

Descriptive statistics

MULTIPLE CHOICE

1. A frequency distribution is a tabular summary of data showing the
- fraction of items in several classes
 - percentage of items in several classes
 - relative percentage of items in several classes
 - number of items in several classes

ANS: D

PTS: 1

TOP: Descriptive Statistics

2. A tabular summary of a set of data showing the fraction of the total number of items in several classes is a
- frequency distribution
 - relative frequency distribution
 - frequency
 - cumulative frequency distribution

ANS: B

PTS: 1

TOP: Descriptive Statistics

3. The percent frequency of a class is computed by
- multiplying the relative frequency by 10
 - dividing the relative frequency by 100
 - multiplying the relative frequency by 100
 - adding 100 to the relative frequency

ANS: C

PTS: 1

TOP: Descriptive Statistics

4. Fifteen percent of the students in a school of Business Administration are majoring in Economics, 20% in Finance, 35% in Management, and 30% in Accounting. The graphical device(s) which can be used to present these data is (are)
- a line chart
 - only a bar chart
 - only a pie chart
 - both a bar chart and a pie chart

ANS: D

PTS: 1

TOP: Descriptive Statistics

5. Categorical data can be graphically represented by using a(n)
- histogram
 - frequency polygon
 - ogive
 - bar chart

ANS: D

PTS: 1

TOP: Descriptive Statistics

6. A cumulative relative frequency distribution shows
- the proportion of data items with values less than or equal to the upper limit of each class
 - the proportion of data items with values less than or equal to the lower limit of each class
 - the percentage of data items with values less than or equal to the upper limit of each class
 - the percentage of data items with values less than or equal to the lower limit of each class

ANS: A

PTS: 1

TOP: Descriptive Statistics

7. The sum of the relative frequencies for all classes will always equal
- the sample size
 - the number of classes
 - one
 - any value larger than one

ANS: C

PTS: 1

TOP: Descriptive Statistics

8. The most common graphical presentation of quantitative data is a
- histogram
 - bar chart
 - relative frequency
 - pie chart

ANS: A

PTS: 1

TOP: Descriptive Statistics

9. The relative frequency of a class is computed by
- dividing the cumulative frequency of the class by n
 - dividing n by cumulative frequency of the class
 - dividing the frequency of the class by n
 - dividing the frequency of the class by the number of classes

ANS: C

PTS: 1

TOP: Descriptive Statistics

10. In constructing a frequency distribution, as the number of classes are decreased, the class width
- decreases
 - remains unchanged
 - increases
 - can increase or decrease depending on the data values

ANS: C

PTS: 1

TOP: Descriptive Statistics

11. In a cumulative frequency distribution, the last class will always have a cumulative frequency equal to
- one
 - 100%
 - the total number of elements in the data set
 - None of these alternatives is correct.

ANS: C

PTS: 1

TOP: Descriptive Statistics

12. In a cumulative percent frequency distribution, the last class will have a cumulative percent frequency equal to
- one
 - 100
 - the total number of elements in the data set
 - None of these alternatives is correct.

ANS: B

PTS: 1

TOP: Descriptive Statistics

13. When a histogram has a longer tail to the right, it is said to be
- symmetrical
 - skewed to the left
 - skewed to the right
 - None of these alternatives is correct.

ANS: C

PTS: 1

TOP: Descriptive Statistics

Exhibit 2-1

The numbers of hours worked (per week) by 400 statistics students are shown below.

