

**Problem I.** Below are the average homework scores for 25 of Dr. L.'s calculus students on their on-line homework system. For your convenience the data have been sorted from largest to smallest. (17 points total)

56 60 61 65 66 70 73 74 76 76 77 79 80  
84 84 86 87 87 88 89 89 90 92 94 94

(a) To your right is a frequency table for the data using 8 classes. I have given you the class boundaries using the convention we discussed in class. Note that the variable  $X$  is the average homework score for each student. Please use the data above to complete the table. (5 points)

Class Limits For $X$	Number of Students	Percent of Students
$55 \leq X < 60$	1	4
$60 \leq X < 65$	2	8
$65 \leq X < 70$	2	8
$70 \leq X < 75$	3	12
$75 \leq X < 80$	4	16
$80 \leq X < 85$	3	12
$85 \leq X < 90$	6	24
$90 \leq X < 95$	4	16

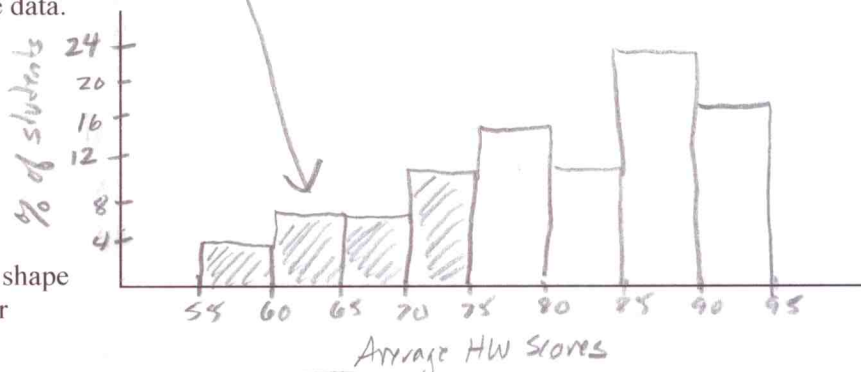
(b) Use the frequency table to graph a *percent* frequency histogram (i.e. graph the percent of students on the vertical axis) on the axes provided below. Be sure to label your axes! (4 points)

(c) What percent of the students have an average homework score less than 75? Shade the area on the histogram that corresponds to this percent. Clearly indicate this on the histogram. (3 points)

$\frac{1+2+2+3}{24} = \frac{8}{24} = 32\%$  or  $4\% + 8\% + 8\% + 12\% = 32\%$

(d) Find the five number summary for these data. Clearly indicate your answers. (3 points)

min = 56  
 $Q_1 = 71.5$   
med = 80  
 $Q_3 = 88.5$   
max = 94



(e) Circle all words below that describe the shape of the distribution of homework averages for these 25 students: (2 points)

Symmetric      Skewed Left      Skewed Right      Unimodal      Uniform

**Problem II.** The following boxplot shows the lifetimes of a sample of fluorescent bulbs (measured in thousands of hours). Use the boxplot the answer the following questions. (4 points total)

1. What are the median (50<sup>th</sup> percentile) and the 75<sup>th</sup> percentile for the lifetime of fluorescent bulbs? Clearly indicate your answers. (2 points)

med = 5000 hrs.  $Q_3 = 12,000$  hrs

2. Based on the box plot, do you think the mean lifetime of fluorescent bulbs is larger or smaller than the median lifetime? Why? (2 points)

Larger b/c the data appear to be skewed to the right.

