SEMANA #06: TEOR

ARITMÉTICA

01 $A = \{ (x+2) / x \in \mathbb{N};\ 2-1 \leq x+1-1 \leq 4-1 \}$ (POR COMPRENSIÓN)

TAL QUE

$1 \leq x \leq 3$

$x = 1; 2; 3$

$1+2=3$
$2+2=4$
$3+2=5$

$\mathbb{N}$: NÚMEROS NATURALES

$\mathbb{N} = \{0; 1; 2; 3; \ldots\}$

$A = \{3; 4; 5\}$ (POR EXTENSIÓN)

Rpta

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02 $A = \{ (x+y) / x \in \mathbb{N};\ 1 \leq x \leq 2 \ \wedge\ y \in \mathbb{Z};\ -1 \leq y \leq 0 \}$

$x = 1; 2$

$y = -1; 0$

$1+-1=0$
$1+0=1$
$2+-1=1$
$2+0=2$

$A = \{0; 1; 1; 2\}$

$A = \{0; 1; 2\}$

Rpta

$\mathbb{Z}$: NÚMEROS ENTEROS → (+) (−) (0)

$\mathbb{Z} = \{\ldots; -3; -2; -1; 0; 1; 2; 3; \ldots\}$

TEORÍA DE CONJUNTOS

03| $E = \{0; 9; 99; 999; 9999; 99999\}$

(EXTENSIÓN)

$0 \rightarrow 1 - 1 \rightarrow 10^0 - 1$

$9 \rightarrow 10 - 1 \rightarrow 10^1 - 1$

$99 \rightarrow 100 - 1 \rightarrow 10^2 - 1$

$999 \rightarrow 1000 - 1 \rightarrow 10^3 - 1$

$9999 \rightarrow 10000 - 1 \rightarrow 10^4 - 1$

$99999 \rightarrow 100000 - 1 \rightarrow 10^5 - 1$

$$E = \{10^x - 1 / x \in \mathbb{N};\ x < 6\}$$

RPTA

04|

$A = \{1; 4; 27; 256; \ldots\}$

$1^1 \quad 2^2 \quad 3^3 \quad 4^4 \quad \ldots$

$$A = \{x^x / x \in \mathbb{N};\ x \neq 0\}$$

RPTA

05| $A = \{1; 2; \{2; a\}; \{2; 1; b\}\}$

a) $2 \in \{2, a\}$ ..... (F)

PERTENECE

b) $1 \in \{2; 1; b\}$ ... (F)

c) $\{2\} \in A$ ... (F)

d) $\{2; a\} \in A$ ... (V)

e) $\{2; a\} \in \{2; 1; b\}$ ... (F)

06| $A = \{4; \{5\}; \{4; 5\}; 6\}$

✓ $4 \in A$ (V) ✓ $\{5\} \in A$ (V)

$5 \in A$ (F) ✓ $6 \notin A$ (V)

✓ $\{4\} \subset A$ (V) ✓ $\{\{5\}\} \subset A$ (V)

✓ $\{4; 5\} \in A$ (V) ✓ $\{\{5\}; 6\} \subset A$ (V)

✓ $\{6\} \subset A$ (V) ✓ $\emptyset \in A$ (F)

Rpta: 8

07| A

A=

B=

$\{2;a\}$, $\{2;1;b\}$

..... (F)

ENECE

$\{\cdots$ (F)

=)

...(V)

$\{2;1;b\}$ ... (F)

$\{4;5\}$; 6 $\{$

$\{5\} \in A$ (V)

$6 \notin A$ (V)

$\{\{5\}\} \subset A$ (V)

$\{\{5\};6\} \subset A$ (V)

$\emptyset \in A$ (F)

07) $A = \{ n \in \mathbb{Z}^+ / n \leq 600 \}$

$A = \{1; 2; 3; \ldots\ldots; 600\}$

$B = \{ a+2 / \sqrt[3]{a} \in A \wedge a \in A \}$

$a = 1; 8; 27; 64; 125; 216; 343; 512$

1^3+2

2^3+2

3^3+2

$\ldots$

8^3+2 } 8 CANTIDADES

$\left[\frac{8(9)}{2}\right]^2 + 2(8)$

$36^2 + 16$

$1296 + 16$

1312

PA

08) $C = \{$

Ojo:

$1^3+2^3+3^3+4^3+\ldots+n^3$

$\left[\frac{n(n+1)}{2}\right]^2$

$n \leq 600\}$

$\ldots\ldots\ldots; 600\}$

$\sqrt[3]{a} \in A \wedge a \in A$

$a = 1; 8; 27; 64; 125; 216; 343; 512$

CANTIDADES

Ojo:

$1^3+2^3+3^3+4^3+\ldots+n^3$

$\left[\frac{n(n+1)}{2}\right]^2$

08

$C = \{[2x] / x \in \mathbb{N} ; -4 \leq x \leq -2\}$

$C = \{\}$ → VACÍO

"0" ELEMENTOS

$x = -4; -3; -2$

∴ EL CARDINAL DEL CONJUNTO POTENCIA

ELEMENTOS

$n[P(\ )] = 2^n \rightarrow 2^0 = 1$ Rpta

09

$A = \{a+b; a+2b-3; 12\}$

CONJ. UNITARIO

$\therefore a+b = a+2b-3$

$3 = b$

$a+b = 12$

$a+3 = 12$

$a = 9$

$B = \{x^y; y^x; 16\}$

$\therefore x^y = 16 ; y^x = 16$

$4^2 \quad 2^4$

$x = 4$

$y = 2$

$\therefore x+y+a^2+b$

$4+2+9+3 = 90$ Rpta

10

$A = \{1; a; 2$

$B = \{3; c;$

$C = \{a; 3$

$U = \{1, 2, 3,$

↳ UNIVERSO

$\therefore n[(A-C)'$

$n[\{1; 2; b\}'$

$n[\{3; a; c; d;$

$n[\{3; a$

5

10] $A = \{1, a, 2, b\}$

$B = \{3, c, 4, d\}$

$C = \{a, 3\}$

$U = \{1, 2, 3, a, b, c, d, 4\}$

↳ UNIVERSO

$n[(A - C)' \cup (B - C)]$ ← UNIÓN

$n[\{1, 2, b\}' \cup \{c, 4, d\}]$

$n[\{3, a, c, d, 4\} \cup \{c, 4, d\}]$

$n[\{3, a, c, d, 4\}]$

5 elementos

lo que está en "A" pero NO en "C"

$A - C = \{1, 2, b\}$

← Complemento

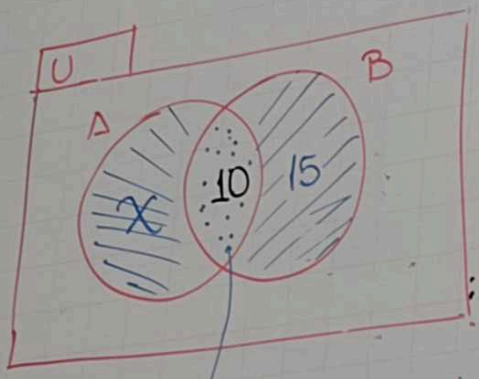
lo que le falta para ser igual al universo

11

- $n(A \cup B) = 50 \Rightarrow X + 10 + 15 = 50$ (TODO)
- $n(A \cap B) = 10$
- $X + 25 = 50$
- $n(B - A) = 15$
- $n(A - B) = ?$

$X = 25$

B



$A \cap B$

↓

INTERSECCIÓN (Y)

12

$U = 150$

CANTAN(80) BAILAN(60)

$80 - X$ X $60 - X$

NO "C"; NO "B": 30

$150 = 80 - X + X + 60 - X + 30$

$X = 20$ Rpta.

13

$U = 50$

ALG(30) ARIT(30)

X Y $30 - Y$

Ni "AL"; Ni ARIT: 5

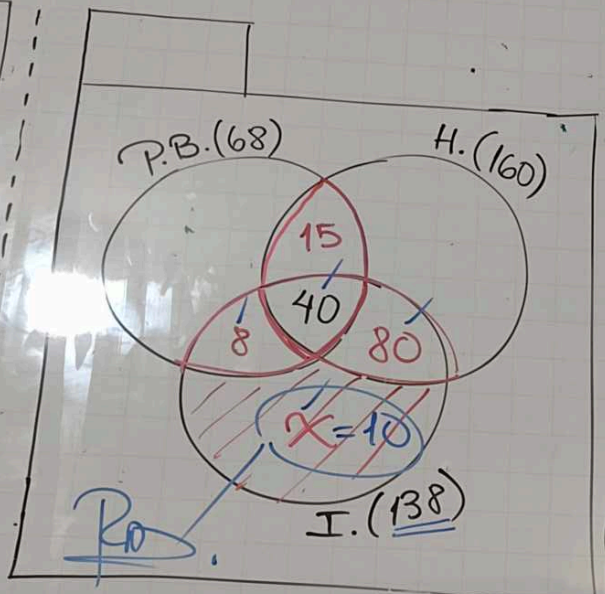
$50 = X + Y + 30 - Y + 5$

$50 = X + 35$

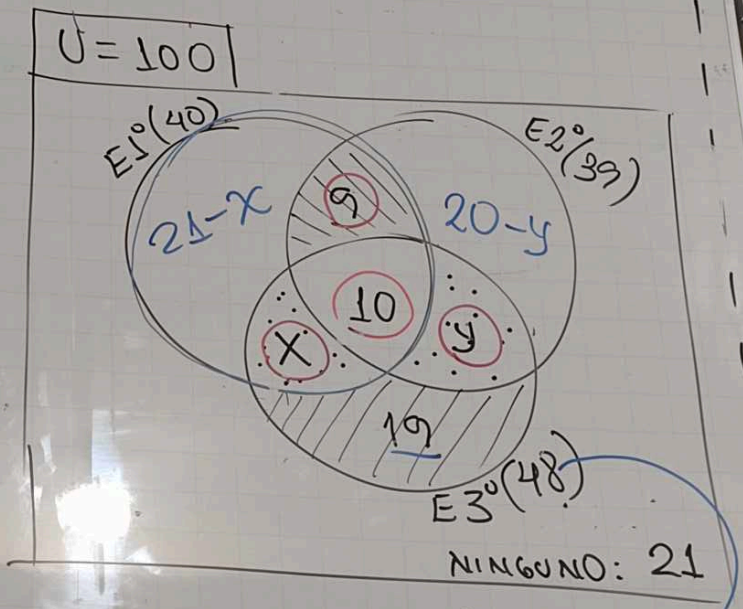
$15 = X$

14

14)



15)



∴ Por lo menos 2 examenes: ?

$x+y+9+10 = ?$

$x+y+19$

$48 = x+y+19+10$

$38 = x+y+19$