Number of hours	Frequency
0 - 9	20
10 - 19	80
20 - 29	200
30 - 39	100

14. Refer to Exhibit 2-1. The class width for this distribution
- is 9
 - is 10
 - is 39, which is: the largest value minus the smallest value or $39 - 0 = 39$
 - varies from class to class

ANS: B

PTS: 1

TOP: Descriptive Statistics

15. Refer to Exhibit 2-1. The relative frequency of students working 9 hours or less
- is 20
 - is 100
 - is 0.95
 - 0.05

ANS: D

PTS: 1

TOP: Descriptive Statistics

16. Refer to Exhibit 2-1. The cumulative relative frequency for the class of 20 - 29
- is 300
 - is 0.25
 - is 0.75
 - is 0.5

ANS: C

PTS: 1

TOP: Descriptive Statistics

17. Refer to Exhibit 2-1. The cumulative frequency for the class of 20 - 29

- a. is 200
- b. is 300
- c. is 0.75
- d. is 0.5

ANS: B

PTS: 1

TOP: Descriptive Statistics

18. Refer to Exhibit 2-1. The percentage of students who work at least 10 hours per week is

- a. 50%
- b. 5%
- c. 95%
- d. 100%

ANS: C

PTS: 1

TOP: Descriptive Statistics

19. Refer to Exhibit 2-1. The midpoint of the last class is

- a. 50
- b. 34
- c. 35
- d. 34.5

ANS: D

PTS: 1

TOP: Descriptive Statistics

Exhibit 2-3

Michael's Compute-All, a national computer retailer, has kept a record of the number of laptop computers they have sold for a period of 80 days. Their sales records are shown below:

Number of Laptops Sold	Number of Days
0 - 19	5
20 - 39	15
40 - 59	30
60 - 79	20
80 - 99	<u>10</u>
Total	80

20. Refer to Exhibit 2-3. The lower limit of the first class is

- a. 5
- b. 80
- c. 0
- d. 20

ANS: C

PTS: 1

TOP: Descriptive Statistics

21. Refer to Exhibit 2-3. The percentage of days in which the company sold at least 40 laptops is

- a. 37.5%
- b. 62.5%
- c. 90.0%
- d. 75.0%

ANS: D

PTS: 1

TOP: Descriptive Statistics

22. A tabular method that can be used to summarize the data on two variables simultaneously is called
- simultaneous equations
 - crosstabulation**
 - a histogram
 - an ogive

ANS: B

PTS: 1

TOP: Descriptive Statistics

23. In a scatter diagram, a line that provides an approximation of the relationship between the variables is known as
- approximation line
 - trend line**
 - line of zero intercept
 - line of zero slope

ANS: B

PTS: 1

TOP: Descriptive Statistics

Exhibit 2-2

A survey of 800 college seniors resulted in the following crosstabulation regarding their undergraduate major and whether or not they plan to go to graduate school.

Graduate School	Undergraduate Major			Total
	Business	Engineering	Others	
Yes	70	84	126	280
No	182	208	130	520
Total	252	292	256	800

24. Refer to Exhibit 2-2. What percentage of the students does not plan to go to graduate school?
- 280
 - 520
 - 65**
 - 32

ANS: C

PTS: 1

TOP: Descriptive Statistics

25. Refer to Exhibit 2-2. Of those students who are majoring in business, what percentage plans to go to graduate school?
- 27.78**
 - 8.75
 - 70
 - 72.22

ANS: A

PTS: 1

TOP: Descriptive Statistics

26. The measure of location which is the most likely to be influenced by extreme values in the data set is the
- range
 - median
 - mode
 - mean**

ANS: D

PTS: 1

TOP: Descriptive Statistics

27. If two groups of numbers have the same mean, then
- their standard deviations must also be equal
 - their medians must also be equal
 - their modes must also be equal
 - None of these alternatives is correct.

ANS: D

PTS: 1

TOP: Descriptive Statistics

28. When the smallest and largest percentage of items are removed from a data set and the mean is computed, the mean of the remaining data is
- the median
 - the mode
 - the trimmed mean
 - any of the above

ANS: C

PTS: 1

TOP: Descriptive Statistics

29. Which of the following provides a measure of central location for the data?
- standard deviation
 - mean
 - variance
 - range

