

Always use 3 decimal places.

GROUP I

1. A researcher is analysing the behaviour of consumption of several households in a given region and collected data on the monthly level of consumption of those households that is summarized on the following table:

Table: Distribution of households by monthly level of consumption

Consumption	Number of households
0 - 400	1867
400 – 1 000	2389
1 000 – 2 000	1258
2 000 – 5 000	658
>5 000	68

Source: Survey

- (1,50 val) a) Depict graphically the simple and cumulative frequencies of the distribution.
- (1,00 val) b) Compute the mean and median value of the distribution.
- (1,00 val) c) Compute the standard deviation and the coefficient of variation of the distribution.
- (0,50 val) d) Taking into account the measures computed, analyse and explain the behaviour of the distribution in terms of symmetry.
- (1,50 val) e) Compute the Gini index of the distribution and analyse its level of concentration.
2. Comment the following sentence:
- (1,50 val) a) "Having analysed the level of concentration of sales in one market it was possible to verify, given the value of the Gini Index, that sales are highly concentrated because that indicator is over 0.5. So it is possible to conclude that the distribution presents a low level of dispersion".

GROUP II

1. Consider the following information on the evolution of exports at constant prices in Portugal.

Table: Information on the real evolution of Portuguese exports

Year	2009	2010	2011	2013	2014
Exports growth (%)	-10,2	9,5	7,0	6,4	3,3

Source: INE

- (1,00 val) a) Compute for those years that is possible the chain and 2011 fixed base index of exports at constant prices.
- (1,00 val) b) Which was the real growth rate of exports in Portugal between 2008 and 2011?
- (1,00 val) c) Which was the real average annual growth rate of exports between 2012 and 2014?
- (1,50 val) d) By how much real exports have grown in 2012 in order to have them growing 13.6% between 2011 and 2014?

GROUP III

1. A given country export basically two types of goods. The following table presents some details on the evolution of exports of those goods.

Table: Information on the exports of one country

	Value of exports in 2014 (thousands m.u.)	Index of prices 2014 (2013=100)	Index of quantities of exports 2013 (2012=100)	Index of quantities of exports 2014 (2013=100)
Group X of goods	36.988.455	85.6	115.5	150.4
Group Z of goods	4.556.658	104.1	106.4	118.8

Source: Statistical office

- (1,00 val) a) Compute the real growth rate of exports of group X goods in 2014.
- (1,00 val) b) Compute the value of exports of group Z goods in 2013 at 2014 prices.
- (1,00 val) c) Compute the nominal growth rate of exports of Group Z goods in 2014.
- (1,25 val) d) Compute the value of total exports in 2013 at current and 2014 prices.
- (1,25 val) e) Compute if possible the 2013 base Laspeyres index of prices of total exports in 2014.

GROUP IV

1. The same researcher of group I tried to study the relationship between the level of consumption and level of disposable income of the households surveyed and collected the following information.

Table: Information on the level of consumption and disposable income of households

Consumption (euros)	2.700	1.520	380	650	780	398	860
Disposable income (euros)	3.500	1.380	390	655	850	380	900

Source: Survey

- (1,50 val) a) Present the equation of the line that better adjusts to this data.
- (1,50 val) b) Comment to what extent the relationship between the two variables is strong and forecast the level of consumption of a household with an income of 2780 euros.