41, 43, 53, 54, 55, 64, 67, 68, 69, 73, 75, 76, 76, 80, 80, 83, 83, 84, 85, 87, 88, 89, 92, 95, 98

Class Limits	Frequency
41-50	
51-60	
61-70	
71-80	
81-90	
91-100	

A)

Class Limits	Frequency
41-50	2
51-60	3
61-70	4
71-80	6
81-90	7
91-100	3

B)

Class Limits	Frequency
41-50	3
51-60	2
61-70	4
71-80	7
81-90	6
91-100	3

11) State the reason why the following frequency distribution is incorrectly constructed. 11) D

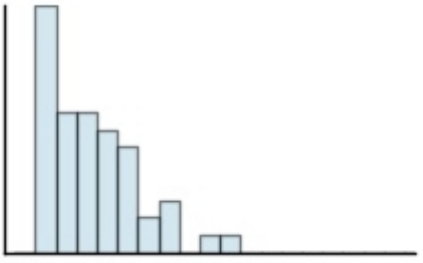
Class	**Frequency**
48-53	2
54-59	0
60-65	6
66-72	4
73-78	3

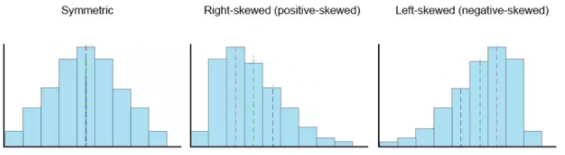
A) there is no percent column B) a class has been omitted

C) class limits overlap D) class width is not uniform

Class width equals the difference between the lower numbers in consecutive classes. In this example, all class width are 6, except 66-72 which is 7

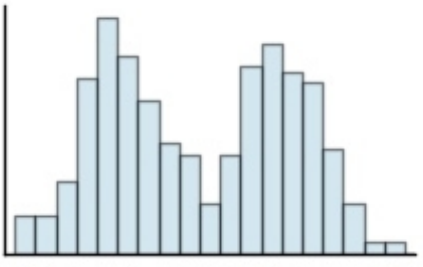
12) Classify the histogram as skewed to the left, skewed to the right, or approximately symmetric. 12) B

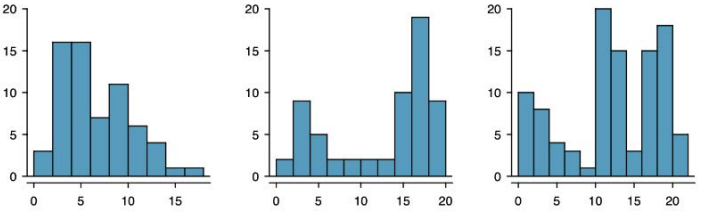




A) approximately symmetric
B) skewed to the right
C) skewed to the left

13) Classify the histogram as unimodal or bimodal.





unimodal bimodal multimodal

A) unimodal B) bimodal

14) The scores on a recent statistics exam are shown below. Construct a stem and leaf plot for the data. 14) A

98, 73, 64, 69, 86, 89, 77, 86, 91, 73, 88

A)

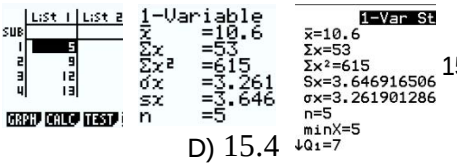
6	4 9
7	3 3 7
8	6 6 8 9
9	1 8

B)

6	4 9
7	3 7 3
8	6 9 6
9	8 1

Sort the data, compare: 64, 69, 73, 73, 77, 86, 86, 88, 89, 91, 98

15) What is the mean of the following data set? 15) C
5, 9, 12, 13, 14



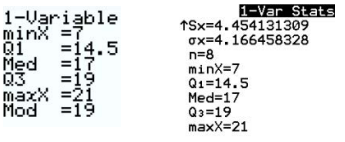
A) 8.0 B) 12.0 C) 10.6 D) 15.4

sum fo the given values divided by the number of values: 53/5 = 10.6

16) What is the median of the following set of values? 16) C
7, 21, 19, 15, 19, 14, 15, 19

A) 15 B) 19 C) 17 D) 13

7, 14, 15, **15**, **19**, 19, 19, 21
Sort the values, two in the middle, sum(15+19)/2 = 17



17) Find the median for the following data set: 17) A

21 23 10 19 13

A) 19 B) 17.2 C) 13 D) 4.9

sort the data: 10 13 **19** 21 23

18) Find the mode for the following data set: 18) C

22 32 14 34 26 22

A) 24 B) 20 C) 22 D) 25.0

The mode is the value that appears most frequently in a data set.

19) What is the midrange of the following data set? 19) B

7, 13, 12, 14, 6, 14, 20, 20, 20

A) 7 B) 13 C) 14 D) 20

midrange = (min+max)/2 = (6 + 20)/2 = 13

20) The data show the heights in feet of 14 roller coasters. Find the mean, median, midrange, and mode for the data. 20) A

95 110 59 133 100 119 154

100 114 91 154 95 59 84

A) mean = 104.8
median = 100
midrange = 106.5
mode = 59, 95, 100, and 154

B) mean = 100
median = 104.8
midrange = 106.5
mode = 102

sort the data: 59 59 84 91 95 95 **100 100** 110 114 119 133 154 154

21) The grades for the trigonometry exam are listed below. Find the range. 21) A

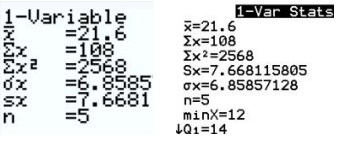
85, 76, 93, 82, 84, 90, 75

A) 18 B) 9 C) 11 D) 76

Range = Max - Min = 93-75 = 18

22) Find the sample standard deviation for the following data set: 22) A

28 12 30 16 22 mean = 21.6



A) 7.7 B) 6.9 C) 58.8 D) 47.0

(28 - 21.6)^2 + (12 - 21.6)^2 + (30 - 21.6)^2 + (16 - 21.6)^2 + (22 - 21.6)^2 = 235.2, take sqrt of (235.2/4) = 7.668...

23) A population has a mean $\mu = 53$ and standard deviation $\sigma = 14$. Find the z-score for a population value of 29. 23) B

A) -24 B) -1.7 C) -0.6 D) 2.1

z-score = (value - mean)/sd = (29 - 53)/14 = -1.71

24) The number of incidents in which police were needed for a sample of 9 schools in Allegheny County is 8, 39, 6, 12, 45, 16, 3, 0, 15. Find Q1 or lower quartile and Q3 or upper quartile for the data. 24) A

A) $Q_1 = 4.5$; $Q_3 = 27.5$ B) $Q_1 = 6$; $Q_3 = 16$

0 3 6 8 **12** 15 16 39 45 Q1 = (3 + 6)/2 =4.5 Q3= (16 + 39)/2 = 27.5