

TRIBUTOS

$$1) \overline{abcc}_4 = 144$$

← BASE 4

$$\begin{array}{r} \therefore 144 \overline{)4} \\ 24 \quad 36 \quad \overline{)4} \\ \textcircled{0} \quad \textcircled{0} \quad 9 \quad \overline{)4} \\ \textcircled{1} \quad \textcircled{2} \end{array}$$

←

$$\therefore 2100_4$$

$$\begin{array}{l} a=2 \\ b=1 \\ c=0 \\ \hline 3 \end{array}$$

$$2) 120_9 = \overline{abc}_6$$

↓ BASE 10

$$1 \cdot 9^2 + 2 \cdot 9 + 0$$

81

$$81 + 18 = 99$$

$$\begin{array}{r} 99 \overline{)6} \\ 39 \quad 16 \quad \overline{)6} \\ \textcircled{3} \quad \textcircled{4} \quad \textcircled{2} \end{array}$$

←

$$\therefore 243_6$$

$$\begin{array}{l} a=2 \\ b=4 \\ c=3 \end{array}$$

LEY DE SIENOS

$$\begin{array}{c} + \\ M_a = N_b \\ - \quad + \end{array}$$

$$\text{Si: } M > N$$

$$\therefore a < b$$

TRIBUTOS

(05) Si  $a+b = \frac{ab}{2^{(2)}}$   
 $\frac{2+2}{4}$

Alw/E:

$$\frac{2^{1920} - 2^{1920}}{2+2} = \frac{0}{4} = 0$$

(06)

(... 6 + ... 2)

(... 8)  $\frac{2+1}{4}$

(... 8)

ESTANEZ (57)

(TOSCANO)

42

MITAD

7

(20)  $\overline{\dots 9}$   $\overline{\dots 9}$  MIO IMPAR

$\overline{\dots 9}$   $\overline{\dots 9}$

$9^{imp} = \dots 9$

(12)

PENAR  $\times 99999 = \dots$  ~~666910~~ ~~12345~~

87655

$8+7+6+5+5$

31

X Conjugado



SCAND)

42

MITAD

abcd

(n) → BASE



$$n > 1$$

$$a < n$$

$$b < n$$

$$c < n$$

$$d < n$$

$$3212 = 3 \cdot \overset{3}{\underset{64}{4}} + 2 \cdot \overset{2}{\underset{16}{4}} + 1 \cdot 4 + 2$$

BASE 10  
DESCOMP. POLINÓMICA

$$4a - 1 = (3)$$

$$= 192 + 32 + 4 + 2$$

$$3212_4 = 230$$

$$(121) \text{ A BASE 3}$$

DIVISIONES  
SUCESSIVAS

$$\begin{array}{r} 121 : 3 \\ - 1 \quad 40 \\ \hline 10 \\ \textcircled{1} \end{array}$$

$$4 : 3$$

$$\textcircled{1} \textcircled{1}$$

$$\therefore 11111_3$$

X

Conjeto Mero:

AMA

SUA

LADRÓN

Y  
NO RAYAR

(TOSCANO)

SNOS

$$3) \begin{array}{r} + \\ abc \end{array} \textcircled{3} = 232$$

$$3 < n < 5$$

$$\therefore abc \textcircled{3} = 2 \cdot 5^2 + 3 \cdot 5 + 2$$
$$\textcircled{4} = 50 + 15 + 2 = 67$$

$$100 \textcircled{3}_4$$

$$a=1$$
$$b=0$$

$$\begin{array}{r} 67 \overline{) 4} \\ 27 \overline{) 16} \\ \textcircled{3} \overline{) 4} \\ \textcircled{0} \overline{) 4} \\ \textcircled{0} \overline{) 1} \end{array}$$

$$4) \begin{array}{r} 1131 \\ + \end{array} = 2a \textcircled{4} b$$
$$4 < n < 6$$

$$1 \cdot 6^3 + 1 \cdot 6^2 + 3 \cdot 6 + 1 = 2a \textcircled{4} b$$

$$216 + 36 + 18 + 1$$

$$\begin{array}{r} 27 \overline{) 5} \\ 21 \overline{) 54} \\ \textcircled{1} \overline{) 4} \overline{) 10} \overline{) 5} \\ \textcircled{0} \overline{) 2} \end{array}$$

$$2041_5$$

$$\therefore a=0$$
$$b=1$$

X CONGO MERO  
AMA / SVA LADRÓN

(TOSCANA)

$$\overbrace{(a+3)(b-2)c(a+b)37}^{(12)}$$

$$a+3=7; \quad b-2=3$$
$$a=4 \quad b=5$$

2103

$$c = a + b$$

$$2.\overset{2}{\underset{9}{3}} + 1.3 + 0$$

$$C=9$$

$$18 + 3 = 21 \quad \begin{array}{r} 5 \\ 4 \end{array}$$

$$\begin{array}{ccc} & 1 & 1 \\ & \cdot & \cdot \\ 1 & 2 & 1 \end{array}$$

$$\therefore a - b + c$$
$$4 - 5 + 9$$
$$8.$$

1 2 3 2 1

415

- ROBUSTUS: A  
"new player" (br)



