Please print out this document and report your final answers in the space provided. Please show as many calculations as possible in order to receive partial credit. It is strongly suggested that you attach additional sheets of paper to show these calculations. Problem set due at the **beginning** of the examination period.

Name: _____

Person Number : _____

Recitation Section: _____

Exam Practice Problem Set (Ch1-4)

1.) Using the table to the right, please solve:

X	Y
1	1
5	9
0	6
7	2
4	3

a) $\sum(X^2)$ _____

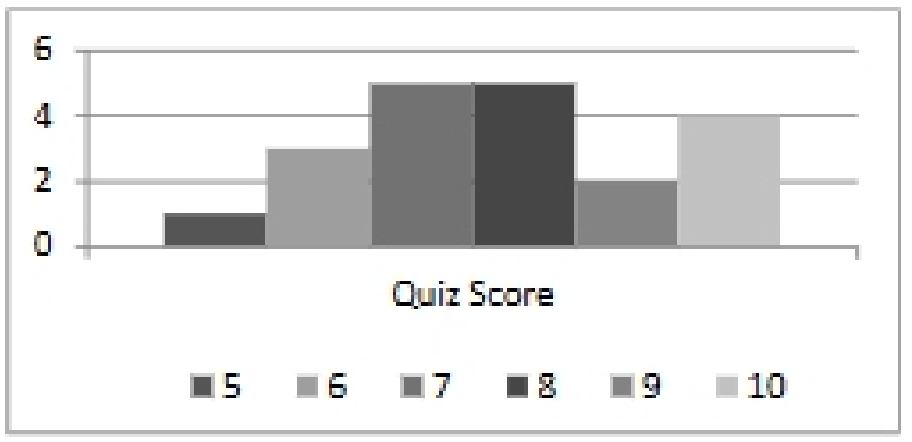
b) $\sum XY$ _____

c) $\sum(Y\text{-}1)$ _____

d) $\sum Y\text{-}1$ _____

e) $\sum(X^2+Y)$ _____

2.) Using the histogram, please complete the frequency distribution:



X	*f*	%
5		
7	5	
8		

What is the mean: _____ median: _____ mode: _____.

What is the sample size (n)? _____

3a) Draw a grouped frequency histogram of the following values (refer to G&W rules for guidelines):

42, 76, 54, 54, 22, 34, 65, 32, 67, 54, 99, 47, 12, 27, 39, 86, 72, 10, 56, 45, 55, 68

3b) Describe the shape of this distribution.

_____

3c) What is the mean: _____ median _____ and mode _____ ?

3d) Suppose we added the following values: 98, 131, 99, 87. What would be the new mean?

4.) Using the following values: 1, 8, 9, 15, 16, 74, 12, 23, 9, 13, 20

a.) Find the mean _____

b.) Find the median _____

c.) Find the mode _____

d.) Find the range _____

5.) A population with a mean of $\mu = 6$ has $\Sigma X = 54$. How many scores are in the population? _____

6.) Using the data set to the right:

a.) Find the unweighted mean (i.e. mean of means): _____.

b.) Now find the weighted mean: _____.

Sample 1	Sample 2	Sample 3
0	11	6
4	7	9
2	13	9
3	3	4
4	9	11
	14	7
	10	
	8	

7.) Using the definitional (a) and the computational (b) formula, calculate the sums of squares (SS) using the following set of scores: 600, 470, 170, 430, 300

a) $SS = \Sigma (X-\mu)^2$

b) $SS = \sum x^2 - \frac{(\sum x)^2}{N}$

c) Using your SS, solve for population variance (σ^2): _____

d) Likewise, solve for population standard deviation (σ): _____

8.) Using the following numbers, calculate the sample variance and sample standard deviation:

55, 89, 34, 45, 49, 72, 67

a) Sample variance (s^2) : _____

b) Sample standard deviation (s) : _____

9.) Which value, when added to *any* dataset, will not alter the mean? _____

10.) In a hypothetical data set, describe:

a) what would happen to the mean if we added a value of 23 to each score?

b) what would happen to the standard deviation if we added a value of 7 to each score?

c) what would happen to the standard deviation if we multiplied each score by 3?

11.) Professor Leary is inspecting his students' grades on their most recent Chemistry exam. He observes that that the distribution of grades are normally shaped with a $\mu = 56$ and a $\sigma = 14$. Some of his students are curious about what their exam scores (X) were ….

a.) If Rob's score is 2 standard deviations (σ) *above* the mean, his score would be: X = _____

b.) If Klara's score is 0 standard deviations (σ) from the mean, her score would be: X = _____

c.) If Marco's score is 1.5 standard deviations (σ) *above* the mean, his score would be: X = _____

d.) If Hodor's score is 3 standard deviations (σ) *below* the mean, his score would be: X = _____

12.) A population of N = 5 scores has $\Sigma X = 20$ and $\Sigma(X^2) = 120$. What is the value of SS for this population? (Hint, use computational formula for SS).

SS = _____

13.) For a population with $\mu = 60$, which of the following values for the population standard deviation would cause X = 68 to have the most extreme position in the distribution? [Circle one answer]

A) $\sigma = 1$ B) $\sigma = 3$ C) $\sigma = 2$ D) $\sigma = 4$