

ARITMÉTICA

$[L_i, L_{i+1})$	x_i	f_i	F_i	$(x_i)(f_i)$
[10, 15)	12,5	3	3	37,5
[15, 20)	17,5	5	8	87,5
[20, 25)	22,5	7	15	157,5
[25, 30)	27,5	4	19	110
[30, 35)	32,5	2	21	65

$n=21$

$$\sum (x_i)(f_i) = 457,5$$

16) $\bar{x} = ?$

$$\bar{x} = \frac{457,5}{21}$$

$$\bar{x} = 21,79$$

Pta

17) $M_0 = ?$

$$d_1 = 7 - 5 \Rightarrow d_1 = 2$$

$$d_2 = 7 - 4 \Rightarrow d_2 = 3$$

$$M_0 = 20 + 5 \left[\frac{2}{2+3} \right]$$

$$M_0 = 22$$

Pta

18) $Me = ?$

$$\frac{21}{2}$$

$$Me = 20 + 5 \left[\frac{\frac{21}{2} - 8}{7} \right]$$

$$Me = 20 + 5 \left[\frac{5}{14} \right]$$

$$Me = 20 + 5 \left(\frac{5}{14} \right)$$

$$Me = 20 + 1,78 \Rightarrow Me = 21,78$$

Pta

ESTADÍSTICA II

20) $Q_3 = ? \therefore \frac{3(21)}{4} = \frac{63}{4}$

$$Q_3 = 25 + 5 \left[\frac{\frac{3(21)}{4} - 15}{19 - 15} \right]$$

$$Q_3 = 25 + 5 \left[\frac{\frac{3}{4}}{4} \right]$$

$$Q_3 = 25 + 5 \left(\frac{3}{16} \right)$$

$$Q_3 = 25 + \frac{15}{16}$$

$$Q_3 = 25 + 0,93$$

$$Q_3 = 25,93$$

Pta

19) $Q_1 = ?$

$$\frac{1(21)}{4} = \frac{21}{4}$$

$$Q_1 = 15 + 5 \left[\frac{\frac{1(21)}{4} - 8}{8 - 3} \right]$$

$$Q_1 = 15 + \frac{9}{4}$$

$$Q_1 = 15 + 2,25 \Rightarrow Q_1 = 17,25$$

Pta

(TOSCANO)

I_i	f_i	F_i
[5,2 - 6,1)	3	3
[6,1 - 7,0)	5	8
[7,0 - 7,9)	9	17
[7,9 - 8,8)	7	24
[8,8 - 9,7)	5	29
[9,7 - 10,6)	3	32

$n=32$

$Q_1 = ? \therefore \frac{1(32)}{4} = 8$

$$Q_1 = 6,1 + (0,9) \left(\frac{8 - 3}{8 - 3} \right)$$

$$Q_1 = 6,1 + 0,9$$

$$= 7$$

* (PAR)

I) MED (\bar{x})

$\bar{x} =$

II) MED (M_e)

$M_e =$

III) M

M_0

\sqrt{d}

f_i	F_i
3	3
5	8
9	17
7	24
5	29
3	32

$n=32$

$(32) = 8$

$(8-3)$

$0,9$

$0,9$

(TOSCANO)

* PARA DATOS AGRUPADOS

I) MEDIA = MEDIA ARITMÉTICA
(\bar{x}) = PROMEDIO

$$\bar{x} = \frac{\sum (x_i)(f_i)}{n}$$

II) MEDIANA (Me) $\Rightarrow \left(\frac{n}{2}\right) \rightarrow$ UBICARLO EN " F_i "

$$Me = L_i + w \left[\frac{\left(\frac{n}{2}\right) - F_{(i-1)}}{f_i} \right]$$

III) MODA (M_o) \Rightarrow DATO MAYOR DE " f_i " \rightarrow UBICARLO

$$M_o = L_i + w \left[\frac{d_1}{d_1 + d_2} \right]$$

$$d_1 = f_i - f_{(i-1)} \quad \text{ANTERIOR}$$

$$d_2 = f_i - f_{(i+1)} \quad \text{POSTERIOR}$$

IV) CUARTIL [Q_k] $\Rightarrow \frac{k(n)}{4} \rightarrow$ UBICARLO EN " F_i "

$$Q_k = L_i + w \left[\frac{\frac{k(n)}{4} - F_{(i-1)}}{F_i - F_{(i-1)}} \right]$$

