STAT 110 – Fall 2009 – Section 4 - Exam 2   Form A

Answer each of the twenty-five questions below on the scantron sheet using a number two-pencil. You may use a non-programmable calculator.

There is a FOUR POINT PENALTY for failing to bubble in your STAT 110 ID (as passed around).
If you fail to bubble in your FORM ID you will receive THE LOWEST SCORE among all the forms

1) A psychologist says that scores on one test for "authoritarian personality" can't be trusted because the test counts having any religious beliefs as authoritarian. The psychologist is attacking the test's:

   a) Reliability
   b) Validity

2) A psychologist says that scores on a second test for "authoritarian personality" can't be trusted because the same person scores very differently every time they take the test. The psychologist is attacking the test's:

   a) Reliability
   b) Validity

3) Adding more questions to an exam generally makes the final score have less random error. This would make the test be:

   a) Less Reliable
   b) Less Valid
   c) More Reliable
   d) More Valid

4) A student is making a pictogram where the population of each state is represented by a square. If the population of Iowa (approximately 3 million) is represented by a 1 centimeter x 1 centimeter square, then how big should the square representing Illinois (approximately 12 million) be?

   a) 0.25 cm x 0.25 cm
   b) 0.5 cm x 0.5 cm
   c) 2 cm x 2 cm
   d) 4 cm x 4 cm
   e) 9 cm x 9 cm

Questions 5-7 concerns the following distribution of educational attainment among people age 30 to 34 in the United States. The data was coded in a spread-sheet so that educational level 1 = "Less than a high school diploma", 2 = "High School Graduate", 3 = "Some College", 4 = "Bachelor's Degree", and 5 = "Advanced Degree".
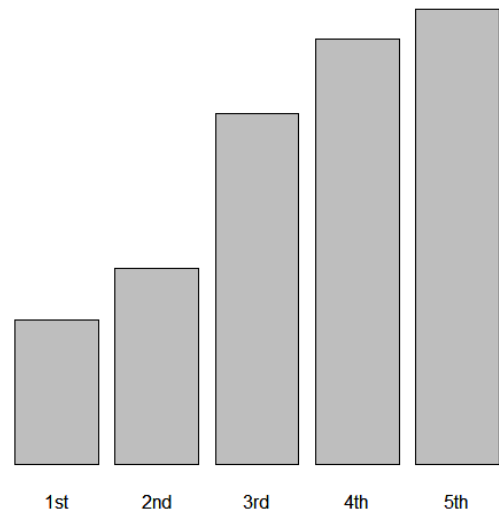
Educational Level	Column A	Column B
1	2.554 million	12.4
2	5.942 million	29.0
3	5.559 million	27.1
4	4.589 million	22.4
5	1.878 million	9.2
Total	20.521 million	100.0

5) Column B is the:

   a) Confidence level
   b) Frequency
   c) Relative Frequency
   d) Variable

6) The third bar in the bar graph to the right corresponds to an educational level of:

   a) 1
   b) 2
   c) 3
   d) 4
   e) 5

7) The educational level used in this data set is:

   a) Categorical
   b) Quantitative

Questions 8-10 refer to the stem plot to the right.

0	0000000000000001111111111122223344444444
0	55555556666777778888889999
1	0000111123344
1	5677788899
2	0000111234
2	556677899
3	00011344
3	6777888
4	024
4	56668
5	0111234
5	557
6	002
6	
7	1
7	9

8) The largest observation is:

    a) 0.0
    b) 0.4
    c) 4.0
    d) 7.9
    e) 9.7
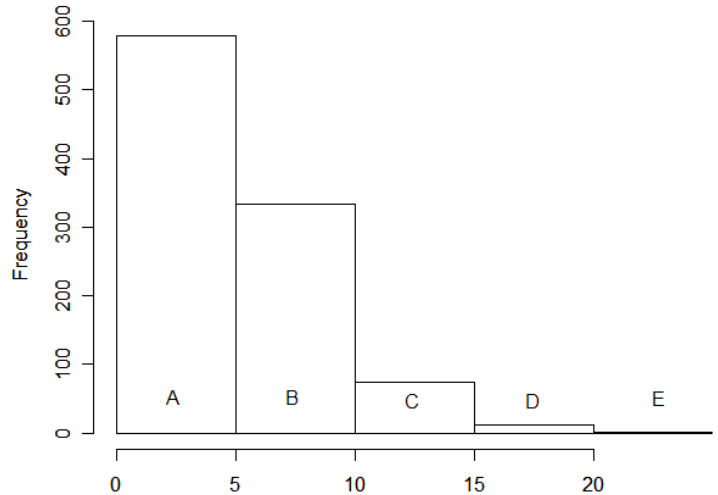
9) This data set is:

    a) Skewed Left
    b) Symmetric
    c) Skewed Right
    d) Bimodal

10) The best measures of center and spread for this distribution are the:

    a) Mean and standard deviation
    b) Median and standard deviation
    c) Mean and IQR
    d) Median and IQR
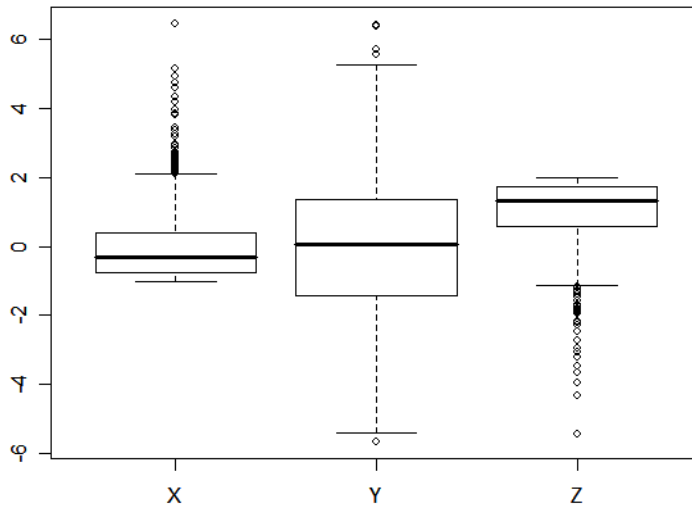
Questions 11 and 12 refer to the histogram to the right:

11) This data set is:
    a) Skewed Left
    b) Symmetric
    c) Skewed Right
    d) Bimodal

12) The median of this data set is:
    a) Approximately equal to the mean
    b) Greater than the mean
    c) Less than the mean
    d) Can't tell from the picture

Questions 13-15 use the side-by-side boxplots shown below:

13) Which of the variables has the largest median?

    a)   X
    b)   Y
    c)   Z
    d)   Can't tell from the picture

14) Which of the variables has the largest inter-quartile range (IQR)?

    a)   X
    b)   Y
    c)   Z
    d)   Can't tell from the picture

15) Which of the variables is skewed left?

    a)   X
    b)   Y
    c)   Z
    d)   Can't tell from the picture

16) A data set has $Q_1=3$, Median=15, and $Q_3=17$. How large would an observation need to be considered an outlier?

    a) 31
    b) 36
    c) 38
    d) 40.5
    e) 42.5

Questions 17-19 are based on the data set: 12   8   9   2   5

17) The mean is:

    a) 7.0
    b) 7.2
    c) 7.5
    d) 8.0
    e) 9.0

18) The median is:

    a) 7.0
    b) 7.2
    c) 7.5
    d) 8.0
    e) 9.0

19) The first quartile (Q_1) is:

    a)   2.0
    b)   3.5
    c)   5
    d)   6.5
    e)   10.5

20)   Most of the houses in a large neighborhood have very similar prices. However there are one or two very expensive ones, and one or two very inexpensive ones.

