Math 1351 Review #1

1. Consider the data set $\{17, 99, 25, 97, 29, 40, 39, 96, 40, 95, 92, 89, 52, 71, 64\}$.

a) Complete the stem and leaf plot of the data values.

1	**7**
2	**5**
3	
4	
5	
6	
7	
8	
9	**9 7**

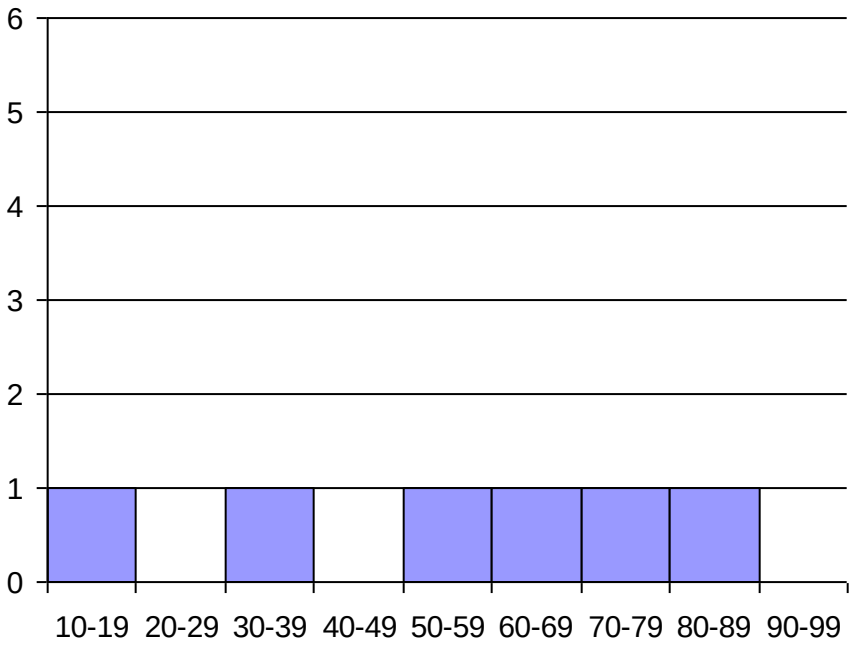
b) Complete the ordered stem and leaf plot of the data values.

1	**7**
2	**5**
3	
4	
5	
6	
7	
8	
9	**2 5**

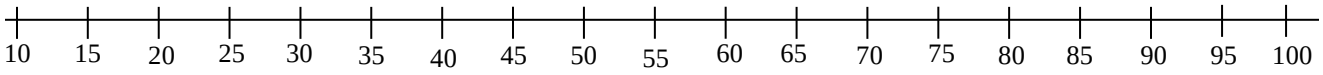
c) Complete the grouped frequency table of the data values.

Interval	**Frequency**
10-19	1
20-29	
30-39	
40-49	
50-59	
60-69	
70-79	
80-89	
90-99	
Total	15

d) Complete the histogram of the data values.



e) Compute the mean of the data values.
f) Compute the median of the data values.
g) Compute the mode of the data values.
h) Compute the lower quartile of the data values.
i) Compute the upper quartile of the data values.
j) Compute the interquartile range of the data values.
k) If an outlier is defined as a value which is more than 1.5 IQR units below the lower quartile or above the upper quartile, then determine all the outliers in this data set.
l) Find the percentile of 64 in this data set.
m) Compute the range of the data values.
n) Complete the box and whisker plot of the data values.



o) Complete the table, and use it to find the variance and standard deviation of the data set.

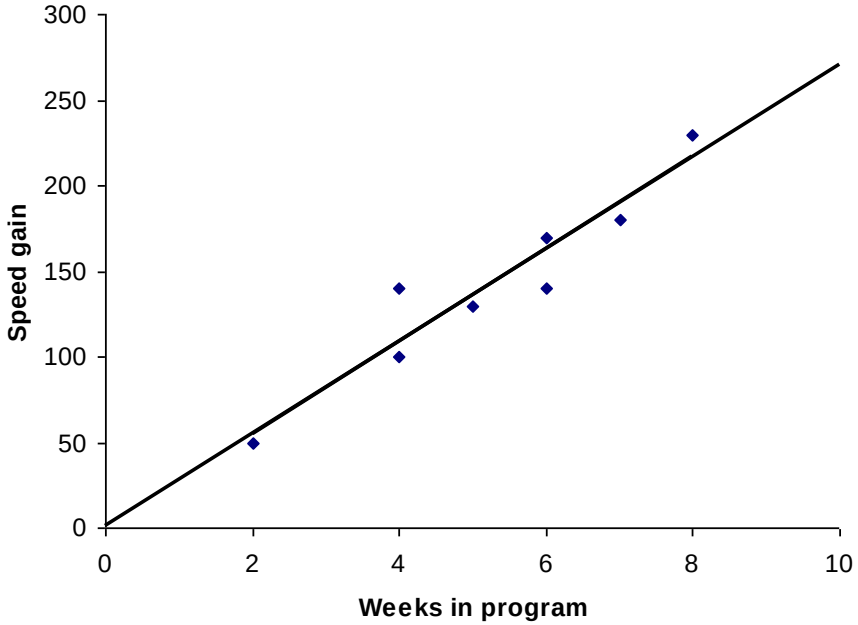
x	$x-\bar{x}$	$(x-\bar{x})^2$
17	–46	2116
99		
25		
97		
29		
40		
39		
96		
40		
95		
92		
89		
52		
71		
64		

