

3) How many outliers are there in this data set?

1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024

- A. 0
- B. 1
- C. 2
- D. 3
- E. 4

4) Which of the following is/are resistant to outliers and other extreme values?

- I. mean
- II. median
- III. standard deviation

- A. I only
- B. II only
- C. III only
- D. I and III
- E. II and III

5) Which of the following are true statements?

- I. The range of the sample data set is never greater than the range of the population.
- II. The interquartile range is half the distance between the first quartile and the third quartile.
- III. While the range is affected by outliers, the interquartile range is not.

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

6) If quartiles $Q_1 = 20$ and $Q_3 = 30$, which of the following must be true?

- I. The median is 25.
- II. The mean is between 20 and 30.
- III. The standard deviation is at most 10.

- (A) I only
- (B) II only
- (C) III only
- (D) All are true.
- (E) None are true.

7) When a set of data has suspect outliers, which of the following are preferred measures of central tendency and of variability?

- (A) mean and standard deviation
- (B) mean and variance
- (C) mean and range
- (D) median and range
- (E) median and interquartile range

- 8) A teacher is teaching two AP Statistics classes. On the final exam, the 20 students in the first class averaged 92 while the 25 students in the second class averaged only 83. If the teacher combines the classes, what will the average final exam score be?
- (A) 87
(B) 87.5
(C) 88
(D) None of the above
(E) More information is needed to make this calculation.

- 9) If the standard deviation of a set of observations is 0, you can conclude
- (A) that there is no relationship between the observations.
(B) that the average value is 0.
(C) that all observations are the same value.
(D) that a mistake in arithmetic has been made.
(E) none of the above.

- 10) Suppose the starting salaries of a graduating class are as follows:

Number of Students	Starting Salary (\$)
10	15,000
17	20,000
25	25,000
38	30,000
27	35,000
21	40,000
12	45,000

What is the mean starting salary?

- (A) \$30,000
(B) \$30,533
(C) \$32,500
(D) \$32,533
(E) \$35,000

- 11) Which of the following statements are true?

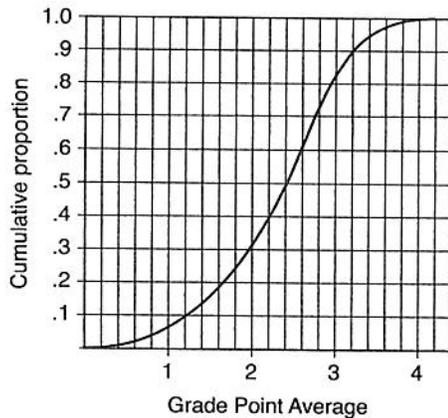
- I. In a stemplot the number of leaves equals the size of the set of data.
II. Both the dotplot and the stemplot are useful in identifying outliers.
III. Histograms do not retain the identity of individual scores; however, dotplots, stemplots, and boxplots all do.

- (A) I and II
(B) I and III
(C) II and III
(D) I, II, and III
(E) None of the above gives the complete set of true responses.

12) The first 115 Kentucky Derby winners by color of horse were as follows: roan, 1; gray, 4; chestnut, 36; bay, 53; dark bay, 17; and black, 4. (You should "bet on the bay!") Which of the following visual displays is most appropriate?

- (A) Bar chart
- (B) Histogram
- (C) Stemplot
- (D) Boxplot
- (E) Time plot

For Questions 13 and 14 consider the following: The graph below shows cumulative proportions plotted against grade point averages for a large public high school.



13) What is the median grade point average?

- (A) 0.8
- (B) 2.0
- (C) 2.4
- (D) 2.5
- (E) 2.6

14) What is the interquartile range?

- (A) 1.0
- (B) 1.8
- (C) 2.4
- (D) 2.8
- (E) 4.0

Free Response

- 1) According to a 1988 *New York Times* article, the ten car models with the highest theft rates were as follows:

Vehicle Model	Thefts per 1000 Cars
Pontiac Firebird	30.14
Chevrolet Camaro	26.02
Chevrolet Monte Carlo	20.28
Toyota MR2	19.25
Buick Regal	14.70
Mitsubishi Starion	14.70
Ferrari Mondial	13.60
Mitsubishi Mirage	12.80
Pontiac Fiero	12.68
Oldsmobile Cutlass	11.73

What are the mean, range, and standard deviation of these theft rates? Explain how each of these values changes if each theft rate increases by 1.5 and if each increases by 15%.

- 2) In 1977 the 88 quarterbacks on National Football League (NFL) rosters earned a mean salary of either \$58,750 or \$89,354. The number that is not the mean is the median. Which number is the mean salary? Justify your answer.