42

22

MITAD

I_i	X_i	f_i	F_i
$[0, 8]$	4	1	1
$[8, 16]$	12	16	17
$[16, 24]$	20	13	30
$[24, 32]$	28	9	39
$[32, 40]$	36	8	47
$[40, 48]$	44	3	50
$[48, 56]$	52	10	60

$n=60$

$$\therefore Q_2 = ? \quad \therefore \frac{2(60)}{4} = 30$$

$$Q_2 = 24$$

Rm

= 2

X (CONJUNTO MERA):
 AMA: SVA: LADRON Y NO RAYAR
 QUELLA: OCOSO
 LULLA: MENTIROSO
 SILEX: ASINO
 MACIA: GAY

f_i	F_i
3	3
9	12
7	24
5	29
3	32

(TOSCANO)

* PARA DATOS AGRUPADOS

I) MEDIA = MEDIA ARITMÉTICA
(\bar{x}) = PROMEDIO

$$\bar{x} = \frac{\sum (x_i)(f_i)}{n}$$

II) MEDIANA (Me) $\Rightarrow \left(\frac{n}{2}\right) \rightarrow$ ubicarlo en " F_i "

$$Me = L_i + w \left[\frac{\left(\frac{n}{2}\right) - F_{(i-1)}}{f_i} \right]$$

III) MODA (Mo) \Rightarrow DATO MAYOR DE " f_i " \rightarrow ubicarlo

$$Mo = L_i + w \left[\frac{d_1}{d_1 + d_2} \right]$$

$$d_1 = f_i - f_{(i-1)} \quad \text{ANTERIOR}$$

$$d_2 = f_i - f_{(i+1)} \quad \text{POSTERIOR}$$

IV) CUARTIL [Q_k] $\Rightarrow \left(\frac{k(n)}{4}\right) \rightarrow$ ubicarlo en " F_i "

$$Q_k = L_i + w \left[\frac{\left(\frac{k(n)}{4}\right) - F_{(i-1)}}{F_i - F_{(i-1)}} \right]$$

V) DECIL [D_k] $\Rightarrow \left(\frac{k(n)}{10}\right) \rightarrow$ ubicarlo en " F_i "

$$D_k = L_i + w \left[\frac{\left(\frac{k(n)}{10}\right) - F_{(i-1)}}{F_i - F_{(i-1)}} \right]$$

VI) PERCENTIL [P_k] $\Rightarrow \left(\frac{k(n)}{100}\right) \rightarrow$ ubicarlo en " F_i "

$$P_k = L_i + w \left[\frac{\left(\frac{k(n)}{100}\right) - F_{(i-1)}}{F_i - F_{(i-1)}} \right]$$

281

MITAD

L_i	X_i	f_i
[0, 8 >	4	1
[8, 16 >	12	16
[16, 24 >	20	13
[24, 32 >	28	9
[32, 40 >	36	8
[40, 48 >	44	3
[48, 56 >	52	10

$$Q_2 = ? \quad \therefore \frac{2(60)}{4} = 30$$

$$Q_2 = 24$$

X CONJ
AMO

I_i	X_i	f_i	F_i
3 >	2	12	12
5, 5 >	4	10	22
	6	8	30
	8	7	37
	10	5	42
13 >	12	8	50
15 >	14	10	60

$n=60$

$$\frac{65(60)}{100} = 39$$

$$+ 2 \left[\frac{65(60)}{100} - 37 \right]$$

$$+ 2 \left(\frac{2}{5} \right)$$

$$9 + \frac{4}{5} = 9.8 = 10$$

(TOSCANO)

* **VARIANZA**

$$VARIANZA = \frac{\sum (x^2)}{n} - (\bar{x})^2$$

* **DESVIACIÓN ESTÁNDAR**

$$DESVIACIÓN ESTÁNDAR = \frac{\sum (f_i)(x^2)}{n} - (\bar{x})^2$$

26 | Datos: 1, 2, 3, ..., n

$$\frac{1^2 + 2^2 + 3^2 + \dots + n^2}{n(n+1)(2n+1)} = \frac{n(n+1)(2n+1)}{6}$$

$$\frac{1+2+3+\dots+n}{n} = \frac{n(n+1)}{2}$$

$$\Rightarrow \frac{n(n+1)(2n+1)}{6} - \left(\frac{n(n+1)}{2} \right)^2 = \frac{n(n+1)(n-1)}{12}$$

28 |

N° Hios	N° Fardinas
0	1
1	4
2	7
3	6
4	2

$$14 + 05 + 05 + 11 = 35$$