Name:_____

4.5,4.6,12.2 Quiz Review

For 1-6, use the data listed which is the speed of a car (in miles per hour) vs. fuel efficiency (in miles per gallon).

1) Find the linear regression line (line of best- fit).

Speed (MPH)	Fuel Efficiency (MPG)
10	10
20	18
30	25
40	33
50	34
60	32
70	28
80	26
90	24

$y = 0.142x + 18.472$

2) Find the MPG of a car going 100 mph.

32.672 MPG

3) Find the speed of a car with a fuel efficiency of 20 MPG.

10.76 Mph

4) Is the data you found for #2 extrapolation or interpolation?

Extrapolation; the data point was outside the data given.

5) Graph and analyze the residual plot for the data. Determine if the best-fit line models the data well.

The best-fit line does not model the data well as residuals show a pattern. Therefore, this data is not linear.

6) What is the correlation coefficient and what does this signify about the relationship between the data?

r =0.503; The data is relatively unreliable.

For 7 & 8, use the data below which is the average number of tweets on Twitter for a given day of the week.

Day of the week	Average number of Tweets
Monday	840,498
Tuesday	857,155
Wednesday	868,964
Thursday	808,121
Friday	785,162
Saturday	732,187
Sunday	807,493

7) Find the mean absolute deviation (MAD).

35418.53

8) Find and interpret the standard deviation of the data set.

σ = 46,881.70

mean =814,275.71

Since the standard deviation is relatively small as compared to the mean, the data lies close to the mean.

For 9-12, identify the sample and the population for each situation. Then describe the sample statistic and the population parameter.

A musical cast randomly selects 8 performers to find the median number of lines they have.

9) Population: The entire musical cast.

10) Population Parameter:

The median number of lines for the entire musical cast.

11) Sample: The 8 performers from the cast.

12) Sample Statistic: The median number of lines of the 8 performers.

13) The city of Oswego is thinking about putting a stop light at the school entrance at Wolf's Crossing (by the marquee). They survey the intersection each weekday for two weeks and counts the number of accidents: {4,3,4,6,1,0,0,5,1,2}. Find and interpret the standard deviation to determine if you think a stop light should be constructed at this entrance.

σ = 2.12, mean =2.6

Since the standard deviation is large as compared to the mean, the data is spread out. So, the data taken does not represent a fair representation for the number of accidents on this intersection. I would not put up the light until a better analysis has been completed.