Sociology 3280: Quantitative Methods   Name:_____
Homework Assignment #2

Use "<u>comic sans</u>" font to type all answers on a separate sheet of paper unless the problem requires calculations. In this case you can show by hand how you have arrived at the answer. <u>To obtain full credit you must provide the page number where the topic of the question is discussed in the book</u>.

1. What is the value/benefit of understanding and interpreting social statistics? Be sure to mention theory in your explanation as well as more practical reasons. Provide two examples one related to a theory and the second related to practical reasons (10%).

2. What is the difference between descriptive and inferential statistics? Be sure to define each as well as explain the difference between the two (5%)

3. What is the relationship between a dependent and independent variable? Be sure to define each as well as explain the relationship. Provide an example. (5%)

King Shrek wants to conserve (save) mud in the land of Far, Far Away. He thinks that ogres typically take really long mud showers (20 minutes each) which is wasting mud. He and Queen Fiona suggest that you, the Royal Statistician, study a random sample of 500 ogres. You ask each ogre how long their mud shower was this morning; Table 1 has frequencies and cumulative percentages for their responses.

Table 1. Frequency Distribution for Ogre Mud Shower Time
_____

Mud Shower Time (Minutes)	Frequency
1	010
3	127
4	264
5	084
6	012
9	003

_____

4. **Calculate** and <u>**interpret**</u> the **mean** mud shower time. You must show all your work. (5%)

5. **Calculate** and <u>**interpret**</u> the **median** mud shower time. You must show all your work. (5%)

6. **Calculate** and <u>**interpret**</u> the **mode.**   You must show all your work (explain your choice). (5%)

7. **Explain** whether the distribution of mud shower time is symmetric, positively skewed, or negatively skewed. Demonstrate with a graph. **Explain** your choice (10%).

8. You discuss your results with Donkey and Puss in Boots, and you decide to present the King and Queen with the number(s) that best represents the "typical" mud shower time. Your friends disagree on which number(s) to present, so you must choose one. (Donkey is jumping up and down saying "pick mean, pick mean" while Puss in Boots is purring "median".) **Explain** which number(s) you will select and **justify** your response (why is it the best choice) (10%)

9. King Shrek wants to know whether he is correct in assuming that ogres typically take really long mud showers of 20 minutes each. What will you tell him? You must **explain** to him why he is correct or incorrect (5%).

10. <u>In your own words</u>, what is the standard deviation that is discussed in our book? What does it tell us? How/why is it helpful? (10%)

Table 2: Number of government parks by state*

$$s_Y^2 = \frac{\sum (Y - \overline{Y})^2}{N-1}$$

State	# of Government Parks
Alaska	025
California	246
Minnesota	036
Georgia	078
New York	390

*Source: Not real data.

10. Use Table 2 and calculate the variance and standard deviation. You will not receive credit unless you have <u>numbered each step</u> that you used to calculate them. Be sure to show all your work. (15%)

11. For table 2, what does the standard deviation tell us about the number of government parks by state? (15%)