

01
 $-200 - 1 - 1 + 3 - 2 + 1 + 1 - 1 = \text{Maxster}$

$$-1 - \cancel{1} + \cancel{1} - \cancel{2} + \cancel{2} - 1$$

$$= -2$$

142+5

3

2 8

10 ← 10 9 6

25 ← 7 4 1

17 ←

22 21 4

$$S = 10 + 7 + 4$$
$$\therefore S = 21$$

$$1+2+3+\dots+\frac{10 \times 11}{2}$$

Handwritten notes showing a sequence of operations and results:

	GF	GC
USAT	5	5
UCV	7	6
UTP	4	5

Below the table, the following calculations are shown:

USAT vs UTP = 2

5 + 4 = 6

6 - 3 = 3

$$A = \frac{25}{3}$$

$$S = \frac{3}{28} = \frac{1}{4}$$

$$\begin{array}{r} 130 \overline{) 7} \\ 60 \quad 18 \\ \underline{4} \end{array}$$

(04)

06 Agosto 2024
Martes

03 SETIEMBRE 2024
Martes

130 = 104 + 26

WARTO BIENTOS

03 SETIEMBRE 1920

VIERNE

03 SETIEMBRE 2024
Martes

(05)

PASADO

YO 4X
TÚ 6X

PASADO2

5X
7X

PRESENTE

10X
12X

12X = 48
X = 4

40

06) $(x-1)(x-3) = x^2 - 1$
 $(x-1)(x+1)$

$$\dots \boxed{\boxed{n}} \dots = 9999$$

46 OPER.

$$\begin{array}{r} \text{+2} \\ 99 \times 101 \\ \hline -2(46) \quad -2(46) \\ \hline 63 = 7 \times 9 \end{array}$$

07

$$P = \frac{1 \times 3 + 3 \times 5 + \dots + n \text{ TÉRMINOS} (+n)}{1^2 + 2^2 + 3^2 + \dots + n \text{ TÉRM.}}$$
$$n = 2 \rightarrow P = \frac{3 + 15 + 2}{1 + 4} = \frac{20}{5}$$
$$P = 4$$

08) $\sqrt[3]{14+\sqrt{x}} + \sqrt[3]{14-\sqrt{x}} = 4$

16) $\sqrt{x} = 13$
 $\therefore x = 169$

(09)

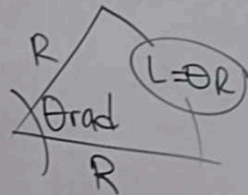
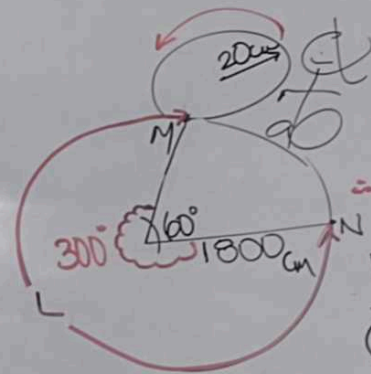
$$N_V = \frac{L}{2\pi r}$$

