DESIGN AND DATA ANALYSIS IN PSYCHOLOGY I. PARTIAL 1.
April, 2012

Name: _____
Number of identification: _____

Exercise 1. The table below presents information about the socioeconomic class of a sample.

$300 + x = 500$

$rf_i = \frac{f_i}{n} \rightarrow 0.1 = \frac{f_i}{500} \rightarrow 500 \cdot 0.1 = f_i$

$50 = f_i$

X_i	f_i	rf_i	F_i
Upper	50	0.1	50
Upper middle	100	0.2	150
Middle	200	0.4	350
Lower middle	100	0.2	450
Lower	50	0.1	500

a) Complete the table knowing that this distribution is symmetric.
b) Represent graphically the data. Ordinal variable: bar chart or cumulative bar chart

Exercise 2. ~~The table below presents information about the height of a sample.~~ Taking into account the information presented in the table below:

a) $Mdn = L_i + \frac{I}{f_i}\left(\frac{n}{2} - F_i\right) =$
$= 50.5 + \frac{10}{4}(15 - 12) = 50.5 + 2.5 \cdot 3 =$
$= 50.5 + 7.5 = 58$

$n/2 = 30/2 = 15$

$L_{inf_i} = 51 - 0.5 = 50.5$

$I = \max - \min$ (exact limits) $=$
$= 60.5 - 50.5 = 10$

cm X	f_i
111-120	1
121-130	5
131-140	4
141-150	2
151-160	4
161-170	6
171-180	3
181-190	2
191-200	3
	30

F_i	X_i	f_iX_i	$X^2 f_i$
1	15.5	15.5	240.25
6	25.5	127.5	650.25
10	35.5	142	1260.25
12	45.5	91	2070.25
16	55.5	222	3080.25
22	65.5	393	4290.25
25	75.5	226.5	5700.25
27	85.5	171	7310.25
30	95.5	286.5	9120.25
		1675	

a) Calculate the median.
b) Calculate the Pearson asymmetry index and interpret the result.

$As = \frac{\bar{X} - Mo}{S_x} = \frac{55.833 - 65.5}{23.308} = \frac{-9.667}{23.308} = -0.415 < 0 \rightarrow$ asymmetric negative

$\bar{X} = \frac{\sum f_i X_i}{n} = \frac{1675}{30} = 55.833$; $S_x = \sqrt{\frac{\sum f_i X_i^2}{n} - \bar{X}^2} = \sqrt{\frac{240.25 + 3251.25 + 5041 + 4140.5 + 12321 + 25741.5 + 17100.75 + 14620.5 + 27360.75}{30} - 55.833^2} = \sqrt{\frac{109817.5}{30} - 3117.324}$

$S_x = \sqrt{3660.583 - 3117.324} = \sqrt{543.259} = 23.308$

Exercise 3. The table below presents the scores obtained in a reading test.

X_i	f_i	F_i
17	3	3
19	2	5
20	1	6
21	2	8
22	1	9
23	1	10
24	1	11
25	1	12
27	1	13
29	1	14
	14	

$Q_1 = X_I + D(X_{I+1} - X_I) =$

$\text{position} = \frac{i(n+1)}{k} = \frac{1(14+1)}{4} = 3.75$

$Q_1 = 17 + 0.75(19 - 17) = 17 + 1.5 =$
$= 18.5$

$P_{85} = X_I + D(X_{I+1} - X_I) =$

$\text{position} = \frac{i(n+1)}{k} =$
$= \frac{85(14+1)}{100} =$
$= \frac{1275}{100} = 12.75$

$P_{85} = 25 + 0.75(27 - 25) =$
$= 25 + 1.5 = 26.5$

Calculate:

a) ~~The semiinterquartile amplitude~~. Quartile 1
b) Percentile 85.

Exercise 4. A normal distribution presents a mean of 50 and a standard deviation of 10.

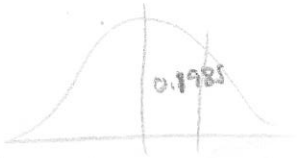
a) What standard distance does represent the ~~20~~ 19.85% of data immediately over the mean?
b) Which proportion does the raw scores between 40 and 70 have?
~~c) What raw score does define the lowest 5% of data?~~
~~d) Calculate the two raw scores that delimit the central 95% of data.~~
~~e) Calculate percentile 30.~~

(4) a)

$\bar{x} = 50$

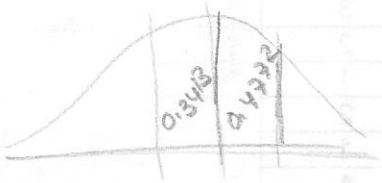
$s = 10$

$z = \frac{x - \bar{x}}{s}$



$z = 0.52$

b)



$x_1 = 40$ $x_2 = 70$

$z_1 = -1$

buscar en la tabla el +1

$z_1 = \frac{40-50}{10} = \frac{-10}{10} = -1$

$z_2 = \frac{70-80}{10} = \frac{20}{10} = 2$

$p = 0.3413 + 0.4772 = 0.8185$