

You need Scantron 882E. Please use a pencil to mark the answers. Make sure your Scantron is clean, flat, and not folded when you submit.

- 1) Which of the following is not true of statistics? 1) \_\_\_\_\_
- A) Statistics involves collecting and summarizing data.
  - B) Statistics can be used to organize and analyze information.
  - C) Statistics is used to draw conclusions using data.
  - D) Statistics is used to answer questions with 100% certainty.

**Classify the variable as qualitative or quantitative.**

- 2) the colors of book covers on a bookshelf 2) \_\_\_\_\_
- A) qualitative
  - B) quantitative
- 3) the number of calls received at a company's help desk 3) \_\_\_\_\_
- A) qualitative
  - B) quantitative
- 4) the numbers on the shirts of a boy's football team 4) \_\_\_\_\_
- A) quantitative
  - B) qualitative

**Provide an appropriate response.**

- 5) Quantitative variables classify individuals in a sample according to 5) \_\_\_\_\_
- A) personality characteristic.
  - B) physical attribute.
  - C) numerical measure.
  - D) exhibited trait.

**Determine whether the quantitative variable is discrete or continuous.**

- 6) the weight of a player on the wrestling team 6) \_\_\_\_\_
- A) discrete
  - B) continuous
- 7) the number of goals scored in a hockey game 7) \_\_\_\_\_
- A) discrete
  - B) continuous
- 8) the speed of a car on a Boston tollway during rush hour traffic 8) \_\_\_\_\_
- A) discrete
  - B) continuous
- 9) the age of the oldest employee in the data processing department 9) \_\_\_\_\_
- A) discrete
  - B) continuous

**Determine whether the data set is a population or a sample.**

- 10) The age of every fourth person entering a department store 10) \_\_\_\_\_
- A) sample
  - B) population
- 11) The age of each employee at a local grocery store 11) \_\_\_\_\_
- A) sample
  - B) population

**Identify whether the statement describes inferential statistics or descriptive statistics.**

- 12) The average age of the students in a statistics class is 20 years. 12) \_\_\_\_\_
- A) inferential statistics
  - B) descriptive statistics
- 13) The chances of winning the California Lottery are one chance in twenty-two million. 13) \_\_\_\_\_
- A) inferential statistics
  - B) descriptive statistics

- 14) Based on previous clients, a marriage counselor concludes that the majority of marriages that begin with cohabitation before marriage will result in divorce. 14) \_\_\_\_\_  
A) inferential statistics B) descriptive statistics

**Determine whether the data are qualitative or quantitative.**

- 15) the numbers on the shirts of a girl's soccer team 15) \_\_\_\_\_  
A) quantitative B) qualitative

**Identify the sampling technique used.**

- 16) Thirty-five sophomores, 30 juniors and 33 seniors are randomly selected from 281 sophomores, 242 juniors and 529 seniors at a certain high school. 16) \_\_\_\_\_  
A) systematic  
B) random  
C) stratified  
D) cluster  
E) convenience

- 17) Every fifth person boarding a plane is searched thoroughly. 17) \_\_\_\_\_  
A) cluster  
B) systematic  
C) stratified  
D) random  
E) convenience

- 18) At a local community college, five statistics classes are randomly selected out of 20 and all of the students from each class are interviewed. 18) \_\_\_\_\_  
A) systematic  
B) convenience  
C) stratified  
D) random  
E) cluster

- 19) A researcher randomly selects and interviews fifty male and fifty female teachers. 19) \_\_\_\_\_  
A) cluster  
B) stratified  
C) systematic  
D) convenience  
E) random

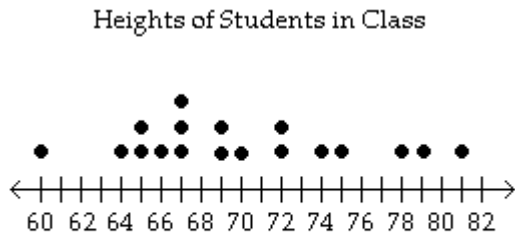
- 20) A researcher for an airline interviews all of the passengers on five randomly selected flights. 20) \_\_\_\_\_  
A) cluster  
B) stratified  
C) random  
D) systematic  
E) convenience

- 21) A community college student interviews everyone in a particular statistics class to determine the percentage of students that own a car. 21) \_\_\_\_\_
- A) random
  - B) convenience
  - C) systematic
  - D) cluster
  - E) stratified
- 22) Based on 12,500 responses from 36,500 questionnaires sent to its alumni, a major university estimated that the annual salary of its alumni was \$116,000 per year. 22) \_\_\_\_\_
- A) stratified
  - B) convenience
  - C) random
  - D) cluster
  - E) systematic
- 23) A lobbyist for a major aerospace firm assigns a number to each legislator and then uses a computer to randomly generate ten numbers. The lobbyist contacts the legislators corresponding to these numbers. 23) \_\_\_\_\_
- A) random
  - B) convenience
  - C) systematic
  - D) cluster
  - E) stratified
- 24) To ensure customer satisfaction, every 20th phone call received by customer service will be monitored. 24) \_\_\_\_\_
- A) random
  - B) convenience
  - C) systematic
  - D) stratified
  - E) cluster
- 25) A market researcher randomly selects 400 drivers under 45 years of age and 100 drivers over 45 years of age. 25) \_\_\_\_\_
- A) random
  - B) cluster
  - C) convenience
  - D) stratified
  - E) systematic

**Provide an appropriate response.**

26) Find the mean, median, and mode of the data.

