

EJERCICIO 1

Item 3 because presents more zeros than the rest

(a) ~~El ítem 3 porque es el más fácil (el que ha sido correctamente respondido en más ocasiones más veces).~~

$$10 = \frac{R}{N} = \frac{5}{10} = 0.5$$

(b) $X = A - \frac{E}{k-1} = 4 - \frac{2}{2-1} = 4 - 2 = 2$

$$10_c = R - \frac{W}{k-1} = \frac{5 - \frac{5}{2-1}}{10} = 0$$

EJERCICIO 2

	IT2	X	Xi	(X-i) ²
P1	1	5	4	16
P2	1	5	4	16
P3	0	3	3	0
P4	0	4	4	0
P5	1	1	0	0
P6	1	4	3	9
P7	0	3	3	0
P8	0	4	4	0
P9	1	5	4	16
P10	1	6	5	1
			34	132

$$r_{bp} = \frac{\bar{X}_c - \bar{X}}{S_x} \sqrt{\frac{p}{q}} = \frac{3.33 - 3.4}{1.28} \sqrt{\frac{0.6}{0.4}} = \frac{-0.07}{1.28} \sqrt{1.5} = -0.05 \cdot 1.22 = -0.06$$

$$\bar{X}_c = \frac{4+4+0+3+4+5}{6} = \frac{20}{6} = 3.33$$

$$\bar{X} = \frac{\sum X}{N} = \frac{34}{10} = 3.4$$

$$S_x = \sqrt{\frac{\sum X^2}{N} - \bar{X}^2} = \sqrt{\frac{132}{10} - 3.4^2} = \sqrt{13.2 - 11.56} = \sqrt{1.64} = 1.28$$

$$p = \frac{6}{10} = 0.6 \quad q = 1 - p = 1 - 0.6 = 0.4$$

El ítem debe eliminarse porque discrimina mal ($D \leq 0$)

EJERCICIO 3

	1.5	2	3	3.5	4	4.5	5
f_i	100	200	200	300	300	400	400
F _i	100	300	500	800	1100	1500	1900

$$a) \quad Md = Li + \frac{1}{f_i} \left(\frac{n}{2} - F_i \right) = 3.5 + \frac{1}{300} (600 - 500) = 3.5 + \frac{100}{300} = 3.5 + 0.33 = 3.83$$

$$n/2 = 1200/2 = 600$$

$$b) \quad CA = Q_3 - Q_1 = 4.75 - 2.5 = 2.25$$

$$Q_3 = Li + \frac{1}{f_i} \left(\frac{3n}{4} - F_i \right) = 4.5 + \frac{1}{400} (900 - 800) = 4.5 + \frac{100}{400} = 4.5 + 0.25 = 4.75$$

$$\frac{3n}{4} = \frac{3 \cdot 1200}{4} = \frac{3600}{4} = 900$$

$$Q_1 = Li + \frac{1}{f_i} \left(\frac{n}{4} - F_i \right) = 1.5 + \frac{1}{200} (300 - 100) = 1.5 + 1 = 2.5$$

$$n/4 = 1200/4 = 300$$

$2.25 > 2 \rightarrow$ El ítem es ambiguo.

Exercise 4. (2 points). A test is formed by 3 dichotomous items. We know that there were no omissions, the sum of the difficulty without correction of the 3 items is 1.7 and:

	item 1	item 2	item 3
Difficulty (without correction)	?	?	0.8
S_j^2	0.25	?	?
H_j	0.6	0.4	0.2
V_j	0.4	0.3	0.5

- Complete the table.
- Considering the difficulty index exclusively, which is the worst item?
- Considering the homogeneity index exclusively, which is the worst item?
- Considering the validity index exclusively, which is the worst item?

a)

	item 1	item 2	item 3
Difficulty (without correction)	0.5	0.4	0.8
S_j^2	0.25	0.24	0.16

- 3 (most extreme value).
- 3 (lowest value).
- 2 (lowest value).