$$N_v = \frac{3000\pi}{2\pi(20)}$$

$$\therefore N_v = 75$$

$$L = \frac{5\pi(1800)}{3}$$

$$(L = 3000\pi)$$

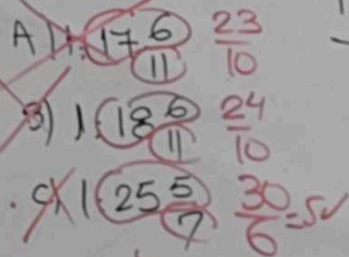


$$\cancel{300} \cdot \frac{\pi}{\cancel{180}} = \frac{5\pi}{3}$$

$$000\pi)$$

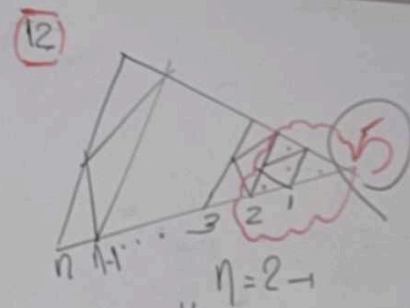


Q. 24



d) ~~1:2:3~~ $\frac{2}{7}$

$\boxed{E) 1.18\overline{6}}$



A) $4n-1 \rightarrow 4$

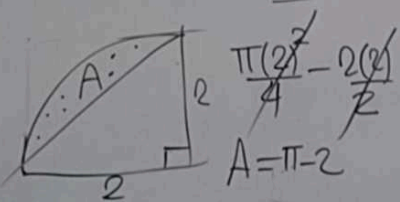
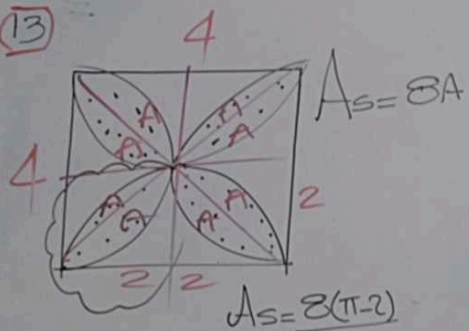
3/41-3-5

c) $4n \rightarrow 8$

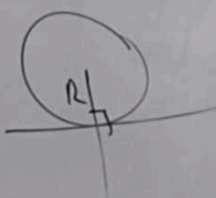
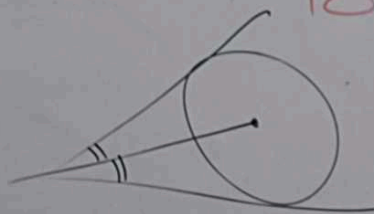
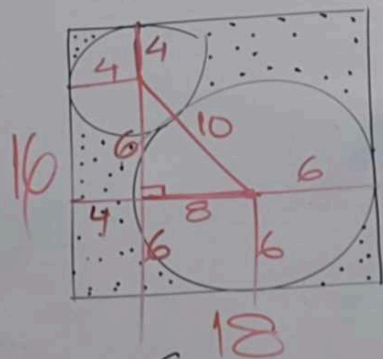
$$O(4n+1) \rightarrow 9$$

E) 21-3-1

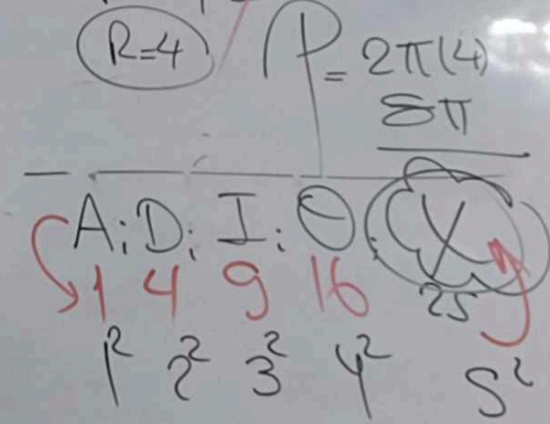
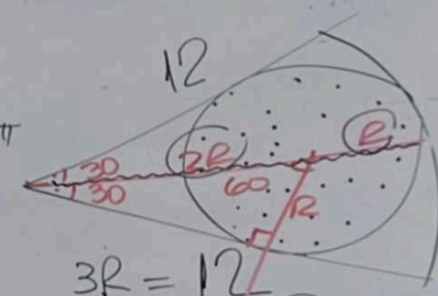
(13)



(14)



(15)



A: D: I: π π π π π

1 4 9 16 25

1^2 2^2 3^2 4^2 5^2

16

S, 6, 13, 1, 13, 10
 F F M A M
 2000 2000 2000 2000 2000

17 18
 $\sum_{n=0}^{\infty} \frac{2^n + 3^n}{5^n}$
 $n=0$
 $\frac{25}{6}$

18
 $\sum_{n=1}^{\infty} n \left(\frac{3}{7}\right)^n$

$$S = 1 \left(\frac{3}{7}\right)^1 + 2 \left(\frac{3}{7}\right)^2 + 3 \left(\frac{3}{7}\right)^3 + \dots$$

$$S = \frac{3 \times 7}{(7-3)^2} = \frac{21}{16}$$

$$S = \frac{1}{5} + \frac{2}{5^2} + \frac{3}{5^3} + \frac{4}{5^4} + \dots = \frac{5}{16}$$

