Questions on Topic 1: Graphical Displays

Multiple-Choice Questions

Directions: The questions or incomplete statements that follow are each followed by five suggested answers or completions. Choose the response that best answers the question or completes the statement.

1. Following are the SAT math scores for an AP Statistics class of 20 students: 664, 658, 610, 670, 640, 643, 675, 650, 676, 575, 660, 661, 520, 667, 668, 635, 671, 673, 645, and 650. The distribution of scores is

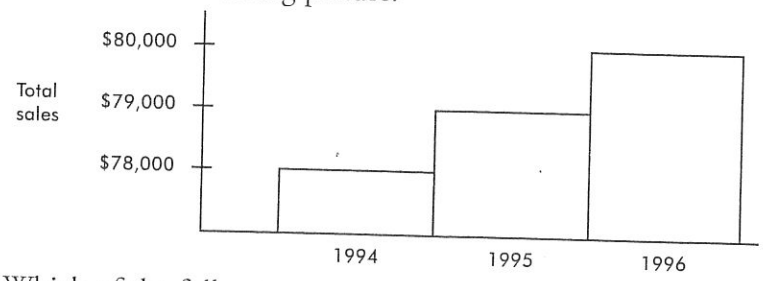
   (A) symmetric.
   (B) skewed to the left.
   (C) skewed to the right.
   (D) uniform.
   (E) bell-shaped.

2. Which of the following statements are true?

   I. Stemplots are useful both for quantitative and categorical data sets.
   II. Stemplots are equally useful for small and very large data sets.
   III. Stemplots can show symmetry, gaps, clusters, and outliers.

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

3. Consider the following picture:

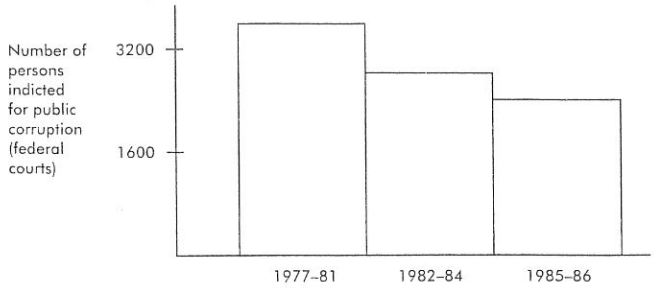


   Which of the following statements are true?

   I. Total sales in 1995 were two times total sales in 1994, while total sales in 1996 were three times the 1994 total.
   II. The choice of labeling for the vertical axis results in a misleading sales picture.
   III. A histogram showing the same information, but this time with a vertical axis starting at $78,000, would be less misleading.

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

4. Consider the following histogram:



Which of the following statements are true?

I. Each year from 1977 to 1986 the number of indictments has steadily decreased.
II. While the number of indictments has decreased each year, the amount of decrease has lessened.
III. The labeling of the horizontal axis has resulted in a misleading picture.

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

5. Which of the following are true statements?

I. Both dotplots and stemplots can show symmetry, gaps, clusters, and outliers.
II. In histograms, relative areas correspond to relative frequencies.
III. In histograms, frequencies can be determined from relative heights.

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

6. Which of the following are true statements?

I. All symmetric histograms have single peaks.
II. All symmetric bell-shaped curves are normal.
III. All normal curves are bell-shaped and symmetric.

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

7. Which of the following distributions are more likely to be skewed to the right than skewed to the left?

   I. Household incomes
   II. Home prices
   III. Ages of teenage drivers

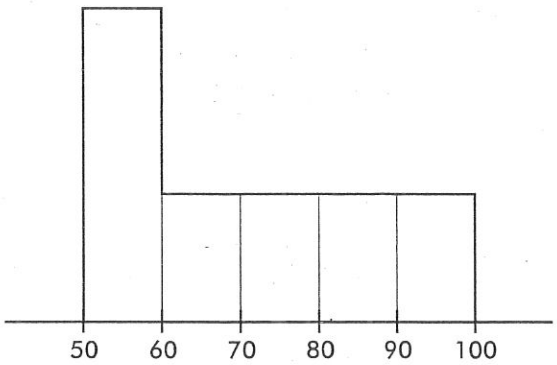
   (A) II only
   (B) I and II
   (C) I and III
   (D) II and III
   (E) I, II, and III

8. Which of the following are true statements?

   I. Two students working with the same set of data may come up with histograms that look different.
   II. Displaying outliers is less problematic when using histograms than when using stemplots.
   III. Histograms are more widely used than stemplots or dotplots because histograms display the values of individual observations.

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

9. Following is a histogram of test scores.



   Which of the following statements are true?

   I. The middle (median) score was 75.
   II. If the passing score was 60, most students failed.
   III. More students scored between 50 and 60 than between 90 and 100.

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

Answer Key

1. **B**	4. **C**	7. **B**
2. **C**	5. **B**	8. **A**
3. **B**	6. **C**	9. **C**

Answers Explained

1. **(B)** The low scores of 520, 575, and 610, far from the remaining scores which are all between 635 and 680, make this distribution skewed to the left.

2. **(C)** Stemplots are not used for categorical data sets and are too unwieldy to be used for very large data sets.

3. **(B)** The vertical axis, starting at $77,000, results in a misleading sales picture. It would be better to start at $0, not $78,000.

4. **(C)** Labeling the horizontal axis with different year spans results in a misleading picture. The number of indictments per year is actually increasing.

5. **(B)** In general, histograms give information about relative frequencies, not actual frequencies.

6. **(C)** Symmetric histograms can have any number of peaks. All normal curves are bell-shaped and symmetric, but not all symmetric bell-shaped curves are normal.

7. **(B)** Incomes and home prices tend to have a few very high scores that make the distributions skewed to the right. Teenage drivers mostly have ages in the last teenage years with a scattering of younger drivers, and thus a distribution skewed to the left.

8. **(A)** Choice of width and number of classes changes the appearance of a histogram. Displaying outliers is *more* problematic with histograms. Histograms do not show individual observations.

9. **(C)** The median score splits the area in half, and so the median is not 75. The area between 50 and 60 is greater than the area between 90 and 100 but is less than the area between 60 and 100.