Spring '05/MAT 117/Exam 4a **Name:** *Show all your work.*

$$\text{angle} = (\text{relative frequency}) \cdot 360^\circ \qquad Z = \frac{X - \mu}{\sigma}$$

$$\mu = \frac{x_1 + x_2 + \cdots + x_n}{n} \qquad \sigma = \sqrt{\frac{(x_1 - \mu)^2 + (x_2 - \mu)^2 + \cdots + (x_n - \mu)^2}{n}}$$

$$\mu = \frac{f_1 x_1 + f_2 x_2 + \cdots + f_n x_n}{f_1 + f_2 + \cdots + f_n} \qquad \sigma = \sqrt{\frac{f_1(x_1 - \mu)^2 + f_2(x_2 - \mu)^2 + \cdots + f_n(x_n - \mu)^2}{f_1 + f_2 + \cdots + f_n}}$$

1. (10pts) A middle school basketball team played 8 games. The numbers of points they scored in those games are 36, 76, 45, 46, 113, 63, 34 and 35.
a) Find the team's median score.
b) Find the team's mean score.
c) Find the standard deviation of scores.

2. (13pts) A Calculus 1 class had the final grades given in the table. Assume the usual association of grades with numbers (A=4, B=3, C=2, D=1, E=0).
a) What is the mode grade?
b) Find the median.
c) Find the mean.
d) Find the standard deviation.

Grade	Frequency
A	6
B	3
C	5
D	4
E	4

3. (10pts) The number of people living in each house of a particular neigborhood is shown below.
a) Find the relative frequencies for each class.
b) Find the appropriate angles and draw a pie chart for the data.
c) Estimate the mean (find representative values first).

People in house	Number of houses	Relative frequency	Angle	Representative value
12–14	3			
9–11	6			
6–8	36			
3–5	74			
0–2	45			

4. (10pts) Compute the following probabilities for a standard normal distribution. Draw a picture showing which area you are computing.

a) $P(Z < 0.35)$

b) $P(1.5 \leq Z)$

5. (7pts) Scores on the mathematics SAT test in 1997 were approximately normally distributed with mean 511 and standard deviation 112. What percentage of scores lies in the range 400–600? Draw a picture showing which area you are computing.

Bonus. (5pts) In a standard normal distribution, which score falls at the 40th percentile?