

Name: _____ Date Due: _____

AP Statistics – Problem Set #1

There are 10 multiple choice and 1 “FRAPPY” on this problem set. Do all of your work within this packet. Circle the letter corresponding to the best answer for the multiple choice questions (worth 1 point each). Answer the AP Free Response question completely, but concisely (worth 4 points).

1. Let's say that a researcher administers a new type of vitamin supplement to a sample of 30 rats. Thirty other rats didn't receive the supplement. Later, he compares the weights of the supplement groups with the nonsupplement group. In this case the rats' weights are an example of which type of data?
- (A) Categorical data
 - (B) Qualitative data
 - (C) Discrete data
 - (D) Continuous data
 - (E) Counted data

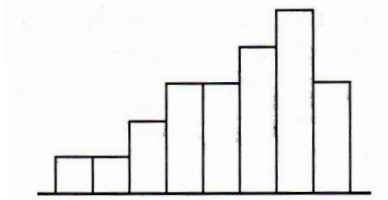
Use the following to answer questions 2 and 3:

During the early part of the 1994 baseball season, many sports fans and baseball players noticed that the number of home runs being hit seemed to be unusually large. Below are the team-by-team statistics on home runs hit through Friday, June 3, 1994 (from the *Columbus Dispatch* Sports Section, Sunday, June 5, 1994), in the form of separate stemplots for the number of home runs by American and National League teams.

<u>American League</u>	<u>National League</u>
2	2 9
3 5	3 1
4 0 3 9	4 2 6 7 8 8
5 1 4 7 8 8	5 3 5 5 5
6 4 8 8	6 3 3 7
7 5 7	7

2. The median for the number of home runs for the American League is:
- (A) lower than that for the National League teams.
 - (B) 45.
 - (C) 50.
 - (D) 57.
 - (E) 57.5.
3. Which of the following is a correct statement?
- (A) The American League plot is reasonably symmetric.
 - (B) The National League plot is slightly skewed to the left.
 - (C) The median number of home runs hit by American League teams was higher than that of National League teams.
 - (D) The 29 home runs in the National League is not considered an outlier.
 - (E) All of the above.

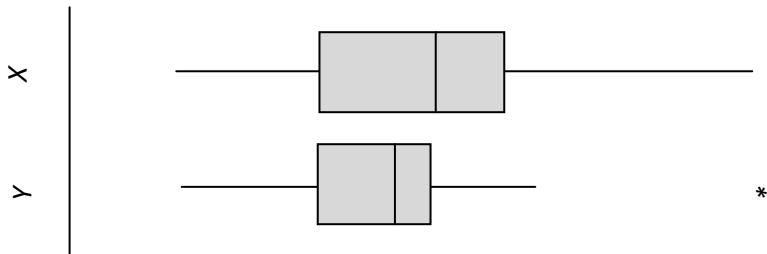
4. Which of the following is more likely to be true of this distribution?



- I. The mean is greater than the median
- II. The graph is skewed to the right.
- III. The graph is skewed to the left.

- (A) I only
- (B) I and II only
- (C) II only
- (D) I and III only
- (E) III only

5. The boxplots below summarize two data sets, X and Y . Which of the following MUST be true?

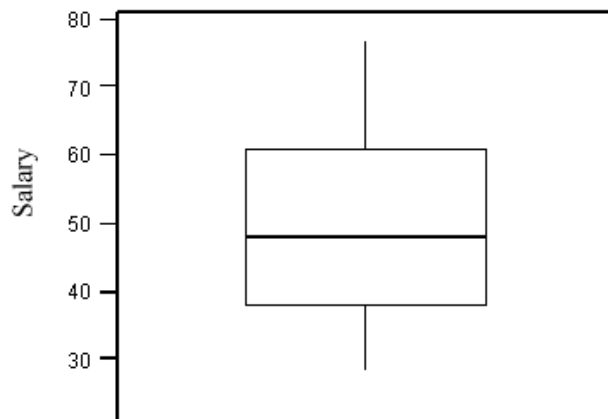


- (A) Set X and set Y have the same number of data points.
- (B) The box of set X contains more data points than the box of set Y .
- (C) The data in set X have a larger range than the data in set Y .
- (D) About 50% of the values in set X are greater than about 75% of the values in set Y .
- (E) The median of set X is less than the median of set Y .

6. If you list and graph the dates of coins in people's pockets and purses, you'd probably find that the graph's distribution is skewed left, because more recent dates are more common. If you want to express the average date of a coin, you'd use:

- (A) the mean.
- (B) the median.
- (C) the mode.
- (D) the mean, median, and mode.
- (E) None of the above

7. A sample of 99 distances has a mean of 24 feet and a median of 24.5 feet. Unfortunately, it has just been discovered that an observation which was erroneously recorded as “30” actually had a value of “35”. If we make this correction to the data, then:
- (A) The mean remains the same, but the median is increased.
 - (B) The mean and median remain the same.
 - (C) The median remains the same, but the mean is increased.
 - (D) The mean and median are both increased.
 - (E) We do not know how the mean and median are affected without further calculations, but the variance is increased.
8. A sample was taken of the salaries of 20 employees of a large company. The following is a boxplot of the salaries (in thousands of dollars) for this year.



Based on this boxplot, which of the following statements is true?

- (A) The maximum salary is between \$60,000 and \$70,000.
 - (B) The minimum salary is \$20,000.
 - (C) The interquartile range is about \$20,000.
 - (D) The data is skewed to the lower end.
 - (E) The median salary is about \$40,000.
9. Here are some data on the average hours spent studying per day by a sample of college students:

Average Hours of Study	Frequency
0 - 2	45
3 - 4	35
5 - 6	29
7 - 10	21

The cumulative relative frequency of students who study 4 hours or fewer a day is:

- (A) 0.385
- (B) 0.500
- (C) 0.615
- (D) 0.690
- (E) 0.810

10. When testing water for chemical impurities, results are often reported as bdl, that is, below detection limit. The following are the measurements of the amount of lead in a series of water samples taken from inner-city households (in parts per million):

5, 7, 12, bdl, 10, 8, bdl, 20, 6

Which of the following is correct?

- (A) The mean lead level in the water is about 10 ppm.
- (B) The mean lead level in the water is about 8 ppm.
- (C) The median lead level in the water is 7 ppm.
- (D) The median lead level in the water is 8 ppm.
- (E) Neither the mean nor the median can be computed because some values are unknown.