OSCANO)

42

# Propiedad

$$\overline{1a} \cdot \overline{1b} \cdot \overline{1c} \cdot \overline{1d} \cdot \dots \cdot \overline{1d} \cdot \textcircled{n} = n + a + b + c + \dots + d$$

7)

$$\begin{matrix} 14 & 14 & 14 \\ & \swarrow & \searrow \\ & 150 \text{ vec} & \\ & & \textcircled{10} \end{matrix} = \overline{abc}$$

$$10 + \underbrace{4 + 4 + 4 + \dots + 4}_{150 \text{ vec}}$$

$$10 + 150(4)$$

$$610 = \overline{abc}$$

MITAD

8)

$$\begin{matrix} 12 & 17 & 12 & 17 \\ & \swarrow & \searrow & \\ & 400 & & \\ & & \textcircled{10} & \end{matrix} = \overline{abcd}$$

$$10 + 2(200) + 7(200)$$

$$10 + 400 + 1400$$

$$1810 = \overline{abcd}$$

X Conigo Mera:  
Ama - SVA: LADRON Y NO PAYAR

TRIBUTOS

Propiedad.

MAYOR NUMERAL

$$11_2; 111_2$$

$$22_3; 222_3$$

$$33_4; 333_4$$

⋮

$$\underbrace{(n-1)(n-1)(n-1)\dots\dots(n-1)}_{K \text{ cifras.}} = n^K - 1$$

$$a) \frac{20 \text{ cifras.}}{(n-1)(n-1)(n-1)\dots\dots(n-1)} + 1 = 27^{40}$$

$$n^{20} - 1 + 1 = 27^{40}$$

$$n^{20} = 27^{40}$$

$$n = \sqrt[20]{27^{40}}$$

$$n = 27^2 = 729$$



(TOSCANO)

10)

40 cifras  
2222...222

(3)

ABASE 9

$$3^{40} - 1$$

$$(3^2)^{20} - 1$$

$$9^{20} - 1$$

888...89  
20 cifras

BASE  $n$  A  $n^k$

$$\begin{array}{r} 2 \text{ A } 2^2 \\ 2^3 \\ 2^4 \\ \hline 2 \end{array}$$

$$3 \text{ a } 3^2 \\ 3^3$$

1011100011  
2 2 2 2

base 10

$$134 \underbrace{(0.2^2 + 1.2 + 1)}_3$$

$$\therefore 1343_8$$

A BASE 8 = 2

MITAD

4675

A BASE 8

$$\begin{array}{r} 4675 : 8 \\ 8 \overline{) 4675} \\ \underline{36} \phantom{00} \\ 107 \phantom{0} \\ \underline{96} \phantom{0} \\ 115 \\ \underline{96} \\ 19 \end{array}$$

$$\begin{array}{r} 6 \overline{) 19} \\ \underline{16} \\ 3 \end{array}$$

$$\begin{array}{r} 4 \overline{) 3} \\ \underline{4} \\ 0 \end{array}$$

10011011101

X CONGO MERO:  
AMA - SUA LADRÓN Y  
- QUELLA OCIOSO NO RAYAR

42

MITAD

A  $n^k$

A  $2^2$   
 $2^3$   
 $2^4$   
 $2^5$

B a  $3^2$   
 $3^3$

A BASE 8 = 2

4675

A BASE 2

8  
 $2^3$   
 $\underline{\underline{=}}$

5 | 2  
 0 2 | 2 : 101  
 0 1

7 | 2 : 10011011101  
 1 3 | 2 : 110  
 1 1

6 | 2 : 110  
 0 3 | 2 : 110  
 0 1

4 | 2 : 110  
 0 2 | 2 : 110  
 0 1

REPARAR de 3 en 3

3

2

X CONJUNTO

(TOSCANO)

TRIBUTOS

11)  $20_{10}$  A BASE 2

$$555 \dots 55_8 \xleftarrow{3} 2$$

$$\begin{array}{r} 5 \overline{) 2} \\ \textcircled{1} \quad \textcircled{0} \quad \textcircled{1} \end{array} \therefore 101_2$$

$$\Rightarrow 101 \overline{) 101} \overline{) 101} \dots \overline{) 101} \overline{) 101}$$

