MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Determine whether the given value is a statistic or a parameter.
1) After inspecting all of 55,000 kg of meat stored at the Wurst Sausage Company, it was found that 45,000 kg of the meat was spoiled.
   A) Parameter       B) Statistic

Determine whether the given value is from a discrete or continuous data set.
2) The number of limbs on a 2-year-old oak tree is 21.
   A) Continuous      B) Discrete

Provide an appropriate response.
3) The frequency distribution below summarizes the home sale prices in the city of Summerhill for the month of June. Find the class boundaries for class 80.0-110.9.

<table>
<thead>
<tr>
<th>Sale price in thousand $</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>80.0 – 110.9</td>
<td>2</td>
</tr>
<tr>
<td>111.0 – 141.9</td>
<td>5</td>
</tr>
<tr>
<td>142.0 – 172.9</td>
<td>7</td>
</tr>
<tr>
<td>173.0 – 203.9</td>
<td>10</td>
</tr>
<tr>
<td>204.0 – 234.9</td>
<td>3</td>
</tr>
<tr>
<td>235.0 – 265.9</td>
<td>1</td>
</tr>
</tbody>
</table>

A) 80.00, 110.95          B) 79.95, 110.95       C) 79.90, 111.0       D) 79.90, 110.95

Construct the cumulative frequency distribution that corresponds to the given frequency distribution.
4) Height (inches) | Frequency
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>69.0 – 71.9</td>
<td>19</td>
</tr>
<tr>
<td>72.0 – 74.9</td>
<td>17</td>
</tr>
<tr>
<td>75.0 – 77.9</td>
<td>15</td>
</tr>
<tr>
<td>78.0 – 80.9</td>
<td>20</td>
</tr>
<tr>
<td>81.0 – 83.9</td>
<td>9</td>
</tr>
</tbody>
</table>

A) | Cumulative Frequency       | B) | Cumulative Frequency
|------------------|---------|
| Height (inches) | Frequency | Height (inches) | Frequency
| Less than 72.0  | 19       | 69.0 – 71.9     | 19
| Less than 75.0  | 36       | 72.0 – 74.9     | 36
| Less than 78.0  | 51       | 75.0 – 77.9     | 51
| Less than 81.0  | 71       | 78.0 – 80.9     | 71
| Less than 84.0  | 80       | 81.0 – 83.9     | 80

C) | Cumulative Frequency       | D) | Cumulative Frequency
|------------------|---------|
| Height (inches) | Frequency | Height (inches) | Frequency
| Less than 72.0  | 0.237    | Less than 72.0  | 36
| Less than 75.0  | 0.212    | Less than 75.0  | 51
| Less than 78.0  | 0.188    | Less than 78.0  | 71
| Less than 81.0  | 0.250    | Less than 81.0  | 80
| Less than 84.0  | 0.113    | Less than 84.0  | 89
Provide an appropriate response.

5) The scores on a recent statistics test are given in the frequency distribution below. Construct the corresponding relative frequency distribution. Round relative frequencies to the nearest hundredth of a percent if necessary.

<table>
<thead>
<tr>
<th>Scores</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–60</td>
<td>4</td>
</tr>
<tr>
<td>61–70</td>
<td>10</td>
</tr>
<tr>
<td>71–80</td>
<td>12</td>
</tr>
<tr>
<td>81–90</td>
<td>4</td>
</tr>
<tr>
<td>91–100</td>
<td>5</td>
</tr>
</tbody>
</table>

A)  

<table>
<thead>
<tr>
<th>Scores</th>
<th>Relative Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–60</td>
<td>0.20%</td>
</tr>
<tr>
<td>61–70</td>
<td>0.20%</td>
</tr>
<tr>
<td>71–80</td>
<td>0.49%</td>
</tr>
<tr>
<td>81–90</td>
<td>0.03%</td>
</tr>
<tr>
<td>91–100</td>
<td>0.09%</td>
</tr>
</tbody>
</table>

B)  

<table>
<thead>
<tr>
<th>Scores</th>
<th>Relative Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–60</td>
<td>15.5%</td>
</tr>
<tr>
<td>61–70</td>
<td>22.1%</td>
</tr>
<tr>
<td>71–80</td>
<td>31.3%</td>
</tr>
<tr>
<td>81–90</td>
<td>16.2%</td>
</tr>
<tr>
<td>91–100</td>
<td>14.9%</td>
</tr>
</tbody>
</table>

