

EXERCISE 1

X	f _i	f _i X _i	F _i	X ²	f _i X _i ²
0	15	0	15	0	0
1	25	25	40	1	25
2	60	120	100	4	240
3	45	135	145	9	405
4	40	160	185	16	640
5	15	75	200	25	375
	200				1685

POSITIONS 146-185

a) $f/i = \frac{f_i}{n} \rightarrow f/x=4 = \frac{40}{200} = 0.2$

b) $\bar{X} = \frac{\sum f_i X_i}{n} = \frac{515}{200} = 2.575$

The most appropriate central tendency index is the arithmetic mean because the variable "number of correct answers" is quantitative.

c) $\frac{i(n+1)}{k} \rightarrow \frac{i(200+1)}{100} = 146 \rightarrow 201i = 14600$
 $i = \frac{14600}{201} = 72.64 \approx 73$

$\frac{i(200+1)}{100} = 185 \rightarrow 201i = 18500$
 $i = \frac{18500}{201} = 92.04 \approx 92$

Percentiles 73-92 corresponds to X=4

d) $s^2 = \frac{\sum f_i X_i^2}{n} - \bar{X}^2 = \frac{1685}{200} - 2.575^2 = 8.425 - 6.63 = 1.795$



EXERCISE 2

10	1
18	2
22	3
29	4
34	5
37	6
38	7
45	8
46	9
52	10
68	11
92	12

position: $\frac{i(n+1)}{k} = \frac{1(12+1)}{4} = 3.25$

$Q_1 = X_i + D(X_{i+1} - X_i) = 22 + 0.25(29 - 22) = 22 + 0.25 \cdot 7 = 22 + 1.75 = 23.75$

position: $\frac{i(n+1)}{k} = \frac{2 \cdot 13}{4} = \frac{26}{4} = 6.5$

$Q_2 = 37 + 0.5 \cdot (38 - 37) = 37.5$

position: $\frac{3 \cdot 13}{4} = \frac{39}{4} = 9.75$

$Q_3 = 46 + 0.75(52 - 46) = 46 + 0.75 \cdot 6 = 46 + 4.5 = 50.5$

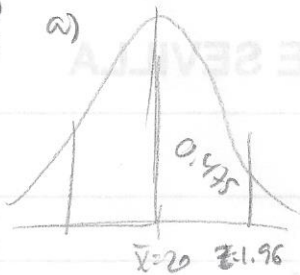
$Q = \frac{Q_3 - Q_1}{2} = \frac{50.5 - 23.75}{2} = \frac{26.75}{2} = 13.375$

TÍTULO
INVESTIGADOR PRINCIPAL
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TIPO DE PROYECTO
PROGRAMA NACIONAL

EL DIRECTOR DE INVESTIGACIÓN
Salvador Chacón Moscoso

Exercise 3

$\bar{x}=20$
 $s=3$



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

$$1.96 = \frac{x - 20}{3} \rightarrow 1.96 \cdot 3 = x - 20$$

$$5.88 = x - 20$$

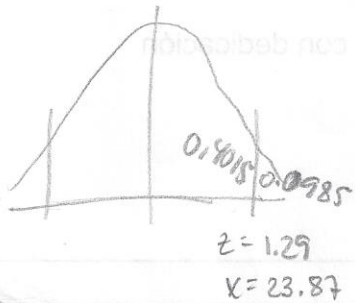
$$\boxed{25.88 = x}$$

$$-1.96 = \frac{x - 20}{3} \rightarrow -5.88 = x - 20$$

$$20 - 5.88 = x$$

$$\boxed{14.12 = x}$$

b)



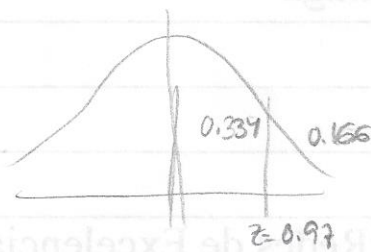
$$1.29 = \frac{x - 20}{3} \rightarrow 3.87 = x - 20$$

$$\boxed{23.87 = x}$$

$$-1.29 = \frac{x - 20}{3} \rightarrow -3.87 = x - 20$$

$$\boxed{16.13 = x}$$

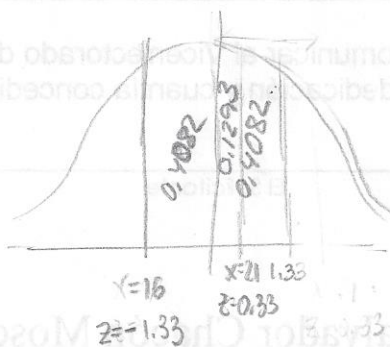
c)



$$0.97 = \frac{x - 20}{3} \rightarrow 2.91 = x - 20$$

$$\boxed{22.91 = x}$$

d)



$$z = \frac{x - \bar{x}}{s} = \frac{16 - 20}{3} = \frac{-4}{3} = -1.33$$

$$z = \frac{21 - 20}{3} = \frac{1}{3} = 0.33$$

$$0.4082 + 0.1293 = 0.5375$$

$$\boxed{53.75\%}$$

EXERCISE 4

$n = 101$
 $\bar{X} = 1200$
 $\alpha = 0.05 \rightarrow z = 1.96$
 $s = 20$

$$\bar{X} \pm E = 1200 \pm 3.92 < 1196.08$$

$$E = z_{\alpha/2} \cdot \sigma_{\bar{X}} = 1.96 \cdot 2 = 3.92$$

$$\sigma_{\bar{X}} = \frac{s}{\sqrt{n-1}} = \frac{20}{\sqrt{101-1}} = \frac{20}{10} = 2$$

388	
388	
387	330
386	181
342	187
344	186
178	141
171	143
192	145
128	145
144	141
145	138
130	138
132	131
Group A	Group B

Number of Identification:
 Name:
 Date:
 Type B

DESIGN AND DATA ANALYSIS IN PSYCHOLOGY I

Exercise 4: A researcher is interested in the effect of an anesthetic on the reaction time of 50. At the level of confidence of 95% (alpha = 0.05), we test the average IQ of 110. We know that IQ (Intelligence Quotient) is normally distributed with a mean of 100 and a standard deviation of 15. The researcher will estimate the average IQ in the population with a margin of error of 2.

- The values that leaves 20% of the cases below itself.
 - The two values that delimit the central 80% of the data.
 - The value that leaves 75% of the cases below itself.
 - The value that leaves 25% of the distribution below itself.
- degrees of freedom: Chi-sq

- Exercise 4: A variable follows a Student-t distribution with 15 degrees of freedom. Obtain the value of the variable that leaves 20% of the cases below itself.
- Calculate the coefficient of non-determination and interpret it.
- Does the relationship between height and weight probably depend on weight and height? ($\alpha = 0.05$). Explain your answer.
- Can we say that there is a statistically significant relationship between weight and height? ($\alpha = 0.05$). Explain your answer.

* Correlation is significant at the 0.05 level (2-tailed).

N	40	40
sig. (2-tailed)	.037	
height Pearson Correlation	.320	
sig. (2-tailed)	.001	
weight Pearson Correlation	.400	
sig. (2-tailed)	.000	
height		.320
weight	.400	.320

the results below:

Exercise 3: The relationship between weight and height gave us

is reaction time statistically different between groups? ($\alpha = 0.05$)

Handwritten notes and scribbles at the bottom of the page.