$\begin{array}{c} + \\ 2 \end{array} \quad \begin{array}{c} + \\ 2 \end{array} \quad \begin{array}{c} + \\ 2 \end{array} \quad \begin{array}{c} + \\ 2 \end{array}$

$$2(20) = 40.$$

Prop.  $N = \overbrace{abcd \dots}^{K \text{ cifras}} X \textcircled{n}$

$$\therefore n^{K-1} \leq N < n^K$$

12)  $250 = \overbrace{abc}^{3 \text{ cifras}} n$

$$n^{3-1} \leq 250 < n^3$$

$$n^2 \leq 250 \wedge 250 < n^3$$

$$n \leq 15, \dots \wedge 6, \dots < n$$

$$\therefore 6, \dots < n \leq 15, \dots$$

$$n: 7, 8, 9, \dots, 15$$

$$N^{\circ} \text{TER}: 15 - 7 + 1$$

$$: 9$$

13)

Robustus: A

MI KAYAR (6K)



(TOSCANO)

$$13) 540 = \overline{abcd} \quad (n)$$

$$n^3 \leq 540 < n^4$$

$$n^3 \leq 540 \wedge 540 < n^4$$

$$n \leq 8, \dots \wedge 4, \dots < n$$

$$n \leq 15, \dots$$

$$\underbrace{9, \dots, 15}$$

$$2 \cdot 15 - 7 + 1$$

$$: 9$$

$$4, \dots < n \leq 8, \dots$$

$$\underbrace{n: 5, 6, 7, 8}$$

$$4$$

$$\begin{array}{r} 10 \\ 2 \end{array}$$

$$1$$

# TRIBUTOS

$$14) 1\text{Kg}; 4\text{Kg}; 16\text{Kg}; 64\text{Kg}; \dots$$

$$1; 4^1; 4^2; 4^3; \dots$$

$$\begin{array}{r} 201\text{Kg} \mid 4 \\ - \textcircled{1} \quad 50 \mid 4 \\ \hline 10 \quad 12 \mid 4 \\ \textcircled{2} \quad \textcircled{0} \quad \textcircled{3} \end{array}$$

$$\therefore 3021_4$$

$$\rightarrow \underline{3} \cdot \textcircled{4}^3 + \underline{0} \cdot \textcircled{4}^2 + \underline{2} \cdot \textcircled{4}^1 + \underline{1} \cdot 1$$

$$15) F = \underline{24} \cdot \textcircled{12}^6 + 15 \cdot \textcircled{12}^5 + 20 \cdot \textcircled{12}^4 + 15$$

$$24 = 2 \times 12; \quad 20 = 1 \times 12 + 8$$

$$15 = 1 \times 12 + 3$$

$$F = 2 \times 12 \times 12^6 + 1 \times 12^6 + 3 \times 12^5 + 1 \times 12^4 + 8 \times 12^3 + 1 \times 12 + 3$$

$$= 2 \times 12^7 + 1 \times 12^6 + 3 \times 12^5 + 1 \times 12^4 + 8 \times 12^3 + 0 \times 12^2 + 1 \times 12 + 3$$

$$21318013_{(12)}$$

(TOSCANO)

$$16) F =$$

$$F = 80 \times 20^6 + 90 \times 20^5 + 35 \times 20^4 + 18 \times 20^3 + 60$$

$$4 \times 20 \times 20^6 + (4 \times 20 + 10) \times 20^5 + (1 \times 20 + 15) \times 20^4 + 18 \times 20^3 + 3 \times 20$$

$$4 \times 20^7 + 4 \times 20^6 + 10 \times 20^5 + 1 \times 20^4 + 15 \times 20^4 + 18 \times 20^3 + 3 \times 20$$

$$4 \times 20^7 + 4 \times 20^6 + 11 \times 20^5 + 15 \times 20^4 + 18 \times 20^3 + 0 \times 20^2 + 3 \times 20 + 0$$

$$44(11)(15)(18)030_{(20)}$$



TRIBUTOS

17)  $\overline{abc}$  existen

1	0	0
2	1	1
3	2	2
4	3	3
5	4	4
5	5	5

---

$5 \times 6 \times 6 = 180$

18) CAPICUA

$\overline{abba}_8$

1	0
2	1
3	2
4	3
5	4
6	5
7	6
7	7

---

$7 \times 8 =$

19)  $\overline{abc}$  POR

1	0	0
2	1	1
3	2	2
:	3	:
:	4	:
9	:	9

---

TOTAL:  $9 \times 10 \times 10 = 900$

$900 - 648$

252

(TOSCANO)

20) LO MENOS 1 cif 4

CONTRARIO

ES NINGUN 4.