26) \_\_\_\_\_



- A)  $\bar{x} \approx 70.1$ ; median = 69; mode = 68  
 C)  $\bar{x} = 70$ ; median = 67; mode = 69

- B)  $\bar{x} \approx 70.3$ ; median = 69; mode = 68  
 D)  $\bar{x} = 70$ ; median = 69; mode = 67

27) The top 14 speeds, in miles per hour, for Pro-Stock drag racing over the past two decades are listed below. Find the mean speed.

27) \_\_\_\_\_

181.1   202.2   190.1   201.4   191.3   201.4   192.2  
 201.2   193.2   201.2   194.5   199.2   196.0   196.2

- A) 201.2                      B) 210.9                      C) 196.1                      D) 195.8

28) The top 14 speeds, in miles per hour, for Pro-Stock drag racing over the past two decades are listed below. Find the median speed.

28) \_\_\_\_\_

181.1   202.2   190.1   201.4   191.3   201.4   192.2  
 201.2   193.2   201.2   194.5   199.2   196.0   196.2

- A) 201.2                      B) 196.7                      C) 195.8                      D) 196.1

29) The test scores of 30 students are listed below. Find the five-number summary.

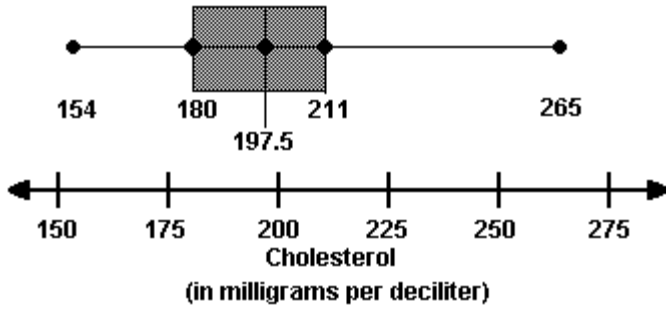
29) \_\_\_\_\_

31   41   45   48   52   55   56   58   63   65  
 67   67   69   70   70   74   75   78   79   79  
 80   81   83   85   85   87   90   92   95   99

- A) Min = 31,  $Q_1 = 58$ ,  $Q_2 = 70$ ,  $Q_3 = 83$ , Max = 99  
 B) Min = 31,  $Q_1 = 57$ ,  $Q_2 = 72$ ,  $Q_3 = 81$ , Max = 99  
 C) Min = 31,  $Q_1 = 57$ ,  $Q_2 = 70$ ,  $Q_3 = 81$ , Max = 99  
 D) Min = 31,  $Q_1 = 58$ ,  $Q_2 = 72$ ,  $Q_3 = 83$ , Max = 99

30) Use the box-and-whisker plot below to determine which statement is accurate.

30) \_\_\_\_\_

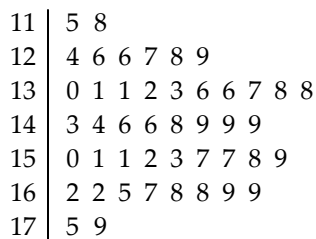


- A) One half of the cholesterol levels are between 180 and 211.
- B) One half of the cholesterol levels are between 180 and 197.5.
- C) About 75% of the adults have cholesterol levels less than 180.
- D) About 25% of the adults have cholesterol levels of at most 211.

31) For the stem-and-leaf plot below, what is the maximum and what is the minimum entry?

31) \_\_\_\_\_

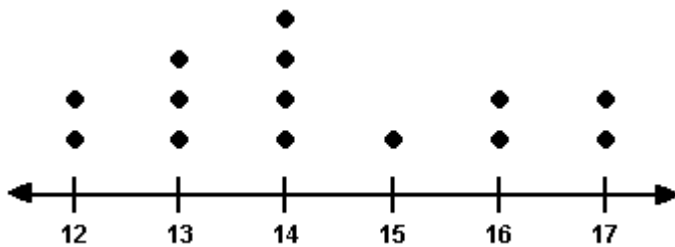
Key : 11|8 = 11.8



- A) max: 17.9; min: 11.5
- B) max: 17.9; min: 11.5
- C) max: 17.5; min: 11.5
- D) max: 17.9; min: 11.8

32) For the dot plot below, what is the maximum and what is the minimum entry?

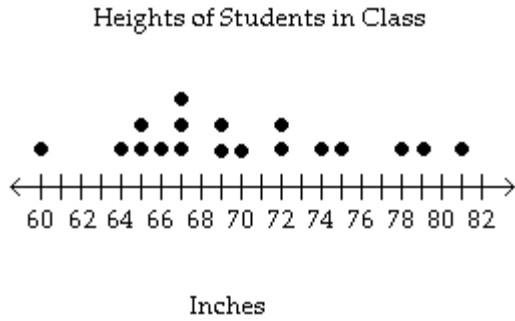
32) \_\_\_\_\_



- A) max: 54; min: 12
- B) max: 14; min: 12
- C) max: 54; min: 15
- D) max: 17; min: 12

33) Display the data below in a stem-and-leaf plot.

