Elementary Statistics for Life Sciences (WL)
Test 1
Fall 2003
Name:…………………………………………………………
SHOW YOUR WORK!   Answers without work will be graded as zero.
4+12+4+12+8+10+12+8+10+5+5+5+5=100

1   State whether each of the following variables is nominal, ordinal, interval, or
        ratio.

        (a)   Color of a flower
        (b)   Calendar year
        (c)   Blood glucose level (high, average, low)
        (d)   Weight

2   Consider the following data.

                0.35, 0.22, 0.27, 0.28, 0.21, 0.34, 0.37, 0.22, 0.33, 0.35

        (a)   Construct a **double** stem and leaf display.

                $n =$
                Stem Unit $=$
                Leaf Unit $=$

        (b)   Find the mean.

        (c)   Find the mode.

3   Draw a dot plot for the following data

0	2	1	3	0	2	4	0	2	1	0
1	2	0	3	0	1	4	1	2	0	3

4   Fill in the **blanks** and then draw a **histogram and the frequency polygon** for following data.

61	75	69	81	85	99	75	88	110	93
78	85	99	85	93	112	86	79	105	107

Class	Tally	Frequency	Relative Frequency
60 – 69.9			
70 – 79.9			
80 – 89.9			
90 – 99.9			
100 – 109.9			
110 – 119.9			

5   Systolic blood pressure (mm Hg) of 50 elementary statistics students measured five
    days before the first exam is tabulated below.

Class	Frequency
60 – 69.9	3
70 – 79.9	8
80 – 89.9	14
90 – 99.9	16
100 – 109.9	7
110 – 119.9	2

(a)   Find the class mark of the class 80 – 89.9

(b)   Find the class **boundaries** (there are two) of the class 80 – 89.9

(c)   Find the lower and upper class limits of the class 80 – 89.9

(d)   Find the class interval.

6   During a special promotion, a discount chain sold 575, 410, and 520 microwave
       ovens in three of its stores at average prices of $475.00, $495.00, and $525.00,
       respectively. What is the mean price of the ovens sold?

7   The pulses of 12 elementary statistics students were measured 24 hours after the first exam. Here are the data:

110, 74, 74, 70, 68, 78, 64, 62, 77, 95, 67, 70

(a)   Find the five number summary. _____ _____ _____ _____ _____
(b)   Draw a box plot. Include the box, median, inner fences, outer fences, mild outliers, serious outliers etc.

8   One patient's systolic blood pressure, measured daily over several weeks, averaged 202 with a standard deviation of 12.5, while that of another patient averaged 124 with a standard deviation of 8.1. Which patient's blood pressure is relatively more variable?

9   Average daily gains (kg/day) of 3 Charolais bulls are given below.

           1.31   1.09   1.20

          (a)   Find the range._____
          (b)   Find the sample variance._____
          (c)   Find the sample standard deviation. _____
(Use 4 decimals for calculations and then write your answer in the blanks)

10   In how many different ways can the manager of a baseball team arrange the batting order of the 9 players in his starting lineup? **Simplify the answer.**

11   Among the 14 candidates for four positions on a city council 8 are Democrats and 6 are Republicans. In how many different ways can the 4 councilmen be chosen so that 3 are Democrats, and 1 is a Republican? **Simplify the answer.**

12   Match the following symbols with the definitions.

$$s^2 \qquad\qquad \boldsymbol{m} \qquad\qquad \boldsymbol{s} \qquad\qquad \tilde{X} \qquad\qquad \overline{\overline{X}}$$

(a)   Sample variance   (g)   Weighted mean
(b)   Sample mean   (h)   Population standard deviation
(c)   Population mean   (i)   Sample standard deviation
(d)   Population variance   (j)   Summation notation
(e)   First quartile   (k)   Median
(f)   Grand mean   (l)   Other

13   The police chief of a city knows that the probabilities for 0, 1, 2, 3, 4, or 5 car thefts on any given day are, respectively, 0.21, 0.37, 0.25, 0.13, 0.03, and 0.01. How many car thefts can he expect per day?

Extra credit (4 points)

If two cards are drawn randomly from a well-shuffled pack of 52 playing cards,

(a)   what is the probability of getting a spade?
(b)   what is the probability of getting a spade on the first attempt and getting a heart on the second attempt if the first card is not replaced?