p) Determine the z-score of the data value 39.

2. Students taking a speed reading course produced the following gains in their reading speeds:

Weeks in the program	Speed gain
2	50
4	100
4	140
5	130
6	170
6	140
7	180
8	230

Here is a scatterplot of the data along with a regression line:

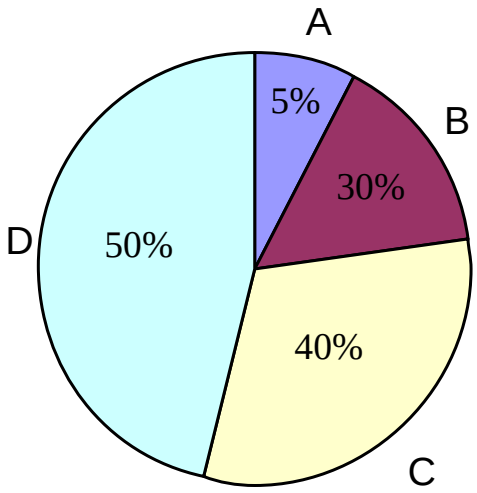


The equation of the regression line is $y = 26.9x + 1.5$.

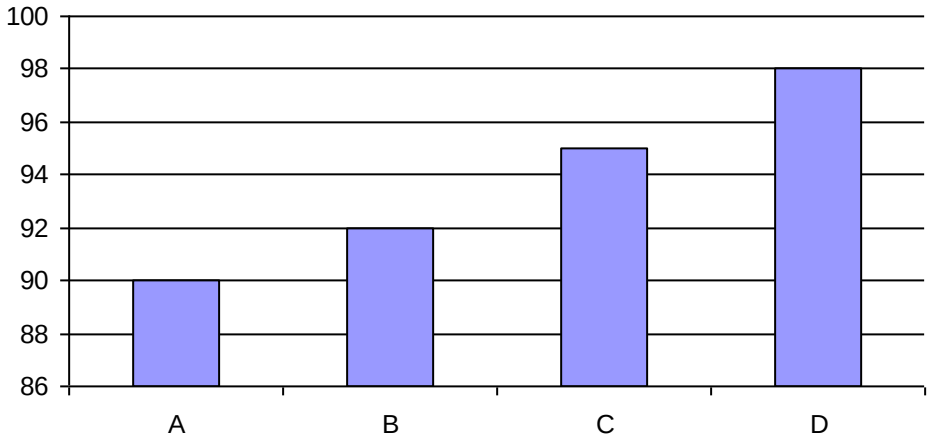
a) Would you say that speed gain and weeks in program are positively correlated, negatively correlated, or uncorrelated?

b) Using the equation of the regression line, predict the speed gain of a student after 3 weeks in the program.

3. Describe at least two problems you see with the following pie chart.



4. What could be done in the following bar graph to deemphasize the differences in the categories?



5. Steve took the ACT in 2016, and received a score of 22. If the mean and standard deviation for that year were 20.9 and 4.9, respectively,

a) What percentile is he in?

b) What percent of all the students who took the exam had a score better than his?

6. A survey found that the number of hours spent studying by Math for Elementary Teachers per week is normally distributed. The mean number of hours is 5 with a standard deviation of 3.72. If 200 students were surveyed, approximately how many of them spent more than 8 hours studying?

7. A biologist wants to estimate the number of fish in a lake. As part of the study, 250 fish are caught, tagged, and released back into the lake. Later, 500 fish are caught and examined. Of the 500 fish caught, 18 have tags, and the rest don't.

a) Identify the population being studied.

b) Identify the sample actually observed.

c) Identify any possible sources of bias.