

**Unit 1 - Summarizing Data**  
**Homework #2 (Unit 1 – Summarizing Data)**

**Due: Monday September 21, 2015**  
**Last submission date for credit: Monday September 28, 2015**

1. **This exercise gives you practice with the ideas of Unit 1, Section 6, “The Summation Notation.”** Let  $x_1=3$ ,  $x_2=1$ ,  $x_3=4$ , and  $x_4=6$

- 1a. Express the following sum in sigma notation and evaluate numerically.

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

- 1b. Express the following sum in sigma notation and evaluate numerically.

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

- 1c. Evaluate the following numerically.

$$\sum (X_i - 1)^2 \text{ for } i=1 \dots 4.$$

- 1d. Evaluate the following numerically.

$$\sum 3X_i \text{ for } i=1 \dots 4.$$

2. **This exercise gives you practice with the ideas of Unit 1, Sections 7 & 8, “Numerical Summaries”**

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	

- 2a. Compute the mean, median, mode, range, variance, and standard deviation, and the 25th and 75th percentiles.

- 2b. 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.

- 2c. Construct Box and Whisker plots using the data from parts "a" and "b". In one or two sentences, compare the two groups.

3. **This exercise gives you practice working with grouped data. See notes for Unit 1, Unit 1, Sections 7, “Numerical Summaries” page 38.**

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

- 3a. Construct a frequency table with columns for class endpoints, class midpoint, frequency, relative frequency, cumulative frequency, and cumulative relative frequency.
- 3b. Estimate the values of the mean, median, variance, and standard deviation. Tip - Use the midpoints of each age interval as your values and use number of cases as their frequencies. For example, the value 10 has an estimated frequency of 5, the value 20 has an estimated frequency of 10, and so on.