MATH 140 SUMMER 2010 WORKSHEET II ½ NAME:_____
(please print legibly)

Let $U = \mathrm{S} = \mathbb{Z}$ (the sample space is the integers).

Let the data be described as X_1, X_2, X_3, X_4 (as in problem 1), as X_1, X_2, X_3, X_4, X_5 (as in problem 2) etc.

1. Let the data set be $D_1 = \{1, 2, 3, 4\}$
Find:

A. the mode of the sample
B. The median of the sample
C. the arithmetic mean (sample mean) of the sample.
D. the geometric mean of the sample.
E. the harmonic mean of the sample.
F. find the deviation of X_1
G. find the variance of the sample
H. find the standard deviation of the sample
I. find the mean absolute deviation (MAD)
J. find the range

2. Let the data set be $D_2 = \{1, 2, 2, 3, 4\}$
Find:

F. find the deviation of X_1
G. find the variance of the sample
H. find the standard deviation of the sample

3. Let the data set be $D_3 = \{1, 2, 3, 3, 4\}$
Find:

F. find the deviation of X_1
G. find the variance of the sample
H. find the standard deviation of the sample

4. Let the data set be $D_4 = \{1, 3, 3, 3, 4\}$
Find:

F. find the deviation of X_1
G. find the variance of the sample
H. find the standard deviation of the sample
I. find an approximation for the standard deviation to accurate to 3 significant figures.

5. Flip a fair coin 4 times and record the number of heads. Let H be the number of heads obtained. Then $\mathrm{H} \sim j(\mathrm{h})$ where $j(\mathrm{h})$ a probability mass function (pmf) such that $j(\mathrm{h}) = \begin{cases} \binom{4}{\mathrm{h}} \cdot \left(\frac{1}{2}\right)^{\mathrm{h}} \cdot \left(\frac{1}{2}\right)^{(4-\mathrm{h})} & \mathrm{h} \in \mathbb{N}_4^* \\ 0 & \text{else} \end{cases}$
explicitly find all the probabilities (in chart form) and graph the pmf.

6. Flip a non-fair coin 4 times and record the number of heads. Let the probability of tossing a head be $\frac{1}{5}$ Let H be the number of heads obtained. Then $\mathrm{H} \sim k(\mathrm{h})$ where $k(\mathrm{h})$ a probability mass function (pmf) such that
$k(\mathrm{h}) = \begin{cases} \binom{4}{\mathrm{h}} \cdot \left(\frac{1}{5}\right)^{\mathrm{h}} \cdot \left(\frac{4}{5}\right)^{(4-\mathrm{h})} & \mathrm{h} \in \mathbb{N}_4^* \\ 0 & \text{else} \end{cases}$ explicitly find all the probabilities (in chart form) and graph the pmf.

7. What is the difference (if any) with the arithmetic mean, standard deviation, skewness, or kurtosis between and betwixt problem 5 and 6 (DO NOT COMPUTE THE VALUES OF THE arithmetic mean, standard deviation, skewness, or kurtosis just opine from the graphs).

8. Take a coin and flip it 4 times record the number of heads. Do this 20 times and send the results to me at mcloughl@kutztown.edu (a list of 20 numbers all in $\mathbb{N}_4^*$ in *.txt form please).