ANS: B

PTS: 1

TOP: Descriptive Statistics

30. In computing the mean of a sample, the value of $\sum x_i$ is divided by
- n
 - n - 1
 - n + 1
 - n - 2

ANS: A

PTS: 1

TOP: Descriptive Statistics

31. Since the population size is always larger than the sample size, then the sample statistic
- can never be larger than the population parameter
 - can never be equal to the population parameter
 - can be smaller, larger, or equal to the population parameter
 - can never be smaller than the population parameter

ANS: C

PTS: 1

TOP: Descriptive Statistics

32. The mean of a sample
- is always equal to the mean of the population
 - is always smaller than the mean of the population
 - is computed by summing the data values and dividing the sum by (n - 1)
 - is computed by summing all the data values and dividing the sum by the number of items

ANS: D

PTS: 1

TOP: Descriptive Statistics

33. The median is a measure of
- relative dispersion
 - absolute dispersion
 - central location
 - relative location

ANS: C

PTS: 1

TOP: Descriptive Statistics

34. The 75th percentile is referred to as the
- first quartile
 - second quartile
 - third quartile
 - fourth quartile

ANS: C

PTS: 1

TOP: Descriptive Statistics

35. The first quartile
- contains at least one third of the data elements
 - is the same as the 25th percentile
 - is the same as the 50th percentile
 - is the same as the 75th percentile

ANS: B

PTS: 1

TOP: Descriptive Statistics

36. Which of the following is not a measure of central location?
- mean
 - median
 - variance
 - mode

ANS: C

PTS: 1

TOP: Descriptive Statistics

37. The value which has half of the observations above it and half the observations below it is called the
- range
 - median
 - mean
 - mode

ANS: B

PTS: 1

TOP: Descriptive Statistics

38. If index i (which is used to determine the location of the p th percentile) is not an integer, its value should be
- squared
 - divided by $(n - 1)$
 - rounded down
 - rounded up

ANS: D

PTS: 1

TOP: Descriptive Statistics

39. Which of the following symbols represents the size of the population?

- a. σ^2
- b. σ
- c. μ
- d. **N**

ANS: D

PTS: 1

TOP: Descriptive Statistics

40. Which of the following symbols represents the size of the sample

- a. σ^2
- b. σ
- c. N
- d. **n**

ANS: D

PTS: 1

TOP: Descriptive Statistics

41. The relative frequency of a class is computed by

- a. dividing the midpoint of the class by the sample size
- b. dividing the frequency of the class by the midpoint
- c. dividing the sample size by the frequency of the class
- d. **dividing the frequency of the class by the sample size**

ANS: D

PTS: 1

TOP: Descriptive Statistics

42. Since the mode is the most frequently occurring data value, it

- a. can never be larger than the mean
- b. is always larger than the median
- c. is always larger than the mean
- d. **None of these alternatives is correct.**

ANS: D

PTS: 1

TOP: Descriptive Statistics

43. From a population of size 1,000, a random sample of 100 items is selected. The mean of the sample

- a. must be 10 times smaller than the mean of the population
- b. must be equal to the mean of the population, if the sample is *truly random*
- c. must be 10 times larger than the mean of the population
- d. **can be larger, smaller or equal to the mean of the population**

ANS: D

PTS: 1

TOP: Descriptive Statistics

44. From a population of size 400, a random sample of 40 items is selected. The median of the sample

- a. must be 200, since 400 divided by 2 is 200
- b. must be 10, since 400 divided by 40 is 10
- c. must be equal to the median of population, if the sample is *truly random*
- d. **None of these alternatives is correct.**

ANS: D

PTS: 1

TOP: Descriptive Statistics

Exhibit 3-1

The following data show the number of hours worked by 200 statistics students.