R, E, D, I, L

S, S, S, S, S, 0

WNE(S) MATE(S)

$$\textcircled{1} \xrightarrow{\frac{1(0)}{2}} 0$$

$$\textcircled{2} \xrightarrow{\frac{2(1)}{2}} 1$$

$$\textcircled{3} \xrightarrow{\frac{3(2)}{2}} 3$$

$$\frac{4(3)}{2} = 6$$

$$\begin{aligned}
 a - b &= \sqrt{5} = b - c \\
 b - c &= \sqrt{5} \\
 \hline
 a - c &= 2\sqrt{5} \\
 M &= \frac{(2\sqrt{5})^5 + (\sqrt{5})^5 + (\sqrt{5})^5}{10} \\
 &= \frac{32(5) + 10}{10} = \frac{170}{10} \\
 M &= 17
 \end{aligned}$$

$x+2$ 600m
 $5x$

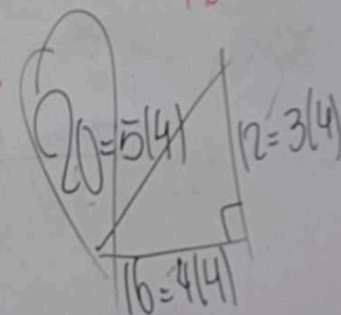
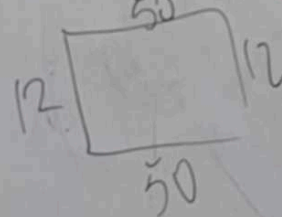
$$5x(x+2) = 600$$

$$x(x+2) = 10(12)$$

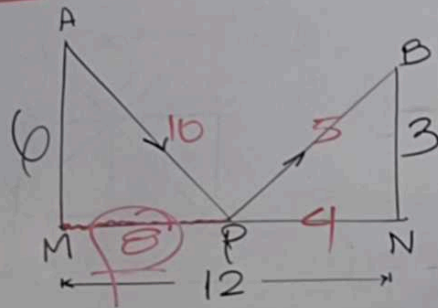
$$X+L = 10(12)$$

$$X = 10 \quad P = 124 \times 20$$

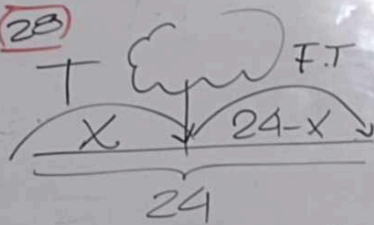
$$50 \quad 2480$$



(27)



(28)



$$3X = 5(24 - X)$$

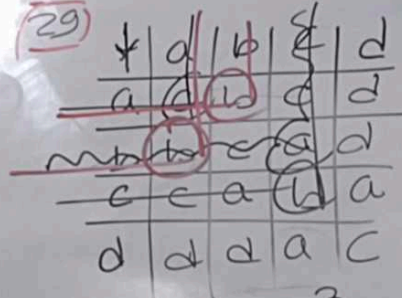
$$3X = 120 - 5X$$

$$X = 15 \text{ H} = 3 \text{ pm}$$

$$\downarrow +4 \text{ H}$$

$$\approx \underline{7 \text{ PM}}$$

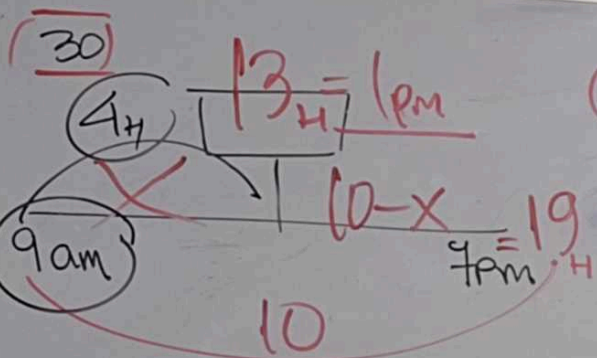
(29)



