Practice 1 – Introduction to Econometrics (deadline: the day before next tutorial)

1) Describe the following random variable "grades from Econometrics11-12, FH Düsseldorf" –which we get from a random sample of a given population– by means of the most well-known measures:

a) Mean

b) Median

c) Mode

d) Variance

e) Standard deviation

f) Skewness (asymmetry)

The random variable takes the following values:

0, 2, 2, 3, 4, 4, 5, 5, 5, 5, 5, 6, 6, 6, 6, 6, 6, 6, 7, 7, 7, 7, 7, 7, 8, 8, 8, 9, 9, 10

g) Plot the probability distribution function of such a random variable.

2) Students of a Biology course at a university are divided into three groups: 1, 2 and 3. After the final evaluation of the course (which was identical for all groups), a sample of 20 tests per group were taken. The observations of each of the samples are as follows:

Group 1: 0, 0, 2, 2, 2, 2, 3, 3, 4, 4, 5, 5, 5, 5, 5, 6, 6, 7, 9, 9

Group 2: 0, 2, 4, 4, 5, 6, 7, 7, 8, 8, 8, 8, 8, 8, 8, 9, 9, 10, 10, 10

Group 3: 0, 1, 2, 3, 4, 4, 5, 5, 5, 5, 5, 5, 5, 5, 6, 6, 7, 8, 9, 10

a) Using an econometric program (or manually), get a table with the main descriptive statistics for each group: mean, median, mode, standard deviation, maximum, minimum, range and coefficient of asymmetry.

b) Considering groups 1 and 2 alone, and based on the coefficient of asymmetry, which group did better? Support your answer.

c) Considering now groups 1 and 3: In which of these two groups it could be said that the performance was more similar among students? What measure can be taken as a reference?

3) Stores A and B sell the same product. Store A sells an average of 12 units per week with a standard deviation of 6. The distribution of sales of the store B is an average of 9 units per week and a standard deviation equal to 3. Draw, in the same graph and in an intuitive and approximate way (given that not all data are available), the probability distribution functions of the random variables "sales of A" and "sales of B". Remember to label all axes in the graphs.