Number of Hours	Frequency
0 - 9	40
10 - 19	50
20 - 29	70
30 - 39	40

45. Refer to Exhibit 3-1. The number of students working 19 hours or less
- is 40
 - is 50
 - is 90
 - cannot be determined without the original data

ANS: C PTS: 1 TOP: Descriptive Statistics

46. Refer to Exhibit 3-1. The cumulative relative frequency for the class of 10 - 19
- is 90
 - is .25
 - is .45
 - cannot be determined from the information given

ANS: C PTS: 1 TOP: Descriptive Statistics

Exhibit 3-2

A researcher has collected the following sample data

5	12	6	8	5
6	7	5	12	4

47. Refer to Exhibit 3-2. The mode is
- 5
 - 6
 - 7
 - 8

ANS: A PTS: 1 TOP: Descriptive Statistics

48. Refer to Exhibit 3-2. The 75th percentile is
- 5
 - 6
 - 7
 - 8

ANS: D PTS: 1 TOP: Descriptive Statistics

49. The hourly wages of a sample of 130 system analysts are given below.

mean = 60 range = 20
mode = 73 variance = 324
median = 74

The coefficient of variation equals

- a. 0.30%
- b. 30%
- c. 5.4%
- d. 54%

ANS: B PTS: 1 TOP: Descriptive Statistics

50. The difference between the largest and the smallest data values is the

- a. variance
- b. interquartile range
- c. range
- d. coefficient of variation

ANS: C PTS: 1 TOP: Descriptive Statistics

51. The interquartile range is

- a. the 50th percentile
- b. another name for the variance
- c. the difference between the largest and smallest values
- d. the difference between the third quartile and the first quartile

ANS: D PTS: 1 TOP: Descriptive Statistics

52. The heights (in inches) of 25 individuals were recorded and the following statistics were calculated

mean = 70 range = 20
mode = 73 variance = 784
median = 74

The coefficient of variation equals

- a. 11.2%
- b. 1120%
- c. 0.4%
- d. 40%

ANS: D PTS: 1 TOP: Descriptive Statistics

53. The variance of a sample of 81 observations equals 64. The standard deviation of the sample equals

- a. 9
- b. 4096
- c. 8
- d. 6561

ANS: C PTS: 1 TOP: Descriptive Statistics

54. The interquartile range is used as a measure of variability to overcome what difficulty of the range?
- the sum of the range variances is zero
 - the range is difficult to compute
 - the range is influenced too much by extreme values
 - the range is negative

ANS: C

PTS: 1

TOP: Descriptive Statistics

55. The measure of dispersion that is influenced most by extreme values is
- the variance
 - the standard deviation
 - the range
 - the interquartile range

ANS: C

PTS: 1

TOP: Descriptive Statistics

56. The numerical value of the standard deviation can never be
- larger than the variance
 - zero
 - negative
 - smaller than the variance

ANS: C

PTS: 1

TOP: Descriptive Statistics

57. The coefficient of variation is
- the same as the variance
 - the standard deviation divided by the mean times 100
 - the square of the standard deviation
 - the mean divided by the standard deviation

ANS: B

PTS: 1

TOP: Descriptive Statistics

58. The sum of deviations of the individual data elements from their mean is
- always greater than zero
 - always less than zero
 - sometimes greater than and sometimes less than zero, depending on the data elements
 - always equal to zero

ANS: D

PTS: 1

TOP: Descriptive Statistics

59. Which of the following symbols represents the variance of the population?
- σ^2
 - σ
 - μ
 - \bar{x}

ANS: A

PTS: 1

TOP: Descriptive Statistics

60. The symbol σ^2 is used to represent
- the variance of the population
 - the standard deviation of the sample
 - the standard deviation of the population
 - the variance of the sample

ANS: A

PTS: 1

TOP: Descriptive Statistics

61. The measure of dispersion which is not measured in the same units as the original data is the
- median
 - standard deviation
 - coefficient of determination
 - variance

ANS: D

PTS: 1

TOP: Descriptive Statistics

62. The numerical value of the variance
- is always larger than the numerical value of the standard deviation
 - is always smaller than the numerical value of the standard deviation
 - is negative if the mean is negative
 - can be larger or smaller than the numerical value of the standard deviation

ANS: D

PTS: 1

TOP: Descriptive Statistics

63. Which of the following is **not** a measure of dispersion?
- mode
 - standard deviation
 - range
 - interquartile range

ANS: A

PTS: 1

TOP: Descriptive Statistics

64. The standard deviation of a sample was reported to be 20. The report indicated that $\sum (x - \bar{x})^2 =$ 7200. What has been the sample size?
- 16
 - 17
 - 18
 - 19

ANS: D

PTS: 1

TOP: Descriptive Statistics

Exhibit 3-3

A researcher has collected the following sample data. The mean of the sample is 5.