$$a^2 = a * a \quad c^3 = \underbrace{c * c * c}_{b * c}$$

$$H = a^2 * b * c^3$$

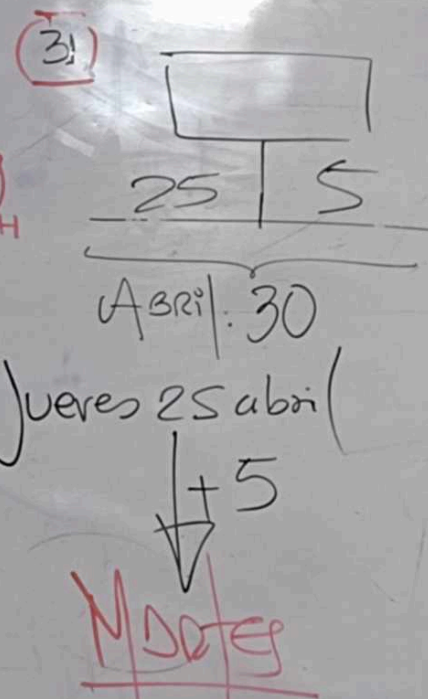
$$M = \underbrace{a * b * a}_{b * a} = \underline{b}$$



$$\frac{X}{2} = \frac{10-X}{3}$$

$$3X = 20 - 2X$$

$$X = 4$$

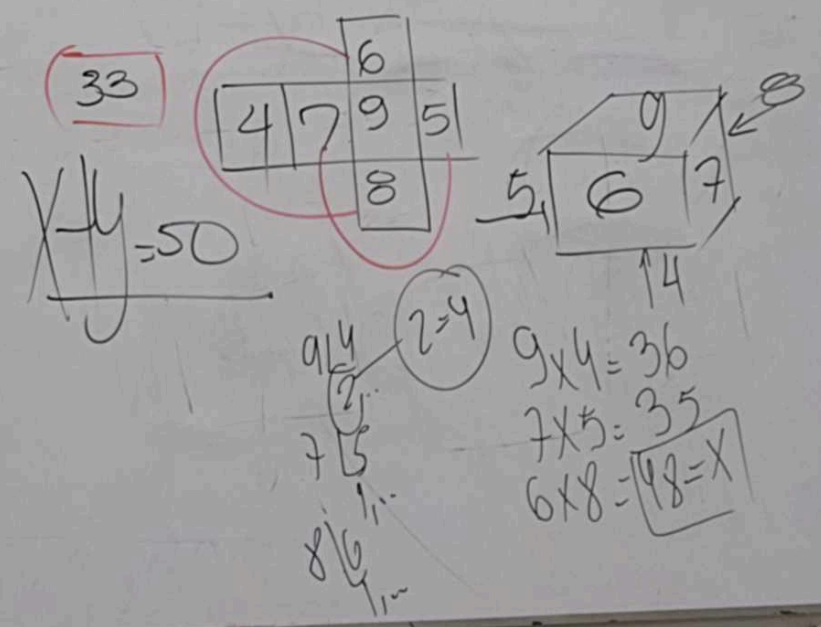


(32)

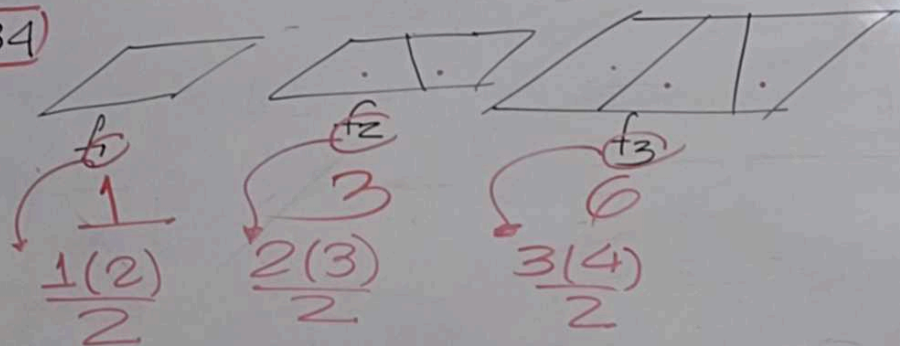
$$1 \times 3 \times 5 \times 7 \times \dots \times 29 = \sqrt{\dots ab}$$