C)  

<table>
<thead>
<tr>
<th>Scores</th>
<th>Relative Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–60</td>
<td>12.5%</td>
</tr>
<tr>
<td>61–70</td>
<td>20.1%</td>
</tr>
<tr>
<td>71–80</td>
<td>37.3%</td>
</tr>
<tr>
<td>81–90</td>
<td>15.2%</td>
</tr>
<tr>
<td>91–100</td>
<td>14.9%</td>
</tr>
</tbody>
</table>

D)  

<table>
<thead>
<tr>
<th>Scores</th>
<th>Relative Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–60</td>
<td>11.43%</td>
</tr>
<tr>
<td>61–70</td>
<td>28.57%</td>
</tr>
<tr>
<td>71–80</td>
<td>34.29%</td>
</tr>
<tr>
<td>81–90</td>
<td>11.43%</td>
</tr>
<tr>
<td>91–100</td>
<td>14.29%</td>
</tr>
</tbody>
</table>

6) 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. The blood pressure readings were given to the nearest whole number. What class width was used to construct the relative frequency distribution?

A) 100  B) 10  C) 11  D) 9
Construct the dotplot for the given data.
7) A manufacturer records the number of errors each work station makes during the week. The data are as follows.
6 3 2 3 5 2 0 2 5 4 2 0 1

Use the data to create a stemplot.
8) The attendance counts for this season's basketball games are listed below.
227 239 215 219
221 233 229 233
235 228 245 231
A) 21 | 5 9
   22 | 1 7 8 9
   23 | 1 3 3 5 9
   24 | 5
B) 21 | 5 7 9
   22 | 1 8 9
   23 | 1 3 3 5 9
   24 | 5

Find the original data from the stemplot.
9) Stem | Leaves
   6   | 1 7
   7   | 1 1 3 5
   8   | 1 3 3 7 9
   9   | 3 5
A) 61, 67, 73, 73, 75, 83, 85, 87, 89, 93, 95
B) 7, 13, 7, 9, 11, 9, 9, 11, 15, 17, 12, 14, 15
C) 63, 63, 65, 71, 71, 73, 75, 81, 81, 93, 95
D) 61, 67, 71, 71, 73, 75, 81, 83, 83, 87, 89, 93, 95

Provide an appropriate response.
10) The table contains data from a study of daily study time for 40 students from Statistics 101. Construct an ogive from the data.

<table>
<thead>
<tr>
<th>Minutes on homework</th>
<th>Number of students</th>
<th>Relative frequency</th>
<th>Cumulative frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–15</td>
<td>2</td>
<td>0.05</td>
<td>2</td>
</tr>
<tr>
<td>16–30</td>
<td>4</td>
<td>0.10</td>
<td>6</td>
</tr>
<tr>
<td>31–45</td>
<td>8</td>
<td>0.20</td>
<td>14</td>
</tr>
<tr>
<td>46–60</td>
<td>18</td>
<td>0.45</td>
<td>32</td>
</tr>
<tr>
<td>61–75</td>
<td>4</td>
<td>0.10</td>
<td>36</td>
</tr>
<tr>
<td>76–90</td>
<td>4</td>
<td>0.10</td>
<td>40</td>
</tr>
</tbody>
</table>

A) Frequency distribution of homework time.

B) Relative frequency distribution of homework time.

C) Cumulative frequency distribution of homework time.

D) Cumulative relative frequency distribution of homework time.
Find the mean for the given sample data. Unless indicated otherwise, round your answer to one more decimal place than is present in the original data values.

11) Last year, nine employees of an electronics company retired. Their ages at retirement are listed below. Find the mean retirement age.

51  61  62
54  68  58
60  57  54

A) 57.7 yr  B) 58.3 yr  C) 58.0 yr  D) 57.1 yr

Find the median for the given sample data.

12) A store manager kept track of the number of newspapers sold each week over a seven-week period. The results are shown below.

80  39  214  152  264  239  232

Find the median number of newspapers sold.