$\overline{abc}$

1	0	0
2	1	:
3	2	:
5	3	1
6	5	1
7	6	:
8	7	:
8	8	9

---

$8 \times 9 \times 9 = 648$

20)

abc

1 0 0  
2 1 1  
3 . .  
4 . .  
5 . .  
6 6 6

$$\text{TOTAL: } 6 \times 7 \times 7 = 294$$

POR LO MENOS 1 cifra 3

CONTRARIO: NINGUN 3

abc

1 0 0 7  
2 1 .  
4 2 .  
5 4 .  
6 5 6

$$5 \times 6 \times 6 = 180$$

$$294 - 180$$

114

42

MITAD

1 afra 3

21)

: NINGUN 3

0 7

b

$$\times 6 = 180$$

$$a(3a) b(4b) c$$

1

2

0

1

2

0

1

2

...

8

$$2 \times 3 \times 9 = 54$$



# TRIBUTOS

## EDADES DE NIÑOS DEL NIVEL PRIMARIA

EDAD VARIABLE	$f_i$	ACUMULADA $F_i$	$h_i = \frac{f_i}{n}$	ACUMULADA $H_i$
8	4	4	$\frac{4}{20} = 0,20$	0,20
9	6	10	$\frac{6}{20} = 0,30$	0,50
11	5	15	$\frac{5}{20} = 0,25$	0,75
12	2	17	$\frac{2}{20} = 0,10$	0,85
13	3	20	$\frac{3}{20} = 0,15$	1
$n = 20$				1

$I = [a, b)$	MARCA DE CLASE $X_i = \frac{a+b}{2}$	$f_i$
$[10, 20)$ +10	$\frac{10+20}{2} = 15$	6
$[20, 30)$	25	4
$[30, 40)$	35	5
$[40, 50)$	45	3
$[50, 60)$ +10	55	2

(TOSCANO)

42

## MEDIDAS DE TENDENCIA CENTRAL

MEDIA (PROMEDIO)  $\bar{X}$

EDADES: 15; 16; 17; 15; 16

$$\therefore \bar{X} = \frac{15+16+17+15+16}{5}$$

MEDIANA (Me) - CENTRO

5, 7, 7, 6, 4, 5, 6, 7

ORDEN:  $n=8$  PAR  $\begin{matrix} \leftarrow c_1 \\ \leftarrow c_2 \end{matrix}$   
 $4, 5, 5, 6, 6, 7, 7, 7$   
 $\therefore 8 \div 2 = 4 \rightarrow t_4$   
 $\quad \quad \quad 5 \rightarrow t_5$   
 $\therefore Me = \frac{6+6}{2} = 6$

4, 5, 5, 6, 6, 6, 7, 4, 5

ORDEN:  $n=9$  IMPAR  $\rightarrow c$   
 $4, 4, 5, 5, 5, 6, 6, 6, 7$

$9+1=10 \div 2$   
 $5 \rightarrow f_5$   
 $Me = 5$

MODA (Mo) (MAYOR FRECUENCIA - VALOR MAS REPITE)

5; 5; 7; 1; 6; 6; 4; 5; 4; 5; 5

$Mo = 5$

X CONJUNTO

(TOSCANO)

MITAD

$$8(2)+19+20$$

23)

OPEN

8 ; b, c,  
4 8 8

1  
2  
3

$$M_e = 8 \rightarrow \frac{b+c}{2}$$

$$\bar{X} = 7 \rightarrow$$

$$M_o = 8$$

d  
8  
11  
10  
9

$$c = 8 \rightarrow b+c = 16$$

$$\frac{a+b+c+d}{4} = 7$$

$$a+b+c+d = 28$$

$$a+d = 12$$

4 8  
1 11

$$\therefore \text{Prod Max: } 2048 \checkmark$$

$$\text{Prod Min: } 704 +$$

24)

PESO

UNGO MORE!  
SUA: LADY  
Quella: O  
LULLA: Y  
SILEX: 9



TOSCANO)