33) \_\_\_\_\_



A)

```
6 | 0 4 6 6 7 8 8 8 9 9
7 | 0 2 2 4 5 7 9
8 | 1
```

B)

```
5 | 0
6 | 0
7 | 7
8 | 1
```

C)

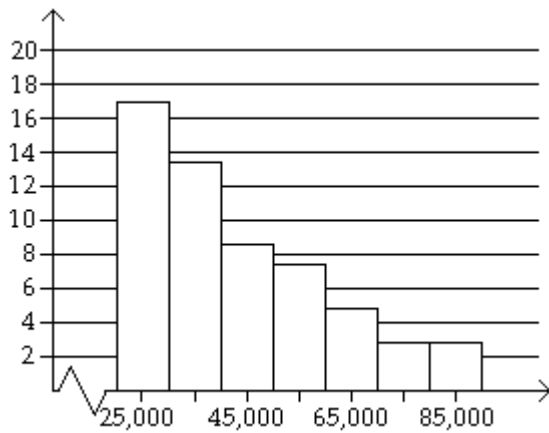
```
5 | 9
6 | 4 5 6 6 8 8 8 9 9
7 | 0 1 1 4 5 8 9
8 | 1
```

D)

```
6 | 0 4 5 5 6 7 7 7 9 9
7 | 0 2 2 4 5 8 9
8 | 1
```

34) Determine whether the approximate shape of the distribution in the histogram is symmetric, uniform, skewed left, skewed right, or none of these.

34) \_\_\_\_\_



A) uniform

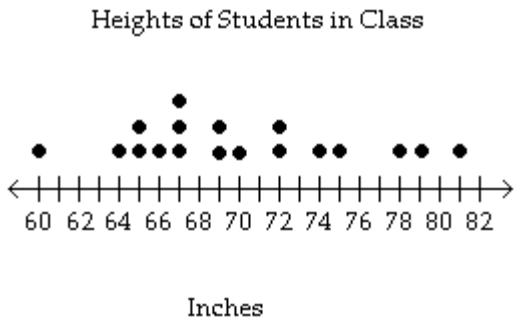
B) symmetric

C) skewed right

D) skewed left

35) Find the mean, median, and mode of the data.

35) \_\_\_\_\_



- A)  $\bar{x} = 70$ ; median = 67; mode = 69
- C)  $\bar{x} = 70$ ; median = 69; mode = 67

- B)  $\bar{x} \approx 70.3$ ; median = 69; mode = 68
- D)  $\bar{x} \approx 70.1$ ; median = 69; mode = 68

For the given data , construct a frequency distribution and frequency histogram of the data using five classes. Describe the shape of the histogram as symmetric, uniform, skewed left, or skewed right.

36) Data set: California Pick Three Lottery

36) \_\_\_\_\_

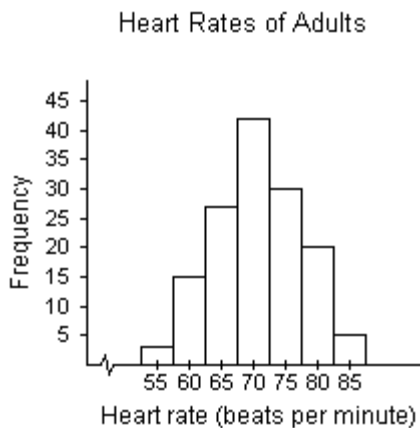
8 6 7 6 0 9 1 7 8 4  
 1 5 7 5 9 7 5 3 9 9  
 8 8 3 9 8 8 9 0 2 7

- A) symmetric
- B) skewed left
- C) skewed right
- D) uniform

Provide an appropriate response.

37) Use the histogram below to approximate the mode heart rate of adults in the gym.

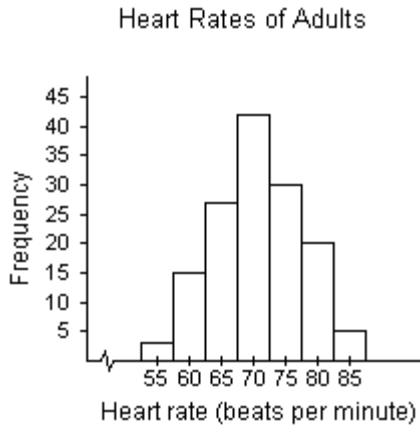
37) \_\_\_\_\_



- A) 55
- B) 70
- C) 42
- D) 2

38) Use the histogram below to approximate the median heart rate of adults in the gym.

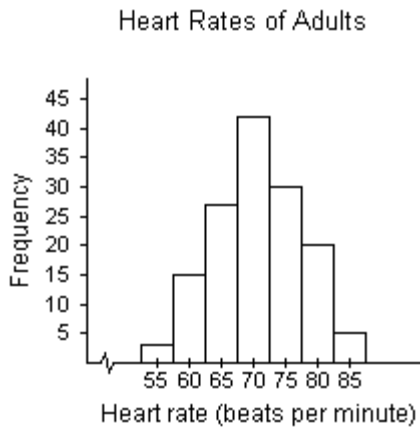
38) \_\_\_\_\_



- A) 65                                      B) 42                                      C) 75                                      D) 70

39) Use the histogram below to approximate the mean heart rate of adults in the gym.

