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).

$$33, 34, 40, 39, 33,$$
$$33, 32, 36, 35, 32,$$
$$37, 31, 26, 33, 39,$$
$$38, 43, 29, 43, 27,$$
$$30, 33, 35, 33, 32.$$

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

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   (b) Approximately what % of patients have recovery times more than 41 hours?

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2. 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, 113, 107, 108, 266//

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3. 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:

(a) Type B engines would generally have less pollution compared with type A. Would you agree? Why?

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

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

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4. Find the following:

(a) $P[1.25 < Z]$

(b) $P[0.25 < Z < 1.18]$

(c) $P[Z < -2.28]$

(d) Find c such that $P[Z > c] = 0.975$

5. The birth weights of children are normally distributed with a mean of 8 pounds and a standard deviation of 1.15 pounds.

    (a) What is the probability that a newborn would weigh more than 9 pounds?

    (b) What is the probability that a newborn would weigh less than 7.5 pounds?

    (c) What is the probability that a newborn would weigh between 6 and 9 pounds?

    (d) Find the number c such that top 40% of the birth weights would be above it.