

# ARITMÉTICA

## \* SISTEMAS DE NUMERACIÓN

01 |  $1011_{(4)} = \overline{abc}_{(5)}$

I)  $1011_{(4)} = \frac{1(4^3) + 0(4^2) + 1(4) + 1}{= 69}$

II)  $\begin{array}{r} 69 \\ (4) \overline{) 13} \phantom{5} \\ \underline{(3) 2} \phantom{5} \\ \phantom{(4) 13} 5 \end{array} \Rightarrow \overline{234}_{(5)}$   
 Reto:  $2+3+4 = 9$

02 |  $N = 4(5^3) + 5(4^2) + 3(5) + 1(5)$   
 $\phantom{N = } \phantom{4(5^3) + } 5[3(5) + 1]$

$N = 4(5^3) + 3(5^2) + 1(5) + 4(5)$

$N = 4(5^3) + 3(5^2) + 5(5)$

$N = 4(5^3) + 4(5^2) + 0(5) + 0$

$N = 4400_{(5)}$  P.A.

# INTENSIVO: REPASO # 03

03 |

$0,1664 = 0,0404_{(n)}$

$\begin{array}{r} 104 \overline{) 1664} \\ \underline{10000} \\ 625 \phantom{00} \end{array} = \frac{104_{(n)}}{10000_{(n)}}$   
 $\frac{104}{625} = \frac{4(n^2+1)}{1(n^4)}$   
 $(26)(n^2) = (625)(n^2+1)$

$\therefore 26 = n^2 + 1 \quad \therefore n^4 - 625$   
 $25 = n^2 \quad n^2 - 5$   
 $5 = n \quad n = 5$

04 |  $\overline{ab}, \dots, 99, 100, \dots, \overline{4ab}$   
 # 2 cifras      # 3 cifras  
 USADO  $\Rightarrow 1160$  cifras

$2(99 - \overline{ab} + 1) + 3(4\overline{ab} - 100 + 1) = 1160$   
 $200 - 2\overline{ab} + 3(400 + \overline{ab} - 99) = 1160$   
 $200 - 2\overline{ab} + 903 + 3\overline{ab} = 1160$   
 $1103 + \overline{ab} = 1160$   
 $\overline{ab} = 57$

$a = 5$   
 $b = 7$

$a + b = 12$

06 |

$N = 0,25$  BASE 6

$0,25 = \overline{0,2b}_{(6)}$

$\frac{25}{4} = \frac{\overline{ab}_{(6)}}{100_{(6)}}$   
 $\frac{1}{4} = \frac{a(6) + b}{1(6^2)}$   
 $\frac{1}{4} = \frac{a(6) + b}{36}$

$9 = 6(a) + b$

$a = 1, b = 3$

$0,13_{(6)}$

# \* CUATRO

34 | 0

23

21

48

# \* CUATRO OPERACIONES

28/04/24 / UNPREG-ORDINARIO/2024-I/

$$\underline{34} \mid 0, \underline{230}_{(5)} = 0, xy.x$$

$$\frac{230_{(5)} - 2_{(5)}}{440_{(5)}} =$$

$$\frac{65-2}{120} =$$

$$\frac{2163}{4020} = \frac{21}{40} = 0, \underline{52}_5$$

$$0, \underline{632}_{(6)} = \frac{632-6}{990}$$

$$x+y=?$$

$$5+2$$

$$7$$

BASE 6

$$0, \underline{2b}_{(6)}$$

$$\underline{2b}_{(6)}$$

$$00_{(6)}$$

$$2(6)+b$$

$$6^2$$

$$36$$

$$7$$

$$+b$$

$$3$$

$$3$$

$$3$$

$$3$$

$$3$$





06/  $N = 0,25$  A BASE 6

$0,25 = 0,2b_{(6)}$

$\downarrow$

$\frac{25}{4 \cdot 100} = \frac{2b_{(6)}}{100_{(6)}}$

$\frac{1}{4} = \frac{a_{(6)} + b}{1(6^2)36}$

$9 = 6(a) + b$

$a=1, b=3$

$0,13_{(6)}$

# \* CUATRO OPERACIONES

07/  $\begin{array}{r} 232 \\ 156_{(9)} + \\ 6452_{(9)} \\ 555_{(9)} \\ 4244_{(9)} \\ \hline 15103_{(9)} \end{array}$

$17 = 23$   
 $11 = 30$   
 $15 = 21$   
 $12 = 15$

08/  $\begin{array}{r} 5^2 3^1 2^8 1^9_{(8)} - \\ 2657_{(8)} \\ \hline 15033^2_{(8)} \end{array}$

