A data set has social security numbers of individuals and the income tax paid by them for the year 2009. Then

1. A○ Both are categorical variables
   B○ Social security number is a numerical variable and tax is a categorical variable
   C○ Both are numerical variables
   D○ Social security number is an identifier and tax is a numerical variable

The following stem-and-leaf display shows the number of patients attended by a house-physician in 15 randomly selected weeks:

<table>
<thead>
<tr>
<th>Stem</th>
<th>Leaf</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>1</td>
<td>3 4 6 6 8 8</td>
</tr>
<tr>
<td>2</td>
<td>0 1 2 8</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

Here 0|8 implies 8, 1|3 implies 13 etc. (i.e. the stem represents tens and leaf represents units).

Which observation occurred most?

3. A○ 16
   B○ 30
   C○ 8
   D○ 18

How many weeks the physician had to attend between 15 to 25 patients?

4. A○ 9 weeks
   B○ 8 weeks
   C○ 11 weeks
   D○ 7 weeks

A statistics department consisting of 25 faculty has a median salary of 51000. One of the senior faculty with a salary of 69000 retired from the department and was replaced by a new faculty with a salary of 71000. What can you say about the median salary of the current faculty?

5. A○ Not enough information to draw any conclusion
   B○ The median will increase.
   C○ The median will decrease
   D○ The median will remain unchanged
1 pt] Which of the three boxplots corresponds to data that is approximately symmetric?

6. A ☐ Both X1 and X3
   B ☐ X3
   C ☐ X1
   D ☐ X2

1 pt] Which of the three boxplots corresponds to data that is skewed to the left?

7. A ☐ None of X1, X2 and X3
   B ☐ X2
   C ☐ X1
   D ☐ X3

1 pt] Which of the following variables has the largest median?

8. A ☐ X1
   B ☐ X3
   C ☐ X2
   D ☐ X1

1 pt] Which of the three boxplots has the largest data point?

9. A ☐ X2
   B ☐ X1
   C ☐ X3

1 pt] Which of the three boxplots has the largest IQR?

10. A ☐ X3
    B ☐ X1
    C ☐ X2

1 pt] Which of the three boxplots has the largest range?

11. A ☐ X1
    B ☐ X2
    C ☐ X3

Consider the data set:
18.5, 16.5, 13, 10.5, 34, 18.5

2 pt] What is the mean of the data?

12. A ☐ 18.50
    B ☐ 7.51
    C ☐ 111
    D ☐ 67.70

2 pt] What is the sample standard deviation of the data?

13. A ☐ 56.42.
    B ☐ 67.70.
    C ☐ 8.23.
    D ☐ 7.51.

Students taking an introductory statistics course reported the number of credit hours that they were taking that quarter. Summary statistics are shown below:
Min = 4, Q1 = 16, Median = 17, Q3 = 20,
Max = 24, Mean = 18.6, Standard deviation = 4.0.
Suppose that the college charges $73 per credit hour plus a flat student fee of $35 per quarter. That means

\[ \text{Fee} = 73 \times \text{(credit hour)} + 35. \]
2 pt  What is the mean fee paid (in dollars)?

14. A ○ 1357.8  
    B ○ 16  
    C ○ 1392.8  
    D ○ 18.6

2 pt  What is the standard deviation for the fees paid (in dollars)?

15. A ○ 292  
    B ○ 292  
    C ○ 327  
    D ○ not in the list

2 pt  The median of the fees paid (in dollars) is:

16. A ○ 20  
    B ○ 1241  
    C ○ 292  
    D ○ 1276

2 pt  The inter-quartile range (IQR) of the fees paid (in dollars) is:

17. A ○ 4  
    B ○ 292  
    C ○ 292  
    D ○ 327

2 pt  For a certain data we know: $Q_1 = 63$, $Q_3 = 84$. Identify which of the following observations are outliers: 
100.8 29.5 116.5 42.5 79.8

18. A ○ Only 29.5  
    B ○ All of them are outliers  
    C ○ Both 100.8 and 116.5  
    D ○ None of these observations are outliers  
    E ○ Both 29.5 and 116.5

For a certain data, the mean is 77 and the standard deviation is 6.

2 pt  Then the z-score of 92.0 is:

19. A ○ 77  
    B ○ insufficient information to compute z-score  
    C ○ 2.50  
    D ○ 6

2 pt  For a certain observation the z-score is 1.15. Then the actual observation is:

20. A ○ 6  
    B ○ not in the list  
    C ○ 83.9  
    D ○ 1.15

2 pt  What percent of a standard normal model [i.e. normal model with mean 0, and standard deviation 1] is found in the region $-2.50 < z < 2.50$?

21. A ○ 2.50%  
    B ○ 98.76%  
    C ○ 99.38%  
    D ○ 0.62%

2 pt  What value of Z (standard normal) gives 32% of the area above it?

22. A ○ 2.50  
    B ○ 0.47  
    C ○ 32  
    D ○ not in the list
In order to plan transportation and parking needs at a private high school, administrations asked students how they get to school. Some rode a school bus, some rode in with parents or friends, and others used "personal" transportation - bikes, skateboards, or just walked. The table summarizes the response from boys and girls.

<table>
<thead>
<tr>
<th></th>
<th>Boy</th>
<th>Girl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus</td>
<td>30</td>
<td>33</td>
</tr>
<tr>
<td>Ride</td>
<td>37</td>
<td>43</td>
</tr>
<tr>
<td>Personal</td>
<td>21</td>
<td>30</td>
</tr>
</tbody>
</table>

1 pt Number of students taken part in the survey is:

23. A 88
   B 194
   C 63
   D 80

2 pt What percent of students surveyed are girl?

    B 106
    C 17.01
    D 54.64

2 pt What percent of students take school bus?

25. A 54.64
    B 32.47
    C 52.38
    D 63

2 pt What percent of the students are girls who ride the bus?

26. A 31.13
    B 52.38
    C 54.64
    D 17.01

2 pt What percent of girls ride bus?

27. A 52.38
    B 17.01
    C 31.13
    D 54.64

2 pt What percent of bus riders are girls?

28. A 17.01
    B 54.64
    C 52.38
    D 31.13

2 pt A Statistics class consists of 32 students, who are labeled as 01, 02, . . . 31, 32. We wish to select a sample of 4 students (no student will be selected more than once) and evaluate their performance on a test. We shall use the following random digits to draw the sample:

31494 73194 03015 02200 60227 43367 27581

If we start at the beginning of the above random digits list, to choose a simple random sample of four students, then the selected students are:

29. A 31, 31, 03, 01
    B 3, 1, 4, 9
    C 31, 49, 47, 31
    D 31, 03, 01, 22