

(please print legibly)

Let the data be described as X_1, X_2, X_3, X_4 (as in problem 1), as $X_1, X_2, X_3, X_4, \dots, X_9$ (as in problem 2) etc.

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

2. Let $U = S = \mathbb{Z}$ (the sample space is the integers). Let the data set be $D_3 = \{1, 2, 3, 3, 3, 4, 5, 5, 5\}$

Using SPSS:

A. draw a histogramme

Find:

- 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 mode of the sample

3. Let $U = \mathbb{R}$. Let $S = \mathbb{N}$.

Let the data set be $D_0 = \{1, 1, 20, 20, 40, 40, 50\}$

- A. draw a histogramme and stem-and-leaf plot with units of tens for the stem.
 B. The median of the sample C. the arithmetic mean (sample mean) of the sample. D. the mode of the sample
 E. the harmonic mean of the sample. F. the geometric mean of the sample. G. find the range
 H. the variance of the sample. I. the standard deviation of the sample.
 J. the skewness of the sample. K. the kurtosis of the sample.

4. Let $U = \mathbb{R}$. Let S be a well defined sample space and D be a data set be such that it is non-empty and finite. Let the data be described as X_1, \dots, X_n ($n \in \mathbb{N}$). Consider \bar{X} and let $d_i = X_i - \bar{X}$ for all $i \in \mathbb{N}_n$.

It is the case that $\sum_{k=1}^n (X_k - \bar{X}) = 0$ (or if you prefer $\sum_{k=1}^n (d_k) = 0$).

Prove or disprove the claim.

5. Let $U = \mathbb{R}$. Let S be a well defined sample space and D be a data set be such that $D = \{x, y\}$ where $x > 0$ and $y > 0$.

Consider \bar{X} and call it **A**, the geometric mean and call it **G**, and the harmonic mean and call it **H**.

Is there a relationship (numerically) between and betwixt **A**, **G**, and **H**?

If so, please try to prove your claim of said relationship.