1) To satisfy a Congessional mandate, the Federal Aviation Administration (FAA) monitors airlines for safety and customer service. For each domestic flight, the airline must report the type of aircraft used for that flight, number of passengers, whether or not the flight departed and arrived on schedule, and any mechanical problems. Select the choice below that completely describes the Who, What, and Why for this data.
   A) All airports; number of departures and arrival at each airport, type of aircraft that use the airport, number of passengers that use the airport; satisfy Congressional mandate.
   B) All airline flights in the United States; type of aircraft, number of passengers, whether or not departures and arrivals were on schedule, mechanical problems; satisfy Congressional mandate.
   C) All airline passengers; departure and destination airport; type of aircraft that passenger flies, whether passenger arrived on time; satisfy Congressional mandate.
   D) All airline flights in the United States; departure airport, destination airport; satisfy Congressional mandate.

Use the data to create a stem-and-leaf plot
2) The following data show the number of laps run by each participant in a marathon.
46 65 55 43 51 48 57 30 43 49 32 56
A)  
   3 | 0 2
   4 | 3 6 8 9
   4 | 1 3 5 6 7
   6 | 5
B)  
   3 | 0 2
   4 | 3 6 8 9
   4 | 1 3 5 6
   6 | 5
C)  
   3 | 0 2
   4 | 3 3 6 8 9
   5 | 1 5 6 7
   6 | 5
D)  
   3 | 0 2
   4 | 3 3 6 8 9 9
   5 | 1 5 6 7
   6 | 5
E)  
   3 | 0
   4 | 3 6 8 9
   4 | 1 3 5 6 7
   6 | 5
Use the following to answer questions 3 and 4.

A nurse measured the blood pressure of each person who visited her clinic. Following is a relative frequency histogram for the systolic blood pressure readings for those people aged between 25 and 40. Use the histogram to answer the question. The blood pressure readings were given to the nearest whole number.

![Histogram of systolic blood pressure readings](image)

3) Approximately what percentage of the people aged 25-40 had a systolic blood pressure reading between 110 and 119 inclusive?
   A) 35%  B) 15%  C) 30%  D) 0.35%  E) 3.5%

4) Given that 200 people were aged between 25 and 40, approximately how many had a systolic blood pressure reading less than 130?
   A) 25  B) 50  C) 75  D) 100  E) 150

A graphical display of a data set is given. Identify the overall shape of the distribution as (roughly) bell-shaped, right skewed, left skewed, bimodal, multimodal.

5) A stem-and-leaf diagram is given below for the ages of the patients at a hospital.

```
0 4 0
1 4 2
2 0 2 0 3
3 0 1 5 8 2 9
4 3 4 5 1 7 1 8 2
5 3 6 2 6 8 9 3 3 0 6 3 6 3
6 6 2 8 1 8 3 3 6 2 6 9 0 5 0 3 6 7 5
7 2 5 3 7 8 9 5 3 6 7 8 4 8 9 3 6 7 8 5 5
8 4 6 0 8 5 3 2 6 2 7 8 9 0
9 1 4 6 7 3
```

   A) Bell shaped  B) Left skewed  C) Bimodal  D) Multimodal  E) Right skewed
6) The number of days that homes stay on the market before they sell in Houston is bell-shaped with a mean equal to 56 days. Further, 95 percent of all homes are on the market between 40 and 72 days. Based on this information, what is the standard deviation for the number of days that houses stay on the market in Houston?

A) \( \sqrt{8} \) B) 4 C) 8 D) 16

7) The weekly salaries (in dollars) of 24 randomly selected employees of a company are shown below. Choose the correct boxplot for the data set. What is the shape of the distribution?

310 320 450 460 470 500 520 540
580 600 650 700 710 840 870 900
1000 1200 1250 1300 1400 1720 2500 3700

A) Skewed-right
B) Skewed-right
C) Bell-shaped
D) Skewed-left
E) Skewed-left
8) For the distribution shown above, identify the mean, median, and Q3.
   A) A = mean, B = Q3, C = median
   B) A = median, B = mean, C = Q3
   C) A = Q3, B = median, C = mean
   D) A = Q3, B = mean, C = median
   E) A = median, B = Q3, C = mean

9) You learn that your company is sending you and several other employees to staff a new office in China. While there everyone will earn the equivalent of their current salary, converted to Chinese currency at the rate of 8 yuans per dollar. In addition, everyone will earn a weekly foreign living allowance of 200 yuans. For example, since you are earning $1000 per week, your weekly salary in China will be $1000 \times 8 + 200 = 8200$ yuans.
   Shown are some summary statistics describing the current US salaries of this group being sent overseas.