09/  $M - S = D$   
 $M = S + D$   
 $400 = 50 + D$   
 $350 = D$

$\checkmark M + S + D = 800$   
 $M + M = 800$   
 $2M = 800$   
 $M = 400$

$\checkmark M = 85$   
 $400 = 85$   
 $50 = 8$

$M + D = ?$   
 $400 + 350 = 750$

10/ C.A.  $[abc_{(6)}] = 82$

C.A.  $[abc_{(6)}] = 214_{(6)}$

$5 - 5 - 6 =$

$\begin{array}{r} 82 \frac{6}{(4)13 \frac{6}{(1)2}} \\ 214_{(6)} \end{array}$

$\therefore a + b + c = ?$   
 $3 + 4 + 2 = 9$

11/  $\begin{array}{r} 2 \cdot 2 \\ 20c_{(6)} a + \\ 5 \quad 8 \quad b \quad c \\ \hline b7c8 \\ c6c2/b' \\ \hline 24022 \end{array}$

$\therefore a \cdot b \cdot c = ?$   
 $5 \cdot 3 \cdot 6 = 90$

$a + b + c + 8 = 2$

$\checkmark n + x = 16$   
 $10 + 6 = 16$   
 $5 \cdot 5$   
 $\checkmark \frac{n-1}{9} \neq 5$   
 $\frac{n-1}{9} = 5$   
 $n-1 = 45$   
 $n = 46$

$\therefore a + b + c = 5 + 9 + 0 = 14$



# \* DIVISIBILIDAD

$$26 \mid \overline{9x8x7x6x5x4x3x2x1x} = 11$$

$$\Rightarrow 9x - 45 = 11$$

$$9x = 11 + 45$$

$$9x = 11 + 44 + 1$$

$$9x = 11 + 11 + 1$$

$$9x = 11 + 1$$

$$9(x) = 11(k) + 1$$

$$x = 5$$

$$k = 4$$

CA

271

$$\overline{4228} = 7$$

$$2 + 32 + 22 - 4 = 7$$

$$52 + 4 = 1$$

$$5(2) + 4 = 7(k)$$

$$2 = 2$$

$$2 = 9$$

$$k = 2$$

$$k = 7$$

2 valores

$$28 \mid N < 600$$

mayor posible

N: tiene 3 cifras

abc

$$CA \Rightarrow 1000 - abc$$

$$N - [C.A(N)] = 17$$

$$N - [1000 - N] = 17$$

$$N - 1000 + N = 17$$

$$2N = 17 + 1000$$

$$2N = 17 + 14$$

$$2N = 17 + 14$$

$$2N = 17(k) + 14$$

$$2N = 17(68) + 14$$

$$11 = 17(34) + 7$$

$$N = 585$$

$$(N < 600) \times 2$$

$$2N < 1200$$

$$17k + 14 < 1200$$

$$17k < 1186$$

$$k < 69, \dots$$

$$k = 68, 67, \dots$$

$$Rpta: 5 + 8 + 5 = 18$$

# \* CONJUNTOS

33)  $A = \{\emptyset, a, \{a\}, \{a, b\}, \{\emptyset\}\}$

I)  $\{a\} \subset A \wedge \{a, b\} \subset A$   
 $F \wedge F = \boxed{F}$

II)  $\{\emptyset\} \notin A \vee \{\emptyset\} \subset A$   
 $F \vee V = \boxed{V}$

III)  $\emptyset \subset A \wedge \{a\} \in A$   
 $V \wedge V = \boxed{V}$   
 Siempre "V"

Rpta: II y III

36)  $D = \{(x^2 - 1) \in \mathbb{Z} \mid 0 < x \leq 4\}$

$0^2 < x^2 \leq 4^2$   
 $0 < x^2 - 1 \leq 16 - 1$   
 $-1 < x^2 - 1 \leq 15$

$D = \{0, 1, 2, \dots, 15\}$   
 16 elementos

# Subconjuntos BIVARIOS = ?

$2^n = n(P)$   
 $2^{16} = \frac{16!}{2!14!}$   
 $= \frac{16 \cdot 15 \cdot 14!}{2 \cdot 14!}$   
 $= 120$

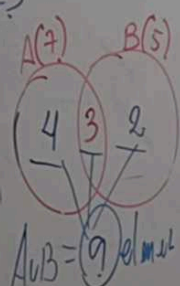
38)  $n(P(A)) = 128$   
 $2^7 = 128 \Rightarrow n(A) = 7$

$n(P(B)) = 32 \Rightarrow n(B) = 5$   
 $2^5 = 32$

$n(P(A \cap B)) = 8 \Rightarrow n(A \cap B) = 3$   
 $2^3 = 8$

$n(P(A \cup B)) + n(C)$   
 $2^9 + 5 = 517$   
 $512 + 5 = 517$

$C = \{(x+1) \in \mathbb{Z}^+ \mid x < \frac{5}{3}\}$   
 $3x+1 < 5+1$   
 $3x+1 < 6$   
 $3x < 5$   
 $x < \frac{5}{3}$   
 $C = \{1, 2, 3, 4, 5\}$   
 Solamente



$5x + k = 5$   
 $\frac{5}{2} + \frac{5}{2}$   
 $\frac{10}{2} = 5$

$C_5 = \{8, -1\} \cup \{8, -1\}$