42

MITAD

59 - 69

$\therefore \text{Prod. Max: } 2048 \checkmark$

Prod Min: 704

$$\frac{a + a + w}{2} = 54,5 \quad \left| \quad \frac{a + 12w + a + 3w}{2} = 64,5$$

$$2a + w = 109$$

$$2a + 5w = 129$$

$$4w = 20$$

$$w = 5$$

$$\therefore \frac{148}{250} = 59,2\%$$

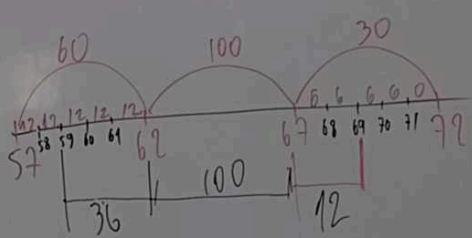
d  
8  
11  
10  
9

$\frac{a+b+c+d}{2} = 8 \rightarrow b+c = 16$

$a+b+c+d = 7$

24)

Peso	$X_i$	$f_i$	$F_i$
$\left[ \begin{smallmatrix} 52 & 57 \\ a & a+w \end{smallmatrix} \right]$	54,5	$X=30$	
$\left[ \begin{smallmatrix} 57 & 62 \\ a+w & a+2w \end{smallmatrix} \right]$	60	$X=30$	60
$\left[ \begin{smallmatrix} 62 & 67 \\ a+2w & a+3w \end{smallmatrix} \right]$	64,5	$X=100$	
$\left[ \begin{smallmatrix} 67 & 72 \\ a+3w & a+4w \end{smallmatrix} \right]$		$X=30$	
			250



148.

59,2%

②

TRIBUTOS

28)

NOTA	$f_i$	$h_i\%$	$H_i\%$
0-4	5	10%	
4-8	15		
8-12	15	30%	
12-16	5		80%
16-20	10	20%	100%
	50		

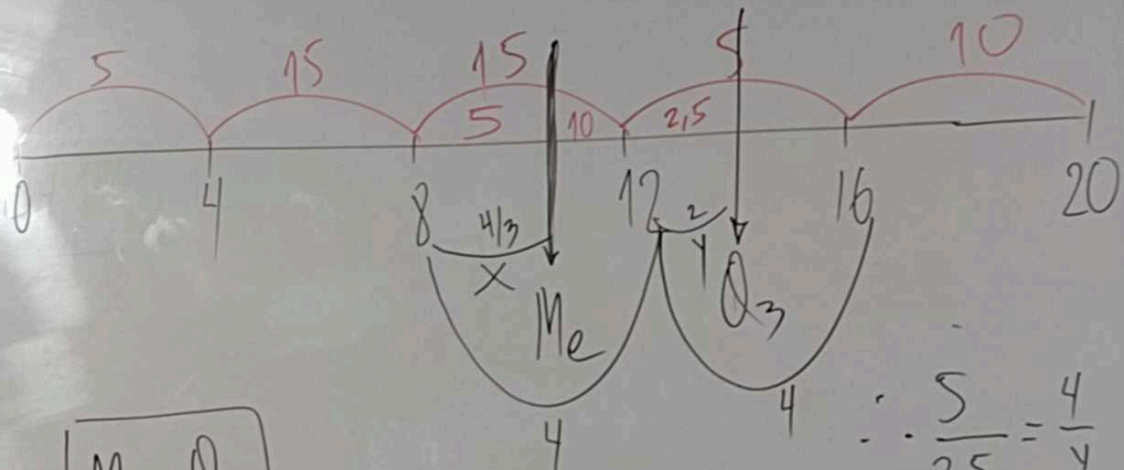
$$\therefore h_i = \frac{f_i}{n}$$

$$\frac{20}{100} = \frac{10}{n}$$

$$50 = n$$

$$Me = Q_2$$

$$n = 50 \div 2 = 25 \rightarrow 50 \div 4 = 12,5$$



$$\frac{15}{5} = \frac{4}{x}$$

$$x = \frac{4}{3}$$

$$Me = 8 + \frac{4}{3} = \frac{28}{3}$$

$$\therefore \frac{5}{2,5} = \frac{4}{y}$$

$$y = 2$$

$$Q_3 = 12 + 2 = 14$$

(TOSCANO)

TRIBUTOS

28)

Nota	$f_i$	$h_i\%$	$H_i\%$
0-4	5	10%	
4-8	15		
8-12	15	30%	
12-16	5		80%
16-20	10	20%	100%
	50		

$$\therefore h_i = \frac{f_i}{n}$$

$$\frac{20}{100} = \frac{10}{n}$$

$$50 = n$$

$$Me = Q_2$$

$$\therefore \frac{15}{5} = \frac{4}{X}$$

$$X = \frac{4}{3}$$

$$Me = 8 + \frac{4}{3} = \frac{28}{3}$$

$$Q_3 = 12 + 2 = 14$$

$$\therefore \frac{5}{2,5} = \frac{4}{Y}$$
$$Y = 2$$