A) 174 newspapers  B) 214 newspapers  C) 152 newspapers  D) 232 newspapers

Find the mode(s) for the given sample data.

13) 7.11  7.41  7.56  7.11  7.88  7.99  7.62

A) 7.41  B) 7.11  C) 7.526  D) 7.56

Find the midrange for the given sample data.

14) 1.5  2.6  3.0  1.0  1.2  3.9  1.8  3.5  2.3  1.8

A) 1.8  B) 2.3  C) 2.25  D) 2.45

Solve the problem.

15) A student earned grades of 92, 79, 93, and 74 on her four regular tests. She earned a grade of 79 on the final exam and 88 on her class projects. Her combined homework grade was 87. The four regular tests count for 40% of the final grade, the final exam counts for 30%, the project counts for 10%, and homework counts for 20%. What is her weighted mean grade? Round to one decimal place.

A) 84.5  B) 85.0  C) 84.6  D) 83.7

Find the range for the given sample data.

16) Jorge has his own business as a painter. The amounts he made in the last five months are shown below.

$2416  $2423  $1644  $2036  $1267

A) $779  B) $772  C) $1156  D) $1149

Find the variance for the given data. Round your answer to one more decimal place than the original data.

17) 6.6  8.5  4.6  1.7  2.4

A) 12.80  B) 7.98  C) 8.08  D) 6.46

Find the standard deviation for the given sample data. Round your answer to one more decimal place than is present in the original data.

18) Christine is currently taking college astronomy. The instructor often gives quizzes. On the past seven quizzes, Christine got the following scores:

50  15  31  27  11  42  71

A) 20.9  B) 11,341  C) 31  D) 8715.6
Find the coefficient of variation for each of the two sets of data, then compare the variation. Round results to one decimal place.

19) The customer service department of a phone company is experimenting with two different systems. On Monday they try the first system which is based on an automated menu system. On Tuesday they try the second system in which each caller is immediately connected with a live agent. A quality control manager selects a sample of seven calls each day. He records the time for each customer to have his or her question answered. The times (in minutes) are listed below.

Automated Menu: 11.7 7.5 3.9 2.9 9.2 6.3 5.5
Live agent: 6.4 2.8 4.4 4.1 3.4 5.2 3.7

A) Automated Menu: 25.2%
   Live agent: 44.2%
   There is substantially more variation in the times for the live agent.

B) Automated Menu: 45.4%
   Live agent: 28.1%
   There is substantially more variation in the times for the automated menu system.

C) Automated Menu: 48.8%
   Live agent: 30.2%
   There is substantially more variation in the times for the automated menu system.

D) Automated Menu: 47.1%
   Live agent: 29.1%
   There is substantially more variation in the times for the automated menu system.

Use the empirical rule to solve the problem.

20) The amount of Jen’s monthly phone bill is normally distributed with a mean of $70 and a standard deviation of $9. What percentage of her phone bills are between $43 and $97?

A) 68%  B) 99.7%  C) 95%  D) 99.99%

Solve the problem.

21) The coefficient of variation, expressed as a percent, is used to describe the standard deviation relative to the mean. It allows us to compare variability of data sets with different measurement units and is calculated as follows:

\[
\text{coefficient of variation} = 100 \left( \frac{s}{\bar{x}} \right)
\]

Find the coefficient of variation for the following sample of weights (in pounds):

130 127 186 105 197
153 172 150 116 125

A) 23.2%  B) 25.9%  C) 18.5%  D) 21.1%

Find the percentile for the data value.

22) Data set: 122 134 126 120 128 130 120 118 125 122 126 136 118 122 124 119; data value: 128

A) 75  B) 70  C) 85  D) 62

Find the indicated measure.

23) The weights (in pounds) of 30 newborn babies are listed below. Find P_{16}.

5.5 5.7 5.8 5.9 6.1 6.1 6.4 6.4 6.5 6.6
6.7 6.7 6.7 6.9 7.0 7.0 7.0 7.1 7.2 7.2
7.4 7.5 7.7 7.7 7.8 8.0 8.1 8.1 8.3 8.7

A) 4.8 lb  B) 6.0 lb  C) 6.1 lb  D) 5.9 lb
Construct a boxplot for the given data. Include values of the 5-number summary in all boxplots.

