Research and Statistics for Educators   Name _____
Benchmark #1
Research terminology, introduction to statistics, scales of measurement, measures of central tendency, variability, skewness, and use of Excel.

True or False
{1 point each}

1. ____ Nominal, ordinal, interval, and ratio are different scales of measurements.

2. ____ Two sets of scores with the same means are identical.

3. ____ Samples are used because they are often more manageable.

4. ____ The mean is the measure of central tendency that is affected by extreme scores.

5. ____ The mean, median and mode are all averages.

6. ____ The standard deviation indicates the spread of a set of data.

7. ____ The mean is an example of a measure of variability.

8. ____ The median has 50% of the cases below it ONLY in a normal distribution.

9. ____ It is possible for a given distribution to have no mode.

Indicate if nominal (N), ordinal (O), interval (I), or ratio (R)
{1 point each}
_____ 10. social security number

_____ 11. IQ scores

Indicate parameter (P), statistic (S)
{1 point each}

_____ 12. A measure of a characteristic of an entire population.

_____ 13. A measure of a characteristic of a subset of a population.

Answer the following questions as completely as possible.

{8 points}
14.   Explain the differences between a distribution with a positive skew and a distribution with a negative skew. Identify the skew, the relationship of the mean and median, the direction of the tail, and higher/lower scores.

{2 points}

15.   When I finished correcting this benchmark, what skew do you hope the class gets and give your reason why.

<u>Use the three data sets below to answer the following questions.</u>

{2 points}

16.   Use Excel to compute the mean, median and sample standard deviation. <u>Submit</u> your spreadsheet with this benchmark completed.

{9 points}

17.   Complete the table by transferring the answers on the spreadsheet to the chart *(Round to two decimal places where appropriate.)*

Set 1 87   81   89   88   72
Set 2 79   95   67   75   73
Set 3 62   68   75   90   80

	Mean	Median	SD_s
Set 1			
Set2			
Set3			

{1 point each blank}

18.   Which set has the highest mean?   _____

19.   Which set has the highest median?   _____

20.   Which set has the lowest standard deviation?   _____

21.   Which set is a nearly normal distribution?   _____

22.   Which set is negatively skewed?   _____

{3 points}
23.   Which set would you like to be in and give two statistical reasons why?

Please follow the directions below for both problem 24 and 25.

For each of the following:
     Indicate if the study is inferential/experimental or descriptive. **{1 point each}**

For the inferential/experimental study:
     a) Identify the *independent* variables and the *dependent* variable. Caution: there may be
          more than one. **{2 points each}**
     b) Identify one extraneous variable and offer a short description of how one could control
          for it. **{2 points each}**

For the descriptive study:
     Identify the *units of analysis*/categories. **{2 points each}**

24.   Researchers wanted to determine the effect of different forms of phonics instruction on
children of different reading levels. They located schools in a large metropolitan area
characterized by high achievement, average achievement, and low achievement as measured by
the previous year's standardized tests. Three classes in each school received different forms of
phonics instruction. One class received a sequential rule-based phonics curriculum. A second
class received daily instruction in decoding by analogy to known words. The third class received
phonics instruction whenever and only if specific words were mispronounced or misspelled. The
instruction lasted for three months after which children were tested on a standardized test of
phonics knowledge employing the use of nonsense words. They were also asked to read a grade
level selection and their word identification and comprehension levels were determined.

25.   Researchers wanted to determine if the extent of home literacy experiences predicted
reading achievement in kindergarten and first grade. A sample of students were followed for
three years. For the first year, researchers made home visits and surveyed day care providers and
caregivers to list the number and kind of literacy experiences provided in day care and home
settings. At the end of kindergarten and first grade, the children's reading level was determined
by asking them to read a list of words, identify letters, and identify letter sounds. The researchers
then examined the relationship between the number and kind of literacy experiences and the
children's reading progress.