Mthsc 301: Statistical Methods Test 1 Closed Book/Notes

September 21, 1999

Each question is worth 20 pts.

1. The following is a data set obtained in a study of recovery times after a surgery (in hours).

53, 54, 60, 59, 53, 53, 52, 56, 55, 52, 57, 51, 46, 53, 59, 58, 63, 49, 63, 47, 50, 53, 55, 53, 52.

(a) Using 5 classes draw a relative frequency histogram for this data

(b) Approximately what % of patients have recovery times less than 45 hours?

.

(c) Monthly gas bills for a few families were collected and the following numbers were reported. Find the mean, standard deviation, median, quartiles and draw a box plot. Determine whether there were any outliers. 114, 13, 107, 108, 66//

.

- (d) The attached figure gives side by side box plots for the % of Nitrogen Dioxide (a lethal air pollutant) discharge (per liter) for two types of engines, A and B. Based on these plots
 - i. Type A engines would generally have less pollution compared with type B. Would you agree? Why?

.

ii. About 50% of type A engines would discharge less than 2% of Nitrogen Dioxide. Would you agree? Why?

.

iii. The distribution of the % of discharge in type B is skewed to the right. True or False?

.

(e) Find the following:

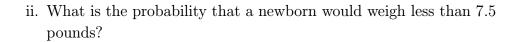
i.
$$P[1.22 < Z]$$

ii.
$$P[1.35 < Z < 1.48]$$

iii.
$$P[Z < -1.18]$$

iv. Find
$$c$$
 such that $P[Z > c] = 0.025$

- (f) The birth weights of children are normally distributed with a mean of 8 pounds and a standard deviation of 1.15 pounds.
 - i. What is the probability that a newborn would weigh more than 9 pounds?



- iii. What is the probability that a newborn would weigh between 6 and 9 pounds?
- iv. Find the number c such that top 30% of the birth weights would be above it.