39) \_\_\_\_\_



- A) 70.8                                      B) 70                                      C) 31.6                                      D) 1425.7

40) The top 14 speeds, in miles per hour, for Pro-Stock drag racing over the past two decades are listed below. Find the mean speed.

40) \_\_\_\_\_

181.1    202.2    190.1    201.4    191.3    201.4    192.2  
 201.2    193.2    201.2    194.5    199.2    196.0    196.2

- A) 195.8                                      B) 201.2                                      C) 196.1                                      D) 210.9

41) The scores of the top ten finishers in a recent golf tournament are listed below. Find the mode score.

41) \_\_\_\_\_

71    67    67    72    76    72    73    68    72    72

- A) 73                                      B) 76                                      C) 67                                      D) 72



Approximate the mean of the frequency distribution.

42)

42) \_\_\_\_\_

Miles (per day)	Frequency
1-2	16
3-4	24
5-6	17
7-8	20
9-10	23

A) 6

B) 20

C) 5

D) 7

43)

43) \_\_\_\_\_

Phone calls (per day)	Frequency
8-11	1
12-15	3
16-19	23
20-23	17
24-27	20

A) 13

B) 19

C) 22

D) 20

E) 21

44)

44) \_\_\_\_\_

Weight (in pounds)	Frequency
135-139	17
140-144	19
145-149	5
150-154	7
155-159	18

A) 144

B) 146

C) 13

D) 148

Provide an appropriate response.

45) For the stem-and-leaf plot below, find the range of the data set.

45) \_\_\_\_\_

Key: 2|7 = 27

1	1 5
2	6 6 6 7 8 9
2	7 7 7 8 8 9 9 9
3	0 1 1 2 3 4 4 5
3	6 6 6 7 8 8 9
4	0 5

A) 45

B) 34

C) 11

D) 36

46) Sample annual salaries (in thousands of dollars) for public elementary school teachers are listed. Find the sample standard deviation.

46) \_\_\_\_\_

18.6 22.9 29.5 35.5 12.6 23.3

A) 8.04

B) 3702.52

C) 32.50

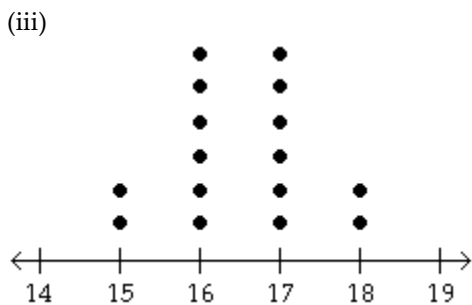
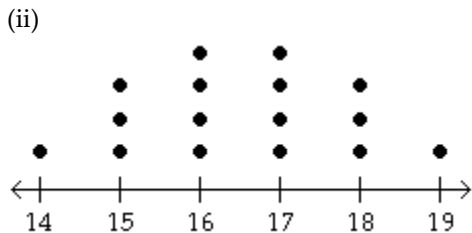
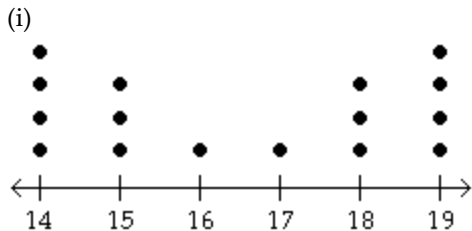
D) 3379.63

47) Without performing any calculations, use the stem-and-leaf plots to determine which statement is accurate. 47) \_\_\_\_\_

(i)	0   9	(ii)	10   9	(iii)	0
	1   5 8		11   5 8		1   5
	2   3 3 7 7		12   3 3 7 7		2   3 3 3 3 7 7 7 7
	3   2 5		13   2 5		3   5
	4   1		14   1		4

- A) Data sets (i) and (ii) have the same standard deviation.
- B) Data sets (i) and (iii) have the same range.
- C) Data set (i) has the smallest standard deviation.
- D) Data set (ii) has the greatest standard deviation.

48) You are asked to compare three data sets. Without calculating, determine which data set has the greatest sample standard deviation and which has the least sample standard deviation. 48) \_\_\_\_\_



- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>A) Greatest sample standard deviation: (iii)<br/>Least sample standard deviation: (i)</li> <li>C) Greatest sample standard deviation: (i)<br/>Least sample standard deviation: (iii)</li> </ul> | <ul style="list-style-type: none"> <li>B) Greatest sample standard deviation: (iii)<br/>Least sample standard deviation: (ii)</li> <li>D) Greatest sample standard deviation: (i)<br/>Least sample standard deviation: (ii)</li> </ul> |
|--|--|

49) You are asked to compare three data sets. Without calculating, determine which data set has the greatest sample standard deviation and which has the least sample standard deviation. 49) \_\_\_\_\_