24) The test scores of 40 students are listed below. Construct a boxplot for the data set.

25  35  43  44  47  48  54  55  56  57
59  62  63  65  66  68  69  69  71  72
72  73  74  76  77  77  78  79  80  81
81  82  83  85  89  92  93  94  97  98

A)  
B)  
C)  
D)  

25) Answer the question.

25) What is the probability of an event that is certain to occur?

A) 1  
B) 0.5  
C) 0.99  
D) 0.95

26) Find the indicated probability.

26) A bag contains 2 red marbles, 3 blue marbles, and 7 green marbles. If a marble is randomly selected from the bag, what is the probability that it is blue?

A) \( \frac{1}{7} \)  
B) \( \frac{1}{4} \)  
C) \( \frac{1}{3} \)  
D) \( \frac{1}{9} \)

27) Estimate the probability of the event.

27) Of 1982 people who came into a blood bank to give blood, 340 people had high blood pressure. Estimate the probability that the next person who comes in to give blood will have high blood pressure.

A) 0.223  
B) 0.172  
C) 0.14  
D) 0.091

28) From the information provided, create the sample space of possible outcomes.

28) Two white mice mate. The male has both a white and a black fur-color gene. The female has only white fur-color genes. The fur color of the offspring depends on the pairs of fur-color genes that they receive. Assume that neither the white nor the black gene dominates. List the possible outcomes.

A) WB, BW  
B) WW, WW  
C) WW, BB  
D) WW, BW

29) Find the indicated complement.

29) The probability that Luis will pass his statistics test is 0.90. Find the probability that he will fail his statistics test.

A) 0.45  
B) 9.00  
C) 0.10  
D) 1.11

30) Is Event B dependent or independent of Event A?

30) A green ball is drawn from a box with five balls and placed next to the box.

B: A red ball is drawn next and placed next to the green one.

A) Independent  
B) Dependent
Find the indicated probability. Express your answer as a simplified fraction unless otherwise noted.

31) The table below shows the soft drinks preferences of people in three age groups. If one of the 255 subjects is randomly selected, find the probability that the person is over 40 years of age given that they drink root beer.

If one of the 255 subjects is randomly selected, find the probability that the person is over 40 years of age given that they drink root beer.

A) $\frac{5}{17}$  
B) $\frac{6}{17}$  
C) $\frac{2}{5}$  
D) None of the above is correct.

32) The following table contains data from a study of two airlines which fly to Small Town, USA.

If one of the 87 flights is randomly selected, find the probability that the flight selected arrived on time given that it was an Upstate Airlines flight.

A) $\frac{11}{76}$  
B) $\frac{43}{48}$  
C) $\frac{43}{87}$  
D) None of the above is correct.

Find the indicated probability.

33) In a certain class of students, there are 9 boys from Wilmette, 3 girls from Winnetka, 6 girls from Wilmette, 7 boys from Glencoe, 3 boys from Winnetka and 9 girls from Glenoce. If the teacher calls upon a student to answer a question, what is the probability that the student will be a boy?

A) 0.243  
B) 0.514  
C) 0.643  
D) 0.432

Estimate the probability of the event.

34) Of 1970 people who came into a blood bank to give blood, 230 people had high blood pressure. Estimate the probability that the next person who comes in to give blood will have high blood pressure.

A) 0.085  
B) 0.168  
C) 0.117  
D) 0.036

From the information provided, create the sample space of possible outcomes.

35) Flip a coin three times.

A) HHH HTH HTT TTT HTH HHT THT  
B) HHH HHT HTH HTT THH THT TTH TTT  
C) HHH TTH HTH HTT TTH HTH  
D) HTH HTH HTH TTH TTH TTT
Answer Key
Testname: STA120-REVIEW-EXAM1

1) A
2) B
3) B
4) A
5) D
6) B
7) A
8) A
9) D
10) C
11) B
12) B
13) B
14) D
15) D
16) C
17) C
18) A
19) B
20) B
21) D
22) A
23) C
24) A
25) A
26) B
27) B
28) D
29) C
30) B
31) C
32) B
33) B
34) C
35) B