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

Use the given frequency distribution to find the
(a) class width.
(b) class midpoints of the first class.
(c) class boundaries of the first class.

1) Height (in inches)

<table>
<thead>
<tr>
<th>Class</th>
<th>Frequency, ( f )</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 – 52</td>
<td>5</td>
</tr>
<tr>
<td>53 – 55</td>
<td>8</td>
</tr>
<tr>
<td>56 – 58</td>
<td>12</td>
</tr>
<tr>
<td>59 – 61</td>
<td>13</td>
</tr>
<tr>
<td>62 – 64</td>
<td>11</td>
</tr>
</tbody>
</table>

A) (a) 3    B) (a) 2    C) (a) 2    D) (a) 3
(b) 51      (b) 51.5   (b) 51.5  (b) 51
(c) 49.5–52.5 (c) 50–52 (c) 49.5–52.5 (c) 50–52

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Use the given frequency distribution to construct a frequency histogram, a relative frequency histogram and a frequency polygon.

2) Weight (in pounds)

<table>
<thead>
<tr>
<th>Class</th>
<th>Frequency, ( f )</th>
</tr>
</thead>
<tbody>
<tr>
<td>135 – 139</td>
<td>6</td>
</tr>
<tr>
<td>140 – 144</td>
<td>4</td>
</tr>
<tr>
<td>145 – 149</td>
<td>11</td>
</tr>
<tr>
<td>150 – 154</td>
<td>15</td>
</tr>
<tr>
<td>155 – 159</td>
<td>8</td>
</tr>
</tbody>
</table>
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Provide an appropriate response.

3) Use the ogive below to approximate the number in the sample.

Leisure Time of College Students

A) 100  B) 80  C) 28  D) 341

4) Use the ogive below to approximate the cumulative frequency for 24 hours.

Leisure Time of College Students

A) 75  B) 17  C) 63  D) 27

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

The Highway Patrol, using radar, checked the speeds (in mph) of 30 passing motorists at a checkpoint. The results are listed below.

44 38 41 50 36 36 43 42 49 48
35 40 37 41 43 50 45 45 39 38
50 41 47 36 35 40 42 43 48 33

5) Construct a frequency distribution, a relative frequency distribution, and a cumulative frequency distribution using six classes.
Provide an appropriate response.

6) Listed below are the ACT scores of 40 randomly selected students at a major university.

18 22 13 15 24 24 20 19 19 12
16 25 14 19 21 23 25 18 18 13
26 26 25 25 19 17 18 15 13 21
19 19 14 24 20 21 23 19 17 17

a) Construct a relative frequency histogram of the data, using eight classes.
b) If the university wants to accept the top 90% of the applicants, what should the minimum score be?
c) If the university sets the minimum score at 17, what percent of the applicants will be accepted?

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

For the given data, construct a frequency distribution and frequency histogram of the data using five classes. Describe the shape of the histogram as symmetric, uniform, skewed left, or skewed right.

7) Data set: California Pick Three Lottery

3 6 7 6 0 6 1 7 8 4
1 5 7 5 9 1 5 3 9 9
2 2 3 0 8 8 4 0 2 4
A) skewed left B) symmetric C) uniform D) skewed right

Provide an appropriate response.

8) Use the histogram below to approximate the mode heart rate of adults in the gym.
9) Use the histogram below to approximate the median heart rate of adults in the gym.

Heart Rates of Adults

A) 70  B) 65  C) 42  D) 75

10) Use the histogram below to approximate the mean heart rate of adults in the gym.

Heart Rates of Adults

A) 70.8  B) 31.6  C) 1425.7  D) 70

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

11) Find the mean, median, and mode of the following numbers:

73  76  69  73  66  74  73  67  68  71

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

12) A student receives test scores of 62, 83, and 91. The student’s final exam score is 88 and homework score is 76. Each test is worth 20% of the final grade, the final exam is 25% of the final grade, and the homework grade is 15% of the final grade. What is the student’s mean score in the class?

A) 80.6  B) 85.6  C) 76.6  D) 90.6
Approximate the mean of the grouped data.

13) Miles (per day) | Frequency
--- | ---
1-2 | 29
3-4 | 12
5-6 | 18
7-8 | 2
9-10 | 16

A) 5  B) 15  C) 6  D) 4

Provide an appropriate response.

14) For the stem-and-leaf plot below, find the range of the data set.

Key: 2|7 = 27

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

A) 13  B) 28  C) 41  D) 34

15) Find the range of the data set represented by the graph.

A) 20  B) 5  C) 6  D) 17

16) The heights (in inches) of 20 adult males are listed below. Find the range of the data set.

70 72 71 70 69 73 69 68 70 71
67 71 70 74 69 68 71 71 71 72

A) 5  B) 6  C) 7  D) 6.5
17) Find the sample standard deviation.

\[ \begin{align*}
2 & \quad 6 \quad 15 \quad 9 \quad 11 \quad 22 \quad 1 \quad 4 \quad 8 \quad 19 \\
A) & \quad 6.3 \quad B) \quad 2.1 \quad C) \quad 7.1 \quad D) \quad 6.8
\end{align*} \]

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

18) The heights (in inches) of all 10 adult males in an office are listed below. Find the population standard deviation and the population variance.

\[ 70 \quad 72 \quad 71 \quad 70 \quad 69 \quad 73 \quad 69 \quad 68 \quad 70 \quad 71 \]

19) In a random sample, 10 students were asked to compute the distance they travel one way to school to the nearest tenth of a mile. The data is listed below. Compute the range, standard deviation and variance of the data.

\[ 1.1 \quad 5.2 \quad 3.6 \quad 5.0 \quad 4.8 \quad 1.8 \quad 2.2 \quad 5.2 \quad 1.5 \quad 0.8 \]

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

Use the grouped data formulas to find the indicated mean or standard deviation.