3 5 12 3 2

65. Refer to Exhibit 3-3. The variance is
- 80
 - 4.062
 - 13.2
 - 16.5

ANS: D

PTS: 1

TOP: Descriptive Statistics

66. Refer to Exhibit 3-3. The coefficient of variation is

- a. 72.66%
- b. 81.24%
- c. 264%
- d. 330%

ANS: B

PTS: 1

TOP: Descriptive Statistics

67. Refer to Exhibit 3-3. The interquartile range is

- a. 1
- b. 2
- c. 10
- d. 12

ANS: B

PTS: 1

TOP: Descriptive Statistics

Exhibit 3-4

The following is the frequency distribution for the speeds of a sample of automobiles traveling on an interstate highway.

Speed Miles per Hour	Frequency
50 - 54	2
55 - 59	4
60 - 64	5
65 - 69	10
70 - 74	9
75 - 79	<u>5</u>
	35

68. Refer to Exhibit 3-4. The variance is

- a. 6.969
- b. 7.071
- c. 48.570
- d. 50.000

ANS: D

PTS: 1

TOP: Descriptive Statistics

Exhibit 3-5

You are given the following frequency distribution.

Class	Frequency
10-14	1
15-19	2
20-24	5
25-29	8
30-34	4

69. Refer to Exhibit 3-5. The mean is

- a. 500
- b. 26.315
- c. 30
- d. 25

ANS: D

PTS: 1

TOP: Descriptive Statistics

70. Refer to Exhibit 3-5. The standard deviation is

- a. 570
- b. 5.477
- c. 25
- d. 30

ANS: B

PTS: 1

TOP: Descriptive Statistics

Exhibit 3-6

The closing stock price of MNM Corporation for the last 7 trading days is shown below.

Day	Stock Price
1	84
2	87
3	84
4	88
5	85
6	90
7	91

71. Refer to Exhibit 3-6. The mean is

- a. 84
- b. 85
- c. 86
- d. 87

ANS: D

PTS: 1

TOP: Descriptive Statistics

72. Refer to Exhibit 3-6. The median is

- a. 84
- b. 85
- c. 86
- d. 87

ANS: D

PTS: 1

TOP: Descriptive Statistics

73. Refer to Exhibit 3-6. The variance is

- a. 2.828
- b. 8
- c. 9
- d. 81

ANS: B

PTS: 1

TOP: Descriptive Statistics

74. When the data are skewed to the right, the measure of Skewness will be

- a. negative
- b. zero
- c. positive
- d. one

ANS: C

PTS: 1

TOP: Descriptive Statistics

75. In a five number summary, which of the following is **not** used for data summarization?

- a. the smallest value
- b. the largest value
- c. the mean
- d. the 25th percentile

ANS: C

PTS: 1

TOP: Descriptive Statistics

76. A numerical measure of linear association between two variables is the

- a. variance
- b. covariance
- c. standard deviation
- d. coefficient of variation

ANS: B

PTS: 1

TOP: Descriptive Statistics

77. A numerical measure of linear association between two variables is the

- a. variance
- b. coefficient of variation
- c. correlation coefficient
- d. standard deviation

ANS: C

PTS: 1

TOP: Descriptive Statistics

78. The coefficient of correlation

- a. is the same as the coefficient of determination
- b. can be larger than 1
- c. cannot be larger than 1
- d. cannot be negative

ANS: C

PTS: 1

TOP: Descriptive Statistics