Math 153 - Quiz 3

February 12, 2015

Name __key__

Score _____

For each problem below, refer to the ammonium ion concentration data on the attached sheet. Show all work to receive full credit. Supply explanations when necessary.

1. (1 point) Use your calculator to compute the mean and the sample standard deviation.

$$\overline{X} = 4.108 \qquad S \approx 1.735$$

2. (2 points) Using the results you found above, compute the z-score corresponding to the value 13.3.

$$Z = \frac{13.3 - 4.108}{1.735} = 5.30$$

3. (1 point) Using your z-score from above, determine if 13.3 is an usually high concentration. Explain.

SINCE $5.30 > 2$, 13.3 IS AN UNUSUALLY HIGH CONCENTRATION.

4. (2 points) Find the percentile for the value 4.9.

$$\frac{41}{50} = 0.82 = 82\% \qquad 82^{ND} \text{ percentile}$$

5. (2 points) Find the value of the 90th percentile.

$$0.90 = \frac{L}{50} \Rightarrow L = 45 \Rightarrow \frac{45^{TH} + 46^{TH}}{2} = \frac{5.5 + 5.6}{2}$$

$$= 5.55$$

6. (2 points) Find the value of the 65th percentile.

$$0.65 = \frac{L}{50} \Rightarrow L = 32.5 \Rightarrow L = 33$$

33RD VALUE IS 4.4

Concentration of Ammonium Ions in 50 Samples

(In Percentages)

1.4	2.3	2.4	2.6	2.6	2.7	2.7	2.8	2.8	2.9
2.9	2.9	3.0	3.1	3.1	3.2	3.3	3.4	3.5	3.5
3.6	3.7	3.7	3.9	3.9	4.0	4.0	4.1	4.1	4.2
4.2	4.2	4.4	4.5	4.6	4.6	4.6	4.7	4.8	4.8
4.8	4.9	5.2	5.2	5.5	5.6	5.7	6.5	7.0	13.3