3.3 and 3.4 Review

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) The interquartile range IQR is found by subtracting the mean from the maximum value of a data set. 1) _____
A) True B) False

2) The percentile corresponding to a given data value *X* is computed by adding the 0.5 to number of values less than *X* then dividing by the total number of values in the data set. 2) _____
A) True B) False

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

3) _____ divide a distribution into four groups, and _____ divide a distribution into ten groups. 3) _____

4) _____ are either extremely high or extremely low data values compared with the rest of the data. 4) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

5) Which of the following is true? 5) _____
A) $D_5 = P_5 = Q_5$ B) $D_5 = P_{50} = Q_2$
C) $D_{50} = P_5 = Q_{25}$ D) $D_{50} = P_5 = Q_2$

6) For the data set below, find the first quartile. 6) _____

72	79	62	76	77	60	65	75	76	67	67

A) 76 B) 60 C) 48.5 D) 65

7) For the data set below, find the third quartile. 7) _____

70	70	76	66	76	75	61	67	60	71	74

A) 66 B) 60 C) 75 D) 52.5

8) For the data set below, find the IQR. 8) _____

71	69	62	79	64	79	63	66	72	74	65

A) 74 B) 10 C) 64 D) 17

9) A population has a mean $\mu = 22$ and standard deviation $\sigma = 8$. Find the *z*-score for a population value of 23. 9) _____

A) 2.9 B) 0.1 C) 1 D) 8

10) If a student scored 90 points on a test where the mean score was 83.2 and the standard deviation was 3.7. The student's *z* score is _____. 10) _____

A) 24.32 B) 0.50 C) 22.49 D) 1.84

11) A population has a mean $\mu = 46$ and standard deviation $\sigma = 11$. What number has a *z*-score of 1.5? 11) _____

A) -29.5 B) 62.5 C) -4 D) 16.5

12) Indicate which student has the higher *z* score. 12) _____

Art Major $X = 46$ $\overline{X} = 50.5$ $s = 5.2$

Theater Major $X = 70$ $\overline{X} = 75.1$ $s = 7.3$

A) The theater major has a higher score than the art major.

B) Neither student received a positive score**;** therefore**,** the higher score cannot be determined.

C) Both students have the same score.

D) The art major has a higher score than the theater major.

13) A baseball player has a batting average of 0.325 each week of the season, with a standard deviation of 0.065. What is the *z* score when he bats 0.410 one week? 13) _____

A) 1.275 B) 1.308 C) 0.410 D) 0.325

14) If a student scored 76 points on a test where the mean score was 82.5 and the standard deviation was 4.1. The student's *z* score is _____. 14) _____

A) -0.39 B) 0.39 C) -1.59 D) 20.12

15) The average weight of adult male bison in a particular federal wildlife preserve is 1600 pounds with a standard deviation of 290 pounds. Find the weight of an adult bull whose *z*-score is -1.5. 15) _____

A) 2035 lb B) 1310 lb C) 1600 lb D) 1165 lb

16) Using the table below, what grade would a student who ranked in the 50th percentile receive. 16) _____

Grade	Class Boundaries	Frequency
A	89.5-99.5	4
B	79.5-89.5	7
C	69.5-79.5	11
D	59.5-69.5	3
F	49.5-59.5	3

A) C B) F C) B D) D

17) The average weekly earnings in dollars for various industries are listed below. Find the percentile rank of 683. 17) _____

810, 683, 608, 713, 658, 768, 855, 559, 876, 931

A) 40th B) 25th C) 35th D) 45th

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

18) Given the following data set, find the approximate value that corresponds to the 75th percentile. 18) _____

10, 44, 15, 23, 14, 18, 72, 56

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

19) For the data set below, find the 88th percentile. 19) _____

64	95	74	70	32
58	24	46	25	17
59	51	7	60	36
67	67	54	33	60

A) 74 B) 88 C) 70 D) 68.5

20) For the data set below, find the upper outlier boundary. 20) _____

160	176	193	144	163	146	152	158	154	184	129

A) 193 B) 30 C) 176 D) 221

21) For the data set below, find the outlier(s). 21) _____

186	153	154	161	160	157	145	176	133	154	157

A) 133
B) 105
C) 133, 176, and 186
D) None are outliers.

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

22) Check the following data set for outliers. 22) _____

23, 32, 34, 34, 36, 37, 39, 41

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

23) For the data set below, list the outliers, if any. 23) _____

51	70	21	89	59
32	36	54	57	51
59	52	62	55	55
48	62	56	41	43

A) 21, 32, and 89
B) 89
C) 21 and 89
D) There are no outliers.

24) Gina and Stewart are surf-fishing on the Atlantic coast, where both bluefish and pompano are common catches. The mean length of a bluefish is 285 millimeters with a standard deviation of 69 mm. For pompano, the mean is 148 mm with a standard deviation of 25 mm. 24) _____

Stewart caught a bluefish that was 321 mm long. What was the *z*-score for this length?

A) 0.52 B) 6.92 C) 321 D) 4.65

25) Gina and Stewart are surf-fishing on the Atlantic coast, where both bluefish and pompano are common catches. The mean length of a bluefish is 261 millimeters with a standard deviation of 59 mm. For pompano, the mean is 152 mm with a standard deviation of 22 mm. 25) _____

Stewart caught a bluefish that was 311 mm long, and Gina caught a pompano that was 187 mm long. Who caught the longer fish, relative to fish of the same species?

A) Stewart
B) Neither. Relative to its respective species, the fish are the same length.
C) Gina

26) A soft-drink bottling company fills and ships soda in plastic bottles with a target volume of 354 milliliters. The filling machinery does not deliver a perfectly consistent volume of liquid to each bottle, and the three quartiles for the fill volume are $Q_1 = 352$, $Q_2 = 354$, and $Q_3 = 356$. 26) _____

Find the IQR.

