Multiple-Choice Concept Review

1. The equation Σx_i^2 is best known as the
   a. sum of all the squared values of the variable x in the data set.
   b. product of all the values of the variable x in the data set.
   c. square of the sum of all the values of the variable x in the data set.
   d. sum of all the values of the variable x in the data set.

2. The equation $(\Sigma x_i)^2$ is best known as the
   a. sum of all the squared values of the variable x in the data set.
   b. product of all the values of the variable x in the data set.
   c. square of the sum of all the values of the variable x in the data set.
   d. sum of all the values of the variable x in the data set.

3. A nominal level of measurement is used when the values of a variable have which of the following properties?
   a. They can be placed in meaningful order, but there is no information about the size of the interval between each value.
   b. They can be placed in meaningful order, have meaningful intervals, and have a true zero.
   c. They can be placed in meaningful order and have meaningful intervals between the times, but there is no true zero.
   d. They simply represent categories.

4. Class intervals should be
   a. of equal length.
   b. mutually exclusive.
   c. overlapping intervals.
   d. a and b only.

5. Symmetrical distributions are best described by which of the following statements?
   a. They have an equal number of data points that appear to the left and to the right of the center.
   b. They are normally distributed.
   c. They have a U-shaped distribution.
   d. They have small standard deviations.

6. Skewness refers to the
   a. shape of the top of the curve.
   b. extent to which data are not symmetrical about the center.
   c. presence of outliers.
   d. sample.

7. Which of the following statements best describes a stem-and-leaf display?
   a. It shows the range of values of the variable.
   b. It shows the shape of the distribution of the variable.
   c. It preserves the individual values of the variable.
   d. All of the above are correct.

8. Standard deviation is best described by which of the following statements?
   a. It can be used to compare variation between two or more variables.
   b. It is the average distance of each point from the mean.
   c. It is the variance squared.
   d. Both a and b are correct.

9. Descriptive statistics have which of the following properties?
   a. They are numerical or graphical summaries of data.
   b. They are used to examine relationships between variables in a data set.
   c. They are used to see how well sample data can be generalized to the population.
   d. All of these.

10. Inferential statistics have which of the following properties?
    a. They are numerical or graphical summaries of data.
    b. They are used to examine relationships between variables in a data set.
    c. They are used to see how well sample data can be generalized to the population.
    d. Both b and c are correct.

Choosing the Correct Measurement Scale

For each of the following variables (1 to 20) listed below, select the correct measurement scale (a to d).

a. Nominal
b. Ordinal
c. Interval
d. Ratio

1. Gender
2. Temperature in Celsius
3. Weight in pounds
4. Weight in kilograms
5. Age in years
6. Age in categories (0 to 6 months, 7 to 12 months, 13+ months)
7. Blood type
8. Ethnic identity

9. Number of years spent in school
10. Highest educational degree obtained
11. Satisfaction with nursing care received (on a scale of 1 to 10)
12. Religion
13. IQ score
14. Smoking status (nonsmoker vs. smoker)
15. Birth order
16. Reaction time in seconds
17. Marital status
18. Number of children
19. Score on a satisfaction scale that sums Likert items
20. Annual income in dollars

Computational Problems

1. For each of the following two data sets, do the following by hand and in SPSS:
   a. Create a frequency distribution.
   b. Create a histogram.
   c. Create a stem-and-leaf plot (by hand only).
   d. Compute the measures of central tendency (i.e., mean, median, and mode) and dispersion (i.e., range, interquartile range, and standard deviation).

Data set 1: Number of Hospitals in 25 Selected Counties in Yunnan, China

8	12	60	79	48
53	18	54	25	36
13	16	23	30	30
49	14	22	44	35
13	20	38	24	28

Data set 2: Blood Cholesterol (in mg/dL) Levels of 32 Participants at a Community Health Fair

180	185	200	198
211	203	199	195
210	190	210	200
180	197	188	198
187	240	189	178
185	220	188	200
188	259	195	221
200	196	194	196

2. From the data in the table below, determine the following:
   a. What percentage of this group is married?
   b. What is the mean age and standard deviation of age?
   c. How many participants are older than 30 years?
   d. What percentage of this group is older than 30 years?
   e. What percentage of this group is male?
   f. What are the mean and standard deviation of years of work experience?
   g. What percentage of this group has a BS degree?

Data set: Selected Demographic Information for 17 Health Care Students Who Attend a State University

ID No.	Gender	Age (Years)	Marital Status	Years Worked	Degree
101	M	27	Married	6	BS
102	F	51	Married	29	MS
103	F	41	Married	19	MS
104	F	26	Married	4	BS
105	F	27	Single	4	BS
106	F	47	Divorced	25	MS
107	F	49	Divorced	20	MS
108	F	42	Married	19	MS
109	F	37	Married	17	BS
110	F	50	Married	28	BS
111	F	39	Single	7	MS
112	M	42	Married	10	MS
113	F	27	Married	5	BS
114	F	49	Divorced	30	BS
115	M	33	Married	11	BS
116	F	30	Married	11	BS
117	F	43	Single	20	MS

3. For the following data set, do the following by hand and in SPSS:
   a. For each group, do the following:
      - Construct the stem-and-leaf plot (by hand only).
      - Construct the histogram.
      - Construct the frequency distribution.
      - Compute the mean, median, mode, standard deviation, and interquartile range.
   b. What does a comparison of the two groups suggest?

Data set: Age (in Years) of 140 Inpatients in Two Departments of One Hospital

Department A						
37	37	52	49	48	40	60
37	37	52	54	43	40	54
37	37	52	38	33	40	53
18	37	40	41	45	39	52
57	38	40	34	42	41	46
58	38	40	64	26	41	43
78	33	40	64	40	41	35
18	43	40	53	40	41	35
19	43	41	58	40	31	35
19	43	51	56	35	31	35
Department B						
19	84	39	56	78	31	35
19	48	46	56	74	36	25
19	65	35	55	68	79	40
18	65	36	53	66	37	40
20	65	41	53	59	25	31
28	65	41	53	45	18	36
28	43	44	52	52	34	37
47	47	29	47	44	41	31
63	52	30	42	46	41	57
45	52	30	48	40	41	37

4. For the following data set, do the following by hand and in SPSS:
   a. For each group, do the following:
      - Construct the stem-and-leaf plot (by hand only).
      - Construct the histogram.
      - Construct the frequency distribution.
      - Compute the mean, median, mode, standard deviation, and interquartile range.
   b. What does a comparison of the two groups suggest?

Data set: Measured Weight (in Pounds) of 48 Employees of Two Groups in a Health Care Department

Group A					
155	160	155	200	125	130
240	118	200	180	130	270
145	180	220	150	154	132
201	100	162	150	228	130
Group B					
182	180	245	203	200	181
192	260	145	165	245	165
225	243	185	200	160	210
115	212	198	145	225	280