$$\text{Imprime } 5(\dots 5) = \sqrt{\dots ab}$$

$$a+b=7 \quad \dots 25 = \dots ab$$

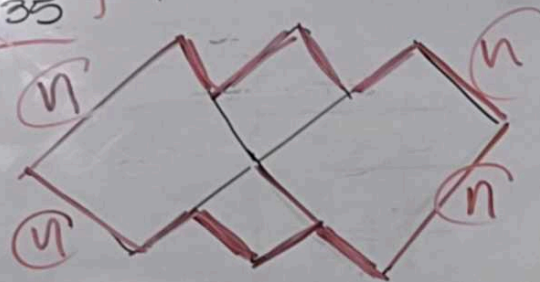


34



$$f_{25} = \frac{25(26)}{2} = 325$$

35



$$4n + 2n = 6n$$

$$a^2 - b^2 = (a-b)(a+b)$$

36

$$\underbrace{(111 \dots 12)}_{100 \text{ cf.}}^2 - \underbrace{(111 \dots 10)}_{100 \text{ cf.}}^2$$

$$2 \underbrace{(222 \dots 22)}_{100 \text{ cf.}}$$

$$\underbrace{444 \dots 4}$$

100 cf

$$J.C = 100(4)$$

400

37

$$\begin{matrix} 47 & 33 \\ (1996+1) & (1969-1) \\ (-6+1) & (-9-1) \end{matrix}$$

$$\underbrace{(-6)}_{\text{circled}} = \underbrace{(-7)}_{\text{circled}} \underbrace{(-8)}_{\text{circled}}$$

38

$$\frac{13}{15} + \frac{13}{15} + \dots + \underbrace{\frac{13}{15}}_{60 \text{ cf.}}$$

$$\frac{13}{15} \times 30 = 26$$

$$\frac{26}{8}$$

$$\underbrace{\frac{13}{15}}_{60 \text{ cf.}}$$

39 $\overline{abab}_{(n)} = 221$

$(n^2 + 1) \overline{ab}_{(n)} = 17(13)$

$n = 4$ $\overline{ab}_{(4)} = 13$

$a = 3$
 $b = 1$

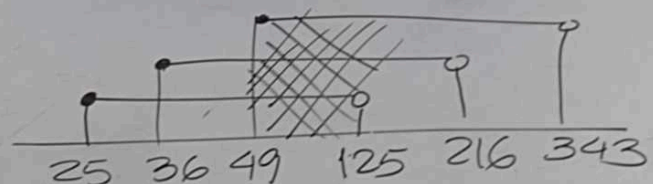
$4a + b = 13$
 $3 \quad 1$

$a + b + n = 8$

$x^1 \leq 8 < x^2$

$x = \overline{3, 4, 5, 6, 7, 8}$
 $\textcircled{6}$

$\overline{44}_2^2 \leq N < \overline{5}_3^3$
 $\overline{6}_2^2 \leq N < \overline{6}_3^3$
 $\overline{7}_2^2 \leq N < \overline{7}_3^3$



$N = \overline{49, 50, 51, \dots, 124}$

$124 - 49 + 1$

$= 76$

$$\overline{40)210} \quad \underline{\hspace{2cm}}$$

$$a28 = 5aa_{(7)}$$

$$81a + 26 = 245 + 8a$$

$$73a = 216$$

$$a = 3 \rightarrow a^2 + 1 = 10$$

$$567_{(8)} = 1^4 423_{(6)}$$

$$f = 8$$

$$e = 6$$

$$c = 2$$

$$\overline{41) \times \frac{1}{5} + \frac{2}{5^2} + \frac{3}{5^3} + \frac{1}{5^4} + \frac{0}{5^5} + \frac{3}{5^6} + \dots}$$