A) 2 B) 4 C) 6 D) 4.8

27) A soft-drink bottling company fills and ships soda in plastic bottles with a target volume of 354 milliliters. The filling machinery does not deliver a perfectly consistent volume of liquid to each bottle, and the three quartiles for the fill volume are $Q_1 = 352$, $Q_2 = 356$, and $Q_3 = 357$. 27) _____

A fill volume of 346 mL is considered low. Would a fill volume of 346 mL be considered an outlier?

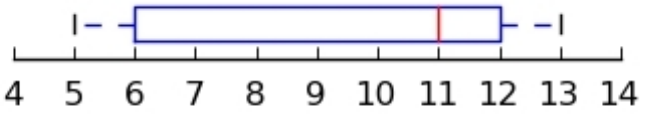
A) No B) Yes

28) Identify the five-number summary of the following data set. 28) _____
7, 11, 21, 28, 32, 33, 37, 43.

A) 7, 11, 28, 33, 43 B) 7, 21, 30, 33, 43
C) 7, 16, 30, 35, 43 D) 7, 21, 26.5, 33, 43

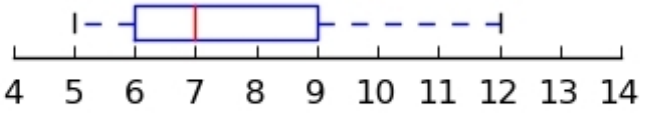
29) Which plot below has a five-number summary of 8, 9, 10, 12, 13 and an interquartile range of 5? 29) _____

A)

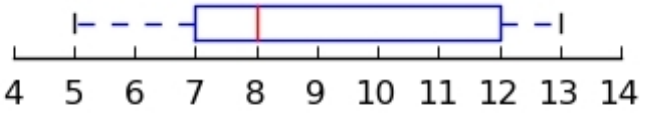


B)

C)



D)



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

30) Make a boxplot for the following data set. 30) _____

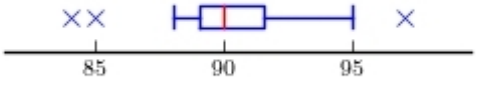
24, 15, 34, 92, 68, 34, 78, 45, 53, 67, 83, 46

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

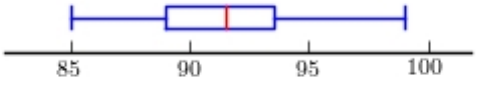
31) Construct a boxplot for the data set below. 31) _____

94	89	91	90	90
89	89	91	90	89
83	93	87	89	87
90	91	91	93	91

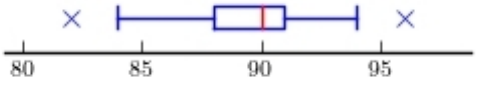
A)



B)



C)

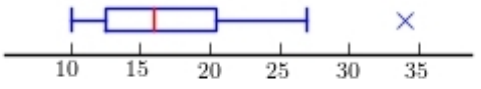


D)

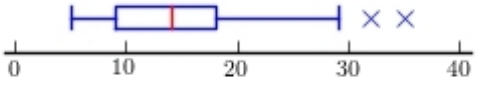
32) Construct a boxplot for the data set below. 32) _____

19	9	10	15	18
17	9	10	12	6
7	15	15	17	5
14	21	17	7	11

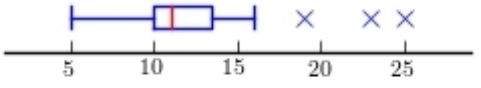
A)



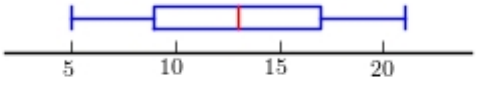
B)



C)



D)



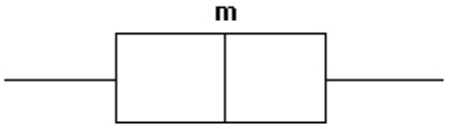
33) A five-number summary of a data set consists of the minimum, Q_1, the median, Q_3, and the maximum. 33) _____

A) False B) True

34) The size of the box in a boxplot shows the _____ of the data set. 34) _____

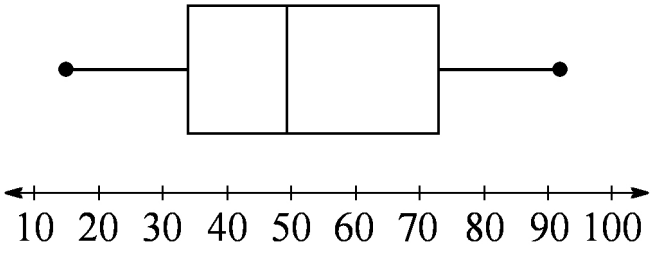
A) variance
B) interquartile range
C) skewness
D) difference between the mean and the median

35) Given the following boxplot where *m* is the median value, what statement could be made about the distribution of the data? 35) _____



A) The distribution is positively skewed.
B) The data are nominal and consequently can not be identified as symmetric or skewed.
C) The distribution is approximately symmetric.
D) The distribution is negatively skewed.

1) B
2) A
3) Quartiles; deciles
4) Outliers
5) B
6) D
7) C
8) B
9) B
10) D
11) B
12) A
13) B
14) C
15) D
16) A
17) C
18) 50
19) C
20) D
21) C
22) 23 is an outlier. Q_1 = 33, Q_3 = 38, IRQ = 5, lower limit = 25.5, upper limit = 45.5
23) C
24) A
25) C
26) B
27) A
28) C
29) B
30) (15, 34, 49.5, 73, 92)



31) D
32) D
33) B
34) B
35) C