Each question is worth 5 points (max possible score = 110). Round your answers to one decimal place. For example, 2.74 would be 2.7, not 3. Unless you include enuf explanation for me to understand what you’re doing, no partial credit will be possible for incorrect answers.

1.) A sample of underweight babies was fed a special diet and the following weight gains (lbs) were observed at the end of three months:

6.7  2.7  2.5  3.6  3.4  4.1  4.8  5.9  8.3.

The mean and standard deviation are, respectively:

(a)  1.67, 4.95  
(b)  4.67, 1.84  
(c)  4.67, 1.95  
(d)  4.67, 3.82  
(e)  3.82, 4.67

2.) The heights in centimeters of 5 students are:

165,  175,  176,  159,  170.

The sample median and sample mean are respectively:

(a)  170, 169  
(b)  170, 170  
(c)  169, 170  
(d)  176, 169  
(e)  176, 176

3.) If most of the measurements in a large data set are of approximately the same magnitude except for a few measurements that are quite a bit smaller, how would the mean and median of the data set compare and what shape would a histogram of the data set have?

(a) the mean would be smaller than the median and the histogram would be skewed right 
(b) the mean would be equal to the median and the histogram would be bell-shaped 
(c) the mean would be smaller than the median and the histogram would be skewed left 
(d) the mean would be larger than the median and the histogram would be skewed right 
(e) the mean would be larger than the median and the histogram would be skewed left
4.) On a test in another class last week, the mean was 77.2, the median was 77.1, and the mode was 77. The grades on the test were probably roughly distributed in a bell–like fashion.

(a) False
(b) True

5.) The best way to calculate the standard deviation for a set of data is to calculate the mean and take the square root of the result.

(a) False
(b) True

6.) The best way to determine the average of the set of grades on this exam would be

(a) to calculate the arithmetic mean of all the scores.
(b) to randomly select five of the exams and determine their arithmetic mean.
(c) to throw all the exams in the air and see how high they go.
(d) to calculate the average of the highest and lowest grades.
(e) to use the empirical rule.

7.) What are the mean and median for the following sample?

118 104 101 118 114 128 122 125 121 107

8.) For a given data value $x$ what does the magnitude of the quantity $\frac{x - \bar{x}}{s}$ tell us?

9.) For a given data value $x$, what does the algebraic sign of the quantity $\frac{x - \bar{x}}{s}$ tell us?
10.) Use the following sample of the ages of forest rangers in Virginia to estimate the true mean age of all forest rangers in Virginia.

<table>
<thead>
<tr>
<th>Age</th>
<th></th>
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<tbody>
<tr>
<td>35</td>
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<tr>
<td>38</td>
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<td>36</td>
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<td>37</td>
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<tr>
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</tr>
<tr>
<td>35</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td></td>
</tr>
</tbody>
</table>

(a) 34.2  
(b) 36.1  
(c) 35 or 37  
(d) 34.0  
(e) 35.5

11.) Use the previous same sample to estimate the standard deviation of the age of all forest rangers in Virginia.

(a) 3.25  
(b) 4.61  
(c) greater than 100  
(d) 2.15  
(e) 1.58

12.) A set of data has a mean of 50. The z-score for a data value of 40 from this sample is equal to −1.3. Determine the standard deviation of the sample.

13.) A histogram for a sample of data is constructed using 5 classes with the first class starting at 25. The class width is 6. The class frequencies are 4, 9, 3, 13, and 2. Approximate the mean for this set of data.
14.) Approximate the standard deviation for the sample in the previous problem.

15.) How many of the following statements are true?
   a) The range of a sample is not affected by every sample value.
   b) The sample mean can be negative.
   c) The sample variance cannot be negative.
   d) The sample standard deviation is not affected by all values in the sample.
   e) If the median and mode for a “one-humped” sample of data are significantly different, the
data is almost certainly not distributed in a bell-like fashion.

   (a) 3
   (b) 1
   (c) 2
   (d) 4
   (e) 5
   (f) 0

16.) Assume the empirical rule applies to a sample of data with a mean of 150 and a standard
deviation of 25. Determine the approximate percentage of the sample values that fall
between 200 and 225.
17.) Consider the following.

<table>
<thead>
<tr>
<th>$x$</th>
<th>$f(x)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>0.05</td>
</tr>
<tr>
<td>3.0</td>
<td>0.25</td>
</tr>
<tr>
<td>5.0</td>
<td>0.10</td>
</tr>
<tr>
<td>7.0</td>
<td>0.45</td>
</tr>
<tr>
<td>9.0</td>
<td>???</td>
</tr>
</tbody>
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Here, $x$ represents the midpoints of the classes in a relative frequency histogram for a sample of 500 data values and $f(x)$ represents the relative frequencies of the classes. What is the relative frequency of the fifth class?

18.) Same problem. How many of the data values fall in the first three classes?

19.) Same problem. What is the mean of $x$?

20.) Same problem. What is the standard deviation of $x$?
21.) Same problem. What is the z-value for the midpoint of the third class?
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22.) Opinion Poll: An exam on Friday is a one heck of a way to start Spring break.

   (a) False
   (b) True
<table>
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<tr>
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