<p>(i)</p> <table style="border-collapse: collapse;"> <tr><td style="border-right: 1px solid black; padding-right: 5px;">2</td><td style="padding-left: 5px;">6</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">3</td><td style="padding-left: 5px;">4</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">4</td><td style="padding-left: 5px;">0 0 3 3 9 9</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">5</td><td style="padding-left: 5px;">8</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">6</td><td style="padding-left: 5px;">1</td></tr> </table>	2	6	3	4	4	0 0 3 3 9 9	5	8	6	1	<p>(ii)</p> <table style="border-collapse: collapse;"> <tr><td style="border-right: 1px solid black; padding-right: 5px;">2</td><td style="padding-left: 5px;">4</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">3</td><td style="padding-left: 5px;">4</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">4</td><td style="padding-left: 5px;">0 0 0 3 3 3 9 9</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">5</td><td style="padding-left: 5px;">8</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">6</td><td style="padding-left: 5px;">1</td></tr> </table>	2	4	3	4	4	0 0 0 3 3 3 9 9	5	8	6	1	<p>(iii)</p> <table style="border-collapse: collapse;"> <tr><td style="border-right: 1px solid black; padding-right: 5px;">2</td><td style="padding-left: 5px;">6</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">3</td><td style="padding-left: 5px;">4 5</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">4</td><td style="padding-left: 5px;">0 3 9 9</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">5</td><td style="padding-left: 5px;">8 9</td></tr> <tr><td style="border-right: 1px solid black; padding-right: 5px;">6</td><td style="padding-left: 5px;">1</td></tr> </table>	2	6	3	4 5	4	0 3 9 9	5	8 9	6	1
2	6																															
3	4																															
4	0 0 3 3 9 9																															
5	8																															
6	1																															
2	4																															
3	4																															
4	0 0 0 3 3 3 9 9																															
5	8																															
6	1																															
2	6																															
3	4 5																															
4	0 3 9 9																															
5	8 9																															
6	1																															

- |   |   |
|---|---|
| <p>A) Greatest sample standard deviation: (i)<br/>Least sample standard deviation: (iii)</p> <p>C) Greatest sample standard deviation: (iii)<br/>Least sample standard deviation: (i)</p> | <p>B) Greatest sample standard deviation: (iii)<br/>Least sample standard deviation: (ii)</p> <p>D) Greatest sample standard deviation: (i)<br/>Least sample standard deviation: (ii)</p> |
|---|---|

Describe the shape of the distribution.

50) \_\_\_\_\_



- |  |   |
|--|---|
| <p>A) skewed to the left</p> <p>C) bell shaped</p> | <p>B) skewed to the right</p> <p>D) uniform</p> |
|--|---|

Provide an appropriate response.

51) The heights of ten male students (in inches) in a college biology class are listed below. Find the mean. 51) \_\_\_\_\_

71 67 67 72 76 72 73 68 72 72

- |              |              |              |              |
|--------------|--------------|--------------|--------------|
| A) 68 inches | B) 67 inches | C) 71 inches | D) 72 inches |
|--------------|--------------|--------------|--------------|

52) If  $X_1, X_2, X_3, \dots, X_N$  are the  $N$  observations of a variable from a population, then the population mean is symbolized by 52) \_\_\_\_\_

- |             |        |                |          |
|-------------|--------|----------------|----------|
| A) $\Sigma$ | B) $X$ | C) $\tilde{X}$ | D) $\mu$ |
|-------------|--------|----------------|----------|

53) A numerical summary of a population is a 53) \_\_\_\_\_

- |  |  |
|--|--|
| <p>A) Statistic</p> <p>C) Qualitative response</p> | <p>B) Variable</p> <p>D) Parameter</p> |
|--|--|

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

54) The annual profits of ten internet businesses are listed below. Find the mean and median profits. Round the median to the nearest dollar. Which measure - the mean or the median - best represents the data? Explain your reasoning. 54) \_\_\_\_\_

\$1,172,246   \$163,659   \$440,584   \$350,634   \$290,596  
 \$186,731   \$145,809   \$143,209   \$139,096   \$125,106

- |         |           |
|---------|-----------|
| A) Mean | B) Median |
|---------|-----------|

55) Last year batting averages in professional baseball averaged 0.263 with a high of 0.339 and a low of 0.221 (minimum 250 at-bats). Based on this information, which measure of variation could be calculated? 55) \_\_\_\_\_

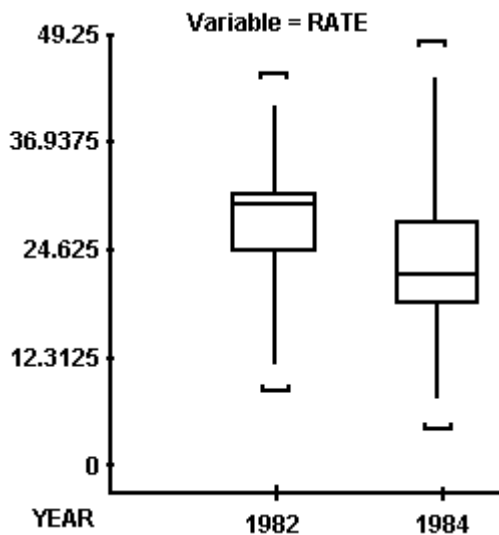
- A) variance
- B) percentile
- C) standard deviation
- D) range

56) Which is not a measure of dispersion? 56) \_\_\_\_\_

- A) Range
- B) Mean
- C) Standard deviation
- D) Variance

57) SAS was used to compare the high school dropout rates for the 50 states in 1982 and 1984. The box plots generated for these dropout rates are shown below. 57) \_\_\_\_\_

Compare the center of the distributions and the variation of the distributions for the two years.