    a)   The IQR would be small and the standard deviation would be large
    b)   The IQR would be large and the standard deviation would be small
    c)   Both the IQR and the standard deviation would be large
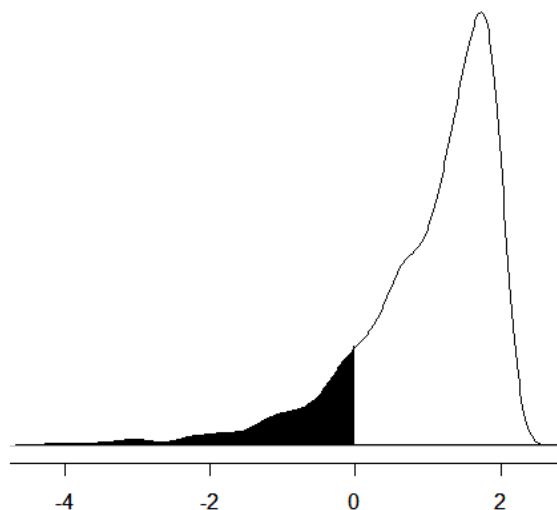   d)   Both the IQR and the standard deviation would be small

Questions 21-22 refer to the density curve to the right.

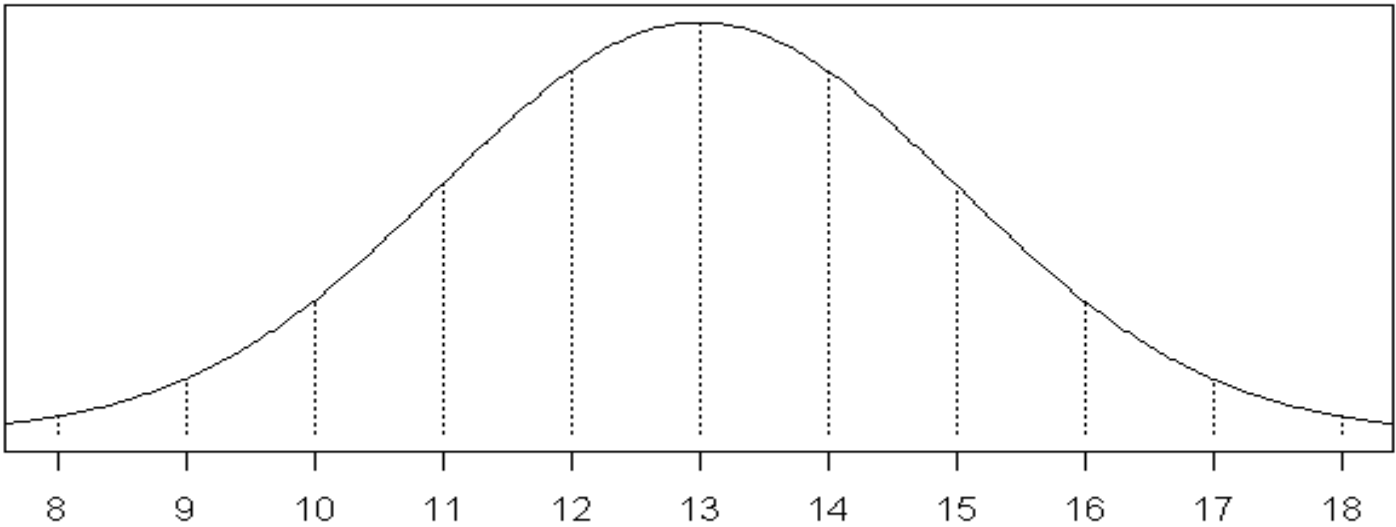21) The area under the density curve **that is shaded in** is approximately:

    a) 0.01 = 1%
    b) 0.15 = 15%
    c) 0.5 = 50%
    d) 0.85 = 85%
    e) 1.00 = 100%

22) This density curve is:

    a)   Skewed Left
    b)   Symmetric
    c)   Skewed Right
    d)   Bimodal

Questions 23-24 refer to the normal distribution plotted below.

23) The mean of the above normal distribution is:

    a) 8
    b) 11
    c) 12
    d) 13
    e) 18

24) The standard deviation of the above normal distribution is:

    a) 1
    b) 2
    c) 3
    d) 4
    e) 5

25) The heights of American women are approximately normal with a mean of 65 inches and a standard deviation of 2.5 inches.   Approximately what percentage of women are between 60 inches and 65 inches?

    a) 2.5%
    b) 16%
    c) 34%
    d) 47.5%
    e) 95%

Make sure you have bubbled in your ID Number and that you took Form A