MEMORY AID1-Descriptive Statistics

1. **Introduction to statistics:**
   - Intuitive concept of statistics
   - Definition of statistics
   - Variable and its type
   - Data
   - Type of statistics
   - Population and sample

2. **Measure of central tendency:**

Example1: We want to compare students in class A and in Class B. We have the scores as following:

Class A: 5, 6, 4, 7, 8
Class B : 10, 7, 2, 9, 3

Which class is better? What indicators do you use in order to compare these two classes?

Example2:

- Let variable X be the statistics score.
- We have data (realization of X: the students' statistics score) as following:

7 8 9 5 7 8 7 9 6 8

-Questions:

a. Calculate the average score, then deduce the formula for mean, denoted by $\overline{X}$.
b. Construct the frequency table.
c. From b., deduce the second formula for mean.
d. Calculate the sum $\sum_{i=1}^{n}(X_i - \overline{X})$ and then interpret the result.
e. Prove the result in d.

Example3: in a semester, Mr. A studies 5 subjects such as: Mathematics, Physics, Chemistry, English and Computer. For final exam, he gets the score (10/10) respectively: 8, 9, 6, 7 and 3.

a. Calculate the average score.
b. Calculate the average score supposing the weight/coefficient for each subject is 3, 2, 2, 5 and 1 respectively.

3. **Measure of dispersion:**

- Again, we want to compare students in class A and in Class B.

- From 2., derive the formula for:

a. Mean Deviation, denoted by MD

b. Variance, denoted by S^2
c. Standard Deviation, denoted by SD

Example 4: Calculate MD, S^2 and SD of the data given in Example 1 and Example 2.

Remark: Explain the concept of $\overline{X}$, MD, S^2 and SD in sample and population context.

4. **Excel:**
   a. Calculate $\overline{X}$, MD, S^2 and SD using Beoga which is an application in handphone.
   b. Calculate $\overline{X}$, MD, S^2 and SD using Excel.