- A) Dropout rates had a higher average with more variability in 1982 than in 1984.
- B) Dropout rates had a higher average with less variability in 1982 than in 1984.
- C) Dropout rates had a lower average with more variability in 1982 than in 1984.
- D) Dropout rates had a lower average with less variability in 1982 than in 1984.

58) Given the length of a human's femur,  $x$ , and the length of a human's humerus,  $y$ , would you expect a positive correlation, a negative correlation, or no correlation? 58) \_\_\_\_\_

- A) negative correlation
- B) positive correlation
- C) no correlation

59) Given the supply of a commodity,  $x$ , and the price of a commodity,  $y$ , would you expect a positive correlation, a negative correlation, or no correlation? 59) \_\_\_\_\_

- A) no correlation
- B) negative correlation
- C) positive correlation

60) Given the size of a human's brain,  $x$ , and their score on an IQ test,  $y$ , would you expect a positive correlation, a negative correlation, or no correlation? 60) \_\_\_\_\_

- A) negative correlation
- B) positive correlation
- C) no correlation

61) A scatter diagram locates a point in a two dimensional plane. The diagram locates the \_\_\_\_\_ variable on the horizontal axis and the \_\_\_\_\_ variable on the vertical axis. 61) \_\_\_\_\_

- A) predictor; response  
 B) response; predictor  
 C) study; predictor  
 D) response; study

62) The data below are the final exam scores of 10 randomly selected calculus students and the number of hours they slept the night before the exam. Calculate the linear correlation coefficient. 62) \_\_\_\_\_

Hours, x	8	10	7	13	7	9	9	10	11	8
Scores, y	60	75	55	83	61	73	80	85	85	66

- A) 0.761  
 B) 0.991  
 C) 0.847  
 D) 0.654

63) The data below are the average one-way commute times (in minutes) of selected students during a summer literature class and the number of absences for those students for the term. Calculate the linear correlation coefficient. 63) \_\_\_\_\_

Commute time (min), x	75	88	94	93	91	101	78	103	83
Number of absences, y	4	8	11	11	9	16	5	16	6

- A) 0.819  
 B) 0.881  
 C) 0.890  
 D) 0.980

64) In an area of the Great Plains, records were kept on the relationship between the rainfall (in inches) and the yield of wheat (bushels per acre). Calculate the linear correlation coefficient. 64) \_\_\_\_\_

Rainfall (in inches), x	9.4	7.7	12.3	11.4	17.7	9.2	5.9	14.5	14.9
Yield (bushels per acre), y	46.5	42.2	54.8	55	78.4	45.2	27.9	72	74.8

- A) 0.981  
 B) 0.998  
 C) 0.899  
 D) 0.900

**Compute the linear correlation coefficient between the two variables and determine whether a linear relation exists.**

65) The table below shows the ages and weights (in pounds) of 9 randomly selected tennis coaches. 65) \_\_\_\_\_

Age, x	36	39	43	46	49	51	55	59	63
Weight (pounds), y	113	117	120	128	139	142	145	147	149

- A)  $r = 0.908$ ; no linear relation exists  
 B)  $r = 0.908$ ; linear relation exists  
 C)  $r = 0.960$ ; no linear relation exists  
 D)  $r = 0.960$ ; linear relation exists

66) The table shows the number of days off last year and the earnings for the year (in thousands of dollars) for nine randomly selected insurance salesmen. 66) \_\_\_\_\_

Number of days off, x	5	8	11	9	14	7	20	13	10
Earnings for the year (thousands of dollars), y	95	83	77	79	68	89	52	73	79

- A)  $r = -0.991$ ; no linear relation exists  
 B)  $r = -0.899$ ; no linear relation exists  
 C)  $r = -0.899$ ; linear relation exists  
 D)  $r = -0.991$ ; linear relation exists

**Provide an appropriate response.**

67) Find the equation of the regression line for the given data. 67) \_\_\_\_\_

x	-5	-3	4	1	-1	-2	0	2	3	-4
y	11	6	-6	-1	3	4	1	-4	-5	8

- A)  $\hat{y} = 1.885x - 0.758$   
 B)  $\hat{y} = 0.758x + 1.885$   
 C)  $\hat{y} = -0.758x - 1.885$   
 D)  $\hat{y} = -1.885x + 0.758$

- 68) In an area of the Great Plains, records were kept on the relationship between the rainfall (in inches) and the yield of wheat (bushels per acre). Find the equation of the regression line for the given data. 68) \_\_\_\_\_

Rainfall (in inches), x	10.5	8.8	13.4	12.5	18.8	10.3	7.0	15.6	16.0
Yield (bushels per acre), y	50.5	46.2	58.8	59.0	82.4	49.2	31.9	76.0	78.8

- A)  $\hat{y} = 4.267x - 4.379$   
 C)  $\hat{y} = -4.379x + 4.267$   
 B)  $\hat{y} = 4.379x + 4.267$   
 D)  $\hat{y} = 4.267x + 4.379$

