GBS 221
Trollen **Chapter 3 Worksheet 1** Name _______________

1) Refer to the gas price data set (the values also appear in the second column of the table on the reverse of this sheet). Assume it represents a ***sample*** and show all work. Carry calculations to 4 digits beyond the decimal point.

   A) Mean = ________ B) Median = _______ C) Mode = _______

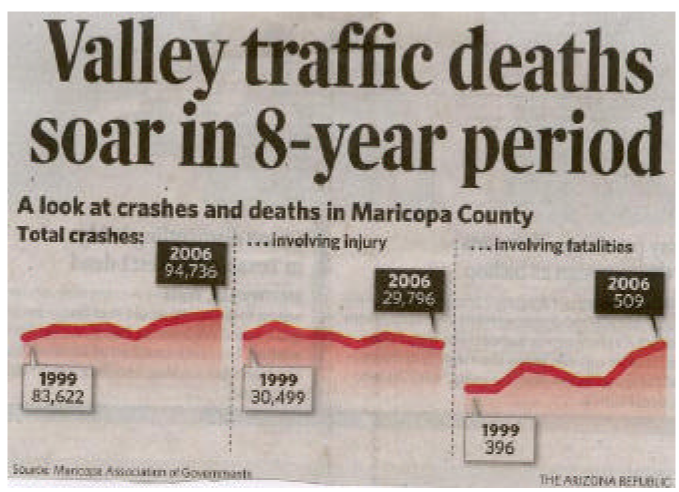
   D) 60^{th} percentile (i.e., P_{60}) = ______ E) 75^{th} percentile (i.e., P_{75}) = _______

2) A law firm charges $100 per hour when its lawyers perform *research*, $50 per hour for *consultations* and $200 per hour for *court appearances*. Last week one of the lawyers spent 10 hours doing research, 19 hours in consultations and 7 hours in court. What was the lawyer's mean hourly charge last week?

3) The graphic below appeared in the Arizona Republic on July 31, 2008.

   a) Compute the average rate of change in **Total Crashes** during the time period shown.

   b) Compute the average rate of change in **Crashes Involving Injury** during the time period shown.



4) Consider the ***population*** whose values are {2, 2, 4, 5, 6}. Carry calculations to 4 digits past the decimal point.

A) Compute the population mean μ= _______

b) Complete the worksheet below.

X	deviation $(X-m)$	deviation² $(X-m)^2$	X²
2			
2			
4			
5			
6			
S			

C) Compute the population variance σ^2= _____

5) Continue with the gas price data set. Assume it represents a ***sample*** and show all work.

A) Range = _______

B) Interquartile range = _______

C) Complete the worksheet below before continuing. Notice the first 17 rows have been completed for you. Carry calculations to 4 digits past the decimal point. Recall that the mean was **52.9909**.

City	X (¢/gal)	deviation $X-\overline{X}$	deviation² $(X-\overline{X})^2$	X²
Houston	47.9	-5.0909	25.9173	2,294.4100
Dallas	49.1	-3.8909	15.1391	2,410.8100
Kansas City	49.6	-3.3909	11.4982	2,460.1600
Milwaukee	50.1	-2.8909	8.3573	2,510.0100
Minneapolis	50.3	-2.6909	7.2409	2,530.0900
St Louis	52.3	-0.6909	0.4773	2,735.2900
Seattle	52.7	-0.2909	0.0846	2,777.2900
Philadelphia	52.9	-0.0909	0.0083	2,798.4100
Cincinnati	53.3	0.3091	0.0955	2,840.8900
Atlanta	53.4	0.4091	0.1674	2,851.5600
Buffalo	53.4	0.4091	0.1674	2,851.5600
Pittsburgh	53.4	0.4091	0.1674	2,851.5600
Los Angeles	53.5	0.5091	0.2592	2,862.2500
Detroit	53.7	0.7091	0.5028	2,883.6900
Boston	53.9	0.9091	0.8265	2,905.2100
Cleveland	53.9	0.9091	0.8265	2,905.2100
Chicago	54.8	1.8091	3.2728	3,003.0400
Baltimore	55.1			
New York	55.2			
Wash D.C.	55.2			
San Diego	55.3			
San Francisco	56.8			
S	1165.8			

D) Variance = _____

E) Standard Deviation = ______

F) Coefficient of Variation = ________

G) Z-score for San Diego_______

H) Z-score for Dallas_______

6) You've been watching two stocks and have judged them equally desirable. You've decided to invest in the *least volatile* stock. Stock A trades on the NASDAQ whereas Stock B trades on the Antwerp Stock Exchange. You've tracked their closing prices for 270 days and the results appear below. Which stock shall you favor? Cite appropriate numerical evidence.

Stock A	**Stock B**
μ = $150	μ = 5 euro
σ = $12	σ = 1 euro

7) Standard scores (a.k.a. z-scores) measure how far a value is from the mean. For the gas price data set (mean=52.9909, standard deviation = 2.2789), determine the **endpoints** of the interval (note that I've done part a for you):

a) within **1** standard deviation (either way) of the mean: 52.9909 ± **1**(2.2789) = 50.71 - 55.2698

b) within **2** standard deviations (either way) of the mean: ____

c) within **3** standard deviations (either way) of the mean: ____

8) The table below summarizes gas prices in metropolitan areas for the US and Great Britain. In relation to its own country, which city was more expensive, Milwaukee = 50.1¢/gal or Beckonsfield = 348.3 £/litre? Cite appropriate numerical evidence.

USA (¢/gal)	Great Britain (£/litre)
mean = 52.9909 sd = 2.2789	mean = 432.5222 sd = 22.4444

9) A national retailer has 369 stores of differing sizes, with a mean of 30,000 square feet and a standard deviation of 4,000 square feet. Assuming store sizes follow the Normal distribution:

A) What proportion of stores are between 26,000 and 30,000 square feet in size?

B) What proportion of stores are smaller than 38,000 square feet?