Unit 1 - Summarizing Data
Practice Problems

Due: Monday September 19, 2011

1. For each of the following variables indicate whether it is quantitative or qualitative and specify the measurement scale that is employed when taking measurements on each: (*source: Daniel, page 12, problem #6.*)

   a) Class standing of members of this class relative to each other
   b) Admitting diagnosis of patients admitted to a mental health clinic
   c) Weights of babies born in a hospital during a year
   d) Gender of babies born in a hospital during a year
   e) Range of motion of elbow joint of students enrolled in a university health sciences curriculum
   f) Under-arm temperature of day-old infants born in a hospital

2. Using the data below (*source: Daniel, 6th edition page 30, problem 2.3.5*),

7	10	12	4	8	7	3	8	5
12	11	3	8	1	1	13	10	4
4	5	5	8	7	7	3	2	3
8	13	1	7	17	3	4	5	5
3	1	17	10	4	7	7	11	8

By any means you like …

2a. Construct a stem and leaf display.

2b. Construct a frequency table with columns for frequency, relative frequency, cumulative frequency, and cumulative relative frequency.

2c. Construct a histogram.

2d. Construct a frequency polygon

3. Data were recorded on the age in years and height in cm of 20 high school students in a classroom.

Females		Males	
Age	Height	Age	Height
15	170	15	185
15	154	16	183
16	160	16	174
15	159	15	183
15	156	15	173
15	153	15	173
16	166	15	178
16	163	14	167
15	167	15	177
15	151		
16	171		

3a. Create a frequency table for age, with columns for frequency, relative frequency, cumulative frequency, and cumulative relative frequency.

3b. Create a histogram for age.

3c. For each sex, create a stem-and-leaf display for height. What does a comparison of the displays suggest about the students?

3d. For each sex, create histograms for height using the same scale.

4. Let $x_1=3$, $x_2=1$, $x_3=4$, and $x_4=6$

4a. Express the following sum in sigma notation and evaluate numerically.

$$(x_1 + x_2 + x_3 + x_4)^2$$

4b. Express the following sum in sigma notation and evaluate numerically.

$$x_1^2 + x_2^2 + x_3^2 + x_4^2$$

4c. Evaluate the following numerically.

$$\Sigma\ (X_i - 1)^2 \text{ for } i=1\ldots4.$$

4d. Evaluate the following numerically.

$$\Sigma\ 3X_i \text{ for } i=1\ldots4.$$

5.
The following are behavioral ratings as measured by the Zang Anxiety Scale (ZAS) for 26 persons with a diagnosis of panic disorder:

53	51	46	45	40	35
59	51	45	60	35	
45	38	53	43	31	
36	40	41	41	38	
69	41	46	38	36	

5a. Compute the mean, median, mode, range, variance, and standard deviation, and the 25th and 75th percentiles.

5b. The following are behavioral ratings as measured by the Zang Anxiety Scale (ZAS) for 21 healthy controls:

26	26	25	25	25
28	26	26	25	
34	30	31	28	
26	34	25	25	
25	28	25	25	

Compute the mean, median, mode, range, variance, and standard deviation, and the 25th and 75th percentiles.

5c. Construct Box and Whisker plots using the data from parts "a" and "b". In one or two sentences, compare the two groups.

6. The following table shows the age distribution of cases of a certain disease reported during a year in a particular state.

Age	Number of Cases
5-14	5
15-24	10
25-34	20
35-44	22
45-54	13
55-64	5
TOTAL	75

6a. Construct a frequency table with columns for class endpoints, class midpoint, frequency, relative frequency, cumulative frequency, and cumulative relative frequency.

6b. Construct a cumulative relative frequency plot of the data. Use this plot to estimate the 10th, 25th, 50th, and 75th percentiles.

6c. Compute the mean, median, variance, and standard deviation .