- 69) Given the equation of a regression line is  $\hat{y} = 5x - 8$ , what is the best predicted value for y given x = 10? 69) \_\_\_\_\_

- A) 7  
 B) 42  
 C) 75  
 D) 58

- 70) Given the equation of a regression line is  $\hat{y} = -2.5x - 8.0$ , what is the best predicted value for y given x = 9.4? 70) \_\_\_\_\_

- A) -15.50  
 B) -31.50  
 C) 15.50  
 D) 31.50

- 71) The data below are the final exam scores of 10 randomly selected chemistry students and the number of hours they slept the night before the exam. What is the best predicted value for y given x = 2? 71) \_\_\_\_\_

Hours, x	3	5	2	8	2	4	4	5	6	3
Scores, y	65	80	60	88	66	78	85	90	90	71

- A) 67  
 B) 65  
 C) 66  
 D) 64

- 72) In an area of Russia, records were kept on the relationship between the rainfall (in inches) and the yield of wheat (bushels per acre). The data for a 9 year period is as follows: 72) \_\_\_\_\_

Rain Fall, x	13.1	11.4	16.0	15.1	21.4	12.9	9.6	18.2	18.6
Yield, y	48.5	44.2	56.8	80.4	47.2	29.9	74.0	74.0	76.8

The equation of the line of least squares is given as  $\hat{y} = -9.12 + 4.38x$ . How many bushels of wheat per acre can be predicted if it is expected that there will be 30 inches of rain?

- A) 8.93  
 B) 140.52  
 C) Cannot be certain of the result because 30 inches of rain exceeds the observed data.  
 D) 122.28

- 73) In order for a company's employees to work for the foreign office, they must take a test in the language of the country where they plan to work. The data below show the relationship between the number of years that employees have studied a particular language and the grades they received on the proficiency exam. What is the best predicted value for y given x = 1.5? 73) \_\_\_\_\_

Number of years, x	3	4	4	5	3	6	2	7	3
Grades on test, y	61	68	75	82	73	90	58	93	72

- A) 55  
 B) 57  
 C) 53  
 D) 59

- 74) Given the equation of a regression line is  $\hat{y} = -1.5x - 1.8$ , what is the best predicted value for y given x = -3.0? Assume that the variables x and y have a significant correlation. 74) \_\_\_\_\_

- A) -2.70  
 B) 2.70  
 C) -6.30  
 D) 6.30

75) The data below are the final exam scores of 10 randomly selected history students and the number of hours they slept the night before the exam. Find the equation of the regression line for the given data. What would be the predicted score for a history student who slept 7 hours the previous night? Is this a reasonable question? Round your answer to the nearest whole number. 75) \_\_\_\_\_

Hours, x	3	5	2	8	2	4	4	5	6	3
Scores, y	65	80	60	88	66	78	85	90	90	71

- A)  $\hat{y} = -5.044x + 56.11$ ; 21; Yes, it is reasonable.
- B)  $\hat{y} = 5.044x + 56.11$ ; 91; No, it is not reasonable. 7 hours is well outside the scope of the model.
- C)  $\hat{y} = -5.044x + 56.11$ ; 21; No, it is not reasonable. 7 hours is well outside the scope of the model.
- D)  $\hat{y} = 5.044x + 56.11$ ; 91; Yes, it is reasonable.

76) The mean IQ score of adults is 100, with a standard deviation of 15. Use the Empirical Rule to find the percentage of adults with scores between 70 and 130. (Assume the data set has a bell-shaped distribution.) 76) \_\_\_\_\_

- A) 95%
- B) 100%
- C) 99.7%
- D) 68%

77) The mean score of a competency test is 73, with a standard deviation of 4. Use the Empirical Rule to find the percentage of scores between 69 and 77. (Assume the data set has a bell-shaped distribution.) 77) \_\_\_\_\_

- A) 50%
- B) 68%
- C) 95%
- D) 99.7%

78) The mean IQ score of students in a particular calculus class is 110, with a standard deviation of 5. Use the Empirical Rule to find the percentage of students with an IQ above 120. (Assume the data set has a bell-shaped distribution.) 78) \_\_\_\_\_

- A) 15.85%
- B) 11.15%
- C) 2.5%
- D) 13.5%

79) A radio station claims that the amount of advertising per hour of broadcast time has an average of 12 minutes and a standard deviation equal to 1.2 minutes. You listen to the radio station for 1 hour, at a randomly selected time, and carefully observe that the amount of advertising time is equal to 15 minutes. Calculate the z-score for this amount of advertising time. 79) \_\_\_\_\_

- A)  $z = 2.50$
- B)  $z = -1.15$
- C)  $z = 1.15$
- D)  $z = -2.50$

80) The birth weights for twins are normally distributed with a mean of 2353 grams and a standard deviation of 647 grams. Use z-scores to determine which birth weight could be considered unusual. 80) \_\_\_\_\_

- A) 2353 g
- B) 1200 g
- C) 3647 g
- D) 2000 g

81) A student scores 74 on a geography test and 282 on a mathematics test. The geography test has a mean of 80 and a standard deviation of 5. The mathematics test has a mean of 300 and a standard deviation of 12. If the data for both tests are normally distributed, on which test did the student score better relative to the other students in each class? 81) \_\_\_\_\_

- A) The student scored the same on both tests.
- B) The student scored better on the mathematics test.
- C) The student scored better on the geography test.

