PROPORTION AND STATISTICS TEST - 3º ESO

Exercise 1: (1 point) I want to know how much money Spanish adults are spending on their Christmas presents this year, so I've asked forty of my co-workers in the high school about it. Classify the random variable and indicate the population and the sample. Do you think my study is representative?

Exercise 2: (2 points) Given the following table showing the values and frequencies of a certain random variable

x_i	0	1	3	4	5
f_i	4	9	5	9	2

Work out:
  a) The percentage corresponding to each value of the variable
  b) The mode
  c) The measures of dispersion
  d) Plot the frequency polygon

Exercise 3: (2 points) Given the following table showing the values and frequencies of a certain random variable

x_i	[0,2]	(2,4]	(4,6]	(6,8]
f_i	5	3	1	7

Work out:
  a) The median
  b) Pearson's coefficient of variation
  c) The bar diagram, the histogram and the frequency polygon

Exercise 4: (1 point) Divide €1003 in an inversely proportional way to 2, 5 and 7.

Exercise 5: (1 point) Six volunteers need two hours to prepare chocolate and churros for four hundred and eighty students. How long would eight volunteers need to work if they had to feed five hundred and twenty students?

Exercise 6: (1.25 points) Due to the crisis, civil servants got our salaries reduced by 5%, twice. Now we've gotten a 1.5% increase. If the original salary of a civil servant was of 1500€:
  a) What's the real percentage variation after both reductions?
  b) What's our salary now?
  c) What should the percentage increase be so we would get 1600€ a month?

Exercise 7: (0.75 points) The other day I spilled my coffee all over my tablet and I had to go and get a new one :(I missed Black Friday just for a couple of days   :(:(and I found out that they had increased its price by 8.5%, to 210.5€   :(:(:'(What was the price of the tablet during Black Friday?
PS: I am completely pissed off :'(

Exercise 8: (1 point) Find the selling price per kilo of a Christmas buns mixture made from half a kilo of alfajores that sells for €5.20 per kilo and 750 grams of hojaldrinas that costs €6.80 per kilo.

Exercise 1: (1 point) I want to know how much money Spanish adults are spending on their Christmas presents this year, so I've asked forty of my co-workers in the high school about it. Classify the random variable and indicate the population and the sample. Do you think my study is representative?
Money can be considered a quantitative continuous random variable. The population is formed by Spanish adults, and the sample, by forty of my co-workers. Nope, it is not a representative study, since teachers are just a small percentage of the population and their salary is not the same as the rest of Spanish workers.

Exercise 2: (2 points) Given the following table showing the values and frequencies of a certain random variable

x_i	0	1	3	4	5
f_i	4	9	5	9	2

Work out:
   a) The percentage corresponding to each value of the variable

x_i	0	1	3	4	5
f_i	4	9	5	9	2
%	14	31	17	31	7

   b) The mode $Mo = 1$ and 4
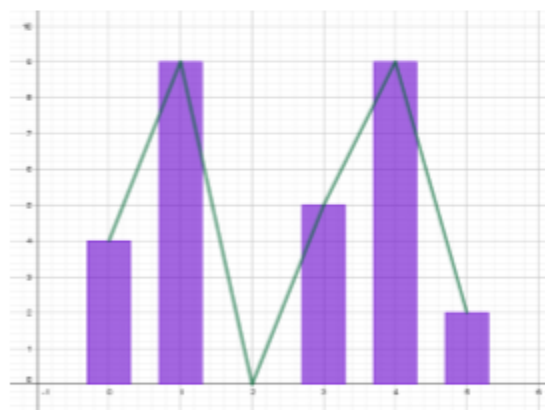   c) The measures of dispersion

$$R = 5 \qquad \sigma^2 = 2.74 \qquad \sigma = 1.66 \qquad CV = 0.69$$

   d) Plot the frequency polygon

Exercise 3: (2 points) Given the following table showing the values and frequencies of a certain random variable
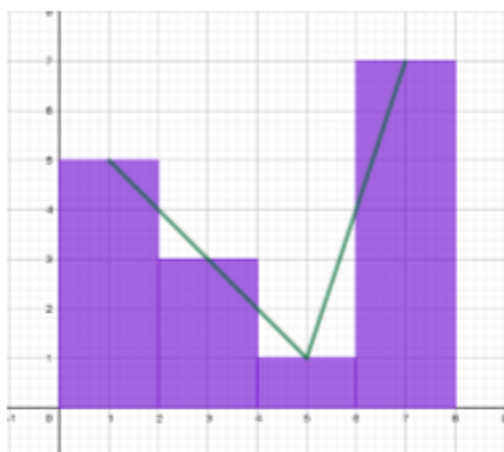
x_i	[0,2]	(2,4]	(4,6]	(6,8]
f_i	5	3	1	7

Work out:
   a) The median $Me = 4$
   b) Pearson's coefficient of variation $CV = 0.62$

c) The bar diagram, the histogram and the frequency polygon

Exercise 4: **(1 point)** Divide €1003 in an inversely proportional way to 2, 5 and 7.

$$a = 595€, \quad b = 238€, \quad c = 170€$$

Exercise 5: (1 point) Six volunteers need two hours to prepare chocolate and churros for four hundred and eighty students. How long would eight volunteers need to work if they had to feed five hundred and twenty students? $1h\,37'30''$

Exercise 6: **(1.25 points)** Due to the crisis, civil servants got our salaries reduced by 5%, twice. Now we've gotten a 1.5% increase. If the original salary of a civil servant was of 1500€:
  a) What's the real percentage variation after both reductions? 9.75%
  b) What's our salary now? $1374.06€$
  c) What should the percentage increase be so we would get 1600€ a month? 16.44%

Exercise 7: (0.75 points) The other day I spilled my coffee all over my tablet and I had to go and get a new one :(I missed Black Friday just for a couple of days :(:(and I found out that they had increased its price by 8.5%, to 210.5€   :(:(:'(What was the price of the tablet during Black Friday? $194€$
PS: I am completely pissed off :̄(

Exercise 8: (1 point) Find the selling price per kilo of a Christmas buns mixture made from half a kilo of alfajores that sells for €5.20 per kilo and 750 grams of hojaldrinas that costs €6.80 per kilo $6.16€$