20) The speeds of a random sample of 100 cars are recorded as they pass a highway checkpoint. The results are summarized in the frequency distribution below. Approximate the sample mean.

\[
\begin{array}{|c|c|}
\hline
\text{Speed (mph)} & \text{Cars} \\
\hline
30-39 & 6 \\
40-49 & 15 \\
50-59 & 51 \\
60-69 & 15 \\
70-79 & 13 \\
\hline
\end{array}
\]

A) 58.7 mph \quad B) 61.5 mph \quad C) 55.9 mph \quad D) 54.5 mph

21) For the following data set, approximate the sample standard deviation.

\[
\begin{array}{|c|c|}
\hline
\text{Miles (per day)} & \text{Frequency} \\
\hline
1-2 & 9 \\
3-4 & 22 \\
5-6 & 28 \\
7-8 & 15 \\
9-10 & 4 \\
\hline
\end{array}
\]

A) 5.1 \quad B) 2.9 \quad C) 2.1 \quad D) 1.6

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Provide an appropriate response.

22) For the data below, find Pearson’s index of skewness. The data set: The systolic blood pressures of 20 randomly selected patients at a blood bank.

\[ 130 \quad 120 \quad 115 \quad 132 \quad 136 \quad 124 \quad 119 \quad 145 \quad 98 \quad 110 \quad 125 \quad 120 \quad 115 \quad 130 \quad 140 \quad 105 \quad 116 \quad 121 \quad 125 \quad 108 \]
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

23) The test scores of 30 students are listed below. Find the five-number summary. 23) ______

<table>
<thead>
<tr>
<th>31</th>
<th>41</th>
<th>45</th>
<th>48</th>
<th>52</th>
<th>55</th>
<th>56</th>
<th>58</th>
<th>63</th>
<th>65</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>67</td>
<td>69</td>
<td>70</td>
<td>70</td>
<td>74</td>
<td>75</td>
<td>78</td>
<td>79</td>
<td>79</td>
</tr>
<tr>
<td>80</td>
<td>81</td>
<td>83</td>
<td>85</td>
<td>85</td>
<td>87</td>
<td>90</td>
<td>92</td>
<td>95</td>
<td>99</td>
</tr>
</tbody>
</table>

A) Min = 31, Q1 = 57, Q2 = 70, Q3 = 81, Max = 99
B) Min = 31, Q1 = 58, Q2 = 72, Q3 = 83, Max = 99
C) Min = 31, Q1 = 57, Q2 = 72, Q3 = 81, Max = 99
D) Min = 31, Q1 = 58, Q2 = 70, Q3 = 83, Max = 99

24) The weights (in pounds) of 30 preschool children are listed below. Find the five-number summary. 24) ______

<table>
<thead>
<tr>
<th>25</th>
<th>25</th>
<th>26</th>
<th>26.5</th>
<th>27</th>
<th>27</th>
<th>27.5</th>
<th>28</th>
<th>28</th>
<th>28.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>29</td>
<td>29</td>
<td>30</td>
<td>30</td>
<td>30.5</td>
<td>31</td>
<td>31</td>
<td>32</td>
<td>32.5</td>
<td>32.5</td>
</tr>
<tr>
<td>33</td>
<td>33</td>
<td>34</td>
<td>34.5</td>
<td>35</td>
<td>35</td>
<td>37</td>
<td>38</td>
<td>38</td>
<td></td>
</tr>
</tbody>
</table>

A) Min = 25, Q1 = 28, Q2 = 30.5, Q3 = 34, Max = 38
B) Min = 25, Q1 = 27.5, Q2 = 30.75, Q3 = 33, Max = 38
C) Min = 25, Q1 = 28, Q2 = 30.75, Q3 = 34, Max = 38
D) Min = 25, Q1 = 27.5, Q2 = 30.5, Q3 = 33.5, Max = 38
Answer Key
Testname: MATH211_DESCRIPTIVE_STAT

1) A
2)

3) B
4) C
5)

<table>
<thead>
<tr>
<th>Speed (in mph)</th>
<th>Frequency</th>
<th>Relative Frequency</th>
<th>Cumulative Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>33–35</td>
<td>3</td>
<td>0.10</td>
<td>3</td>
</tr>
<tr>
<td>36–38</td>
<td>6</td>
<td>0.20</td>
<td>9</td>
</tr>
<tr>
<td>39–41</td>
<td>6</td>
<td>0.20</td>
<td>15</td>
</tr>
<tr>
<td>42–44</td>
<td>6</td>
<td>0.20</td>
<td>21</td>
</tr>
<tr>
<td>45–47</td>
<td>3</td>
<td>0.10</td>
<td>24</td>
</tr>
<tr>
<td>48–50</td>
<td>6</td>
<td>0.20</td>
<td>30</td>
</tr>
</tbody>
</table>
6) a) See graph below  
b) The minimum score = 14  
c) The university will accept 76.57% of the applicants.

![Histogram]

7) C  
8) D  
9) A  
10) A  
11) mean 71, median 72, mode 73  
12) A  
13) A  
14) B  
15) C  
16) C  
17) C  
18) $\sigma = 1.42$, $\sigma^2 = 2.01$  
19) range = 4.4, $s = 1.8$, $s^2 = 3.324$  
20) C  
21) C  
22) $x = 121.7$, $s = 11.82$, $P = 0.31$. Since $-1 \leq P \leq 1$, there is no significant skewness.  
23) B  
24) C