82) For the mathematics part of the SAT the mean is 514 with a standard deviation of 113, and for the mathematics part of the ACT the mean is 20.6 with a standard deviation of 5.1. Bob scores a 660 on the SAT and a 27 on the ACT. Use z-scores to determine on which test he performed better. 82) \_\_\_\_\_

- A) SAT
- B) ACT

83) The probability that event A will occur is  $P(A) = \frac{\text{Number of successful outcomes}}{\text{Total number of all possible outcomes}}$  83) \_\_\_\_\_  
 A) True B) False

84) In terms of probability, a(n) \_\_\_\_\_ is any process with uncertain results that can be repeated. 84) \_\_\_\_\_  
 A) Outcome B) Sample space C) Event D) Experiment

85) A(n) \_\_\_\_\_ of a probability experiment is the collection of all outcomes possible. 85) \_\_\_\_\_  
 A) Bernoulli space B) Prediction set C) Event set D) Sample space

86) An unusual event is an event that has a \_\_\_\_\_ 86) \_\_\_\_\_  
 A) Probability which exceeds 1 B) Probability of 1  
 C) Low probability of occurrence D) A negative probability

87) In a 1-pond bag of skittles the possible colors were red, green, yellow, orange, and purple. The probability of drawing a particular color from that bag is given below. Is this a probability model? Answer Yes or No. 87) \_\_\_\_\_

Color	Probability
Red	0.2299
Green	0.1908
Orange	0.2168
Yellow	0.1889
Purple	0.1816

A) No B) Yes

88) Which of the following cannot be the probability of an event? 88) \_\_\_\_\_  
 A) 0.001 B)  $\frac{\sqrt{7}}{3}$  C) 0 D) -59

89) The probability that event A will occur is  $P(A) = \frac{\text{Number of successful outcomes}}{\text{Number of unsuccessful outcomes}}$  89) \_\_\_\_\_  
 A) False B) True

90) Classify the statement as an example of classical probability, empirical probability, or subjective probability. The probability that a train will be in an accident on a specific route is 1%. 90) \_\_\_\_\_  
 A) empirical probability B) classical probability C) subjective probability

91) Classify the statement as an example of classical probability, empirical probability, or subjective probability. The probability that interest rates will rise during the summer is 0.05. 91) \_\_\_\_\_  
 A) classical probability B) subjective probability C) empirical probability

92) Classify the statement as an example of classical probability, empirical probability, or subjective probability. The probability that a newborn baby is a boy is  $\frac{1}{2}$ . 92) \_\_\_\_\_  
 A) subjective probability B) classical probability C) empirical probability



- 93) Classify the statement as an example of classical probability, empirical probability, or subjective probability. The probability that it will rain tomorrow is 91%. 93) \_\_\_\_\_  
 A) classical probability                      B) subjective probability                      C) empirical probability

- 94) If A, B, C, and D, are the only possible outcomes of an experiment, find the probability of D using the table below. 94) \_\_\_\_\_

Outcome	A	B	C	D
Probability	1/7	1/7	1/7	

A) 4/7                                      B) 3/7                                      C) 1/4                                      D) 1/7

- 95) In a survey of college students, 840 said that they have cheated on an exam and 1795 said that they have not. If one college student is selected at random, find the probability that the student has cheated on an exam. 95) \_\_\_\_\_  
 A)  $\frac{527}{168}$                                       B)  $\frac{359}{527}$                                       C)  $\frac{168}{527}$                                       D)  $\frac{527}{359}$

- 96) The distribution of blood types for 100 Americans is listed in the table. If one donor is selected at random, find the probability of selecting a person with blood type A+. 96) \_\_\_\_\_

Blood Type	O+	O-	A+	A-	B+	B-	AB+	AB-
Number	37	6	34	6	10	2	4	1

- A) 0.45                                      B) 0.34                                      C) 0.68                                      D) 0.4

- 97) The distribution of Master's degrees conferred by a university is listed in the table. 97) \_\_\_\_\_

Major	Frequency
Mathematics	216
English	207
Engineering	90
Business	176
Education	222

What is the probability that a randomly selected student graduating with a Master's degree has a m. Engineering? Round your answer to three decimal places.

- A) 0.011                                      B) 0.901                                      C) 0.099                                      D) 0.989

- 98) You are dealt two cards successively without replacement from a standard deck of 52 playing cards. Find the probability that the first card is a two and the second card is a ten. Round your answer to three decimal places. 98) \_\_\_\_\_

- A) 0.994                                      B) 0.500                                      C) 0.006                                      D) 0.250

- 99) Find the probability of answering two true or false questions correctly if random guesses are made. Only one of the choices is correct. 99) \_\_\_\_\_

- A) 0.1                                      B) 0.5                                      C) 0.75                                      D) 0.25

- 100) Find the probability of answering the two multiple choice questions correctly if random guesses are made. Assume the questions each have five choices for the answer. Only one of the choices is correct. 100) \_\_\_\_\_

- A) 0.004                                      B) 0.02                                      C) 0.04                                      D) 0.4