<table>
<thead>
<tr>
<th>Statistic</th>
<th>In the US</th>
<th>In China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum salary</td>
<td>$400</td>
<td></td>
</tr>
<tr>
<td>Standard deviation</td>
<td>$250</td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>$750</td>
<td></td>
</tr>
<tr>
<td>IQR</td>
<td>$300</td>
<td></td>
</tr>
</tbody>
</table>

The standard deviation and median of the salaries in China are, respectively:

A) (2000 yuans, 6200 yuans)  B) (2200 yuans, 6200 yuans)
C) (250 yuans, 6000 yuans)   D) (450 yuans, 950 yuans)

10) Suppose that the acidity (pH) of rainwater has a distribution that is approximately symmetric and mound-shaped; rainwater tested after last week's storm had a z-score of 1.8. This means that the acidity of that rain...
   A) had a pH of 1.8.
   B) had a pH 1.8 standard deviations higher than that of average rainwater.
   C) had a pH 1.8 times that of average rainwater.
   D) varied with a standard deviation of 1.8
   E) had a pH 1.8 higher than average rainfall.
11) A simple random sample of size 8 is defined to be
   A) A sample of size 8 chosen so that every individual unit in the population has the same chance of being selected.
   B) A sample of size 8 chosen so that every possible group of 8 units in the population has an equal chance to be the sample actually selected.
   C) All of the choices are essentially equivalent definitions.
   D) A sample of size 8 chosen so that every individual unit in the population has a nonzero chance of being selected.

12) The average IQ of students in a particular calculus class is 110, with a standard deviation of 5. The distribution is roughly symmetric and mound-shaped. Use the 68-95-99.7 Rule to find the percentage of students with an IQ above 120.
   A) 13.5%  
   B) 2.5%  
   C) 6.4%  
   D) 11.15%  
   E) 15.85%

In a recent issue, *Consumer Reports* magazine reported the prices, in US dollars, of 23 models of cordless phones. A summary of the prices is shown below:

<table>
<thead>
<tr>
<th>Min</th>
<th>Q1</th>
<th>Median</th>
<th>Q3</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>30</td>
<td>50</td>
<td>110</td>
<td>200</td>
<td>71.75</td>
<td>52.08</td>
</tr>
</tbody>
</table>

13) Based on the summary statistics, which of the following is true?
   A) The price data is skewed to the left.
   B) The mean is a better measure of center for these data than the median.
   C) The price data is skewed to the right.
   D) The standard deviation is larger than the IQR.
   E) The 68-95-99.7 rule is appropriate to use with these data.

14) A researcher is conducting a study on Internet use. She decides to first group the population by education level (not a high school graduate, high school graduate only, some college, college graduate) and then select a random sample from each group. This sampling strategy is called
   A) Convenience  
   B) Systematic  
   C) Stratified  
   D) Cluster  
   E) Simple

Shown below is the five number salary for salaries (in $) from a sample of U.S. marketing managers.

<table>
<thead>
<tr>
<th>Min</th>
<th>Q1</th>
<th>Median</th>
<th>Q3</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>46360</td>
<td>69693</td>
<td>77020</td>
<td>91750</td>
<td>129420</td>
</tr>
</tbody>
</table>

15) Suppose the marketing manager who was earning $129,420 got a raise and is now earning $140,000. Which of the following statement is true?
   I. The mean would increase.
   II. The median would increase.
   III. The standard deviation would increase.
   A) II only  
   B) I, II, and III  
   C) I and III  
   D) III only  
   E) I only
16) A college employs 85 faculty members. Without replacement, select the numbers of the five members who will serve on the tenure committee next year using the random numbers given below.

16348  76938  90169  51392  55887  71015  09209  79157

A) 1634, 3890, 1695, 1392, 1509
B) 16, 34, 69, 38, 13
C) 163, 487, 693, 169, 513
D) 1, 6, 3, 4, 8
E) 163, 169, 15, 92, 97

17) Which of the following statements concerning the box plot and z-score methods for detecting outliers is false?
   A) The box plot method is less affected by an extreme observation in the data set.
   B) The z-score method uses the mean and standard deviation as a basis for detecting outliers.
   C) The box plot method uses the quartiles as a basis for detecting outliers.
   D) The z-score method is less affected by an extreme observation in the data set.
Answer Key
Testname: PRACTICE EXAM1 507

1) B
2) C
3) A
4) E
5) B
6) C
7) A
8) C
9) A
10) B
11) B
12) B
13) C
14) C
15) C
16) B
17) D