

Homework #1
Economics 113
Introduction to Econometrics
Professor Spearot
Due Friday, October 3rd, 2008 – Beginning of class

1. Drummers are unpredictable. Sometimes they play fast, and sometimes they play slow. During a recent 5 day mini-tour, Professor Spearot played the same song at the following tempos:

Day	Tempo (Beats per minute)
1	100
2	110
3	100
4	120
5	80

Calculate the mean, median, mode, variance, standard deviation, and range of Professor Spearot's tempos during this epic five-day tour.

2. Professor Spearot's bandmates blame his tempo issues on the number of Red Bull cans consumed prior to the show. Data on this behavior is detailed in the following table:

Day	Red Bull (Cans)
1	1
2	2
3	2
4	5
5	0

What is the covariance and correlation between tempos and red bull consumption?

3. Suppose that Professor Spearot wants to measure Tempo in beats per second rather than beats per minute. Given that there are 60 seconds in one minute, re-derive the mean and standard deviation of Tempo. What happens to the correlation between Red Bull consumption and Tempo?

4. Suppose that I decide that I want to measure variation using the "coefficient of variation", which is defined as the standard deviation of random variable divided by its mean. Please prove that random variables X and $Z=aX$ have the exact same coefficient of variation. That is, show that scaling does not affect the coefficient of variation.