$$\frac{28}{124} = \frac{7}{31} = 0.7_{(31)}$$

$$\int = + \frac{1}{5} + \frac{2}{5^2} + \frac{1}{5^3} + \frac{2}{5^4} + \frac{1}{5^5} + \frac{2}{5^6} + \dots$$

$$\int = \frac{7}{24}$$

$$(42) \frac{e}{p \uparrow} \frac{e}{p \uparrow} \dots \frac{e}{p \uparrow} = \overline{1 d r e}$$

$$e < 2 \quad \frac{1 \uparrow \dots 1 \uparrow}{p \uparrow} = 2 - 1$$

$$2^p - 1 = \overline{1 d r e}$$

$$p=10 \quad 2^{10} - 1 = 1023$$

$$d=0 \quad r=2 \quad \theta=3$$

$$P + \theta + d + r + \theta = 16$$

$$(43) \quad \begin{matrix} 17 \\ 7 \\ 17 \\ \vdots \\ 17 \end{matrix} = \begin{matrix} 10 \\ 20 \\ 30 \\ \vdots \\ (n-1)0 \end{matrix} \quad \begin{matrix} 100 \\ \vdots \\ (n) \end{matrix}$$

$$720 = 1.2.3 \dots n$$

$$6! = n!$$

$$n=6$$

$$(45) \int = 1 \times 5 + 2 \times 6 + 3 \times \dots + \dots + 20 \times 24$$

$$\int = 1(1+4) + 2(2+4) + 3(3+4) + \dots + 20(20+4)$$

$$\int = 1^2 + 2^2 + 3^2 + \dots + 20^2 + 4(1+2+3+\dots+20)$$

$$\int = \frac{20(21)(41)}{6} + 4 \left[\frac{20(21)}{2} \right]$$

$$2870 + 840 = 3710$$

$$(42) \frac{e}{p \uparrow} \frac{e}{p \uparrow} \dots \frac{e}{p \uparrow} = 1 d r \theta$$

$$e < 2 \quad \frac{1 \uparrow \dots 1}{p \uparrow} = 2^{-1}$$

$$e=1 \quad 2^p - 1 = 1 d r \theta$$

$$p=10 \quad 2^{10} - 1 = 1023$$

$$d=0 \quad r=2 \quad \theta=3$$

$$P + \theta + d + r + \theta = 16$$

(43)

$$100 \left\{ \begin{array}{l} 17 \\ 7 \\ 17 \\ \vdots \\ 17 \end{array} \right\} = \frac{10}{20} \frac{30}{\vdots} \frac{(n-1)0}{(n)}$$

$$720 = 1 \cdot 2 \cdot 3 \dots n$$

$$6! = n!$$

$$n=6$$

(45)

$$\int = 1 \times 5 + 2 \times 6 + 3 \times \dots + 20 \times 24$$

$$\int = 1(1+4) + 2(2+4) + 3(3+4) + \dots + 20(20+4)$$

$$\int = 1^2 + 2^2 + 3^2 + \dots + 20^2 + 4(1+2+3+\dots+20)$$

$$\int = \frac{20(21)(41)}{6} + 4 \left[\frac{20(21)}{2} \right]$$

$$2870 + 840 = 3710$$

$$(46) \int = \frac{1}{5} + \frac{2}{5^2} + \frac{3}{5^3} + \dots$$

$$\int = \frac{5}{(5-1)^2} = \frac{5}{16}$$

(47)

$$1 + 3 + 6 + \dots + 300$$

$$\frac{1(2)}{2} + \frac{2(3)}{2} + \frac{3(4)}{2} + \dots + \frac{24(25)}{2}$$

$$\frac{1 \times 2 + 2 \times 3 + \dots + 24 \times 25}{2}$$

$$\frac{24(25)}{2} = 300$$

$$2600$$

(49)

$$CA(abab) = 7(b+1)(4a+m)$$

$a=2$ $m=0$

$$a-b=b+1$$

$$2-2=0$$

$$4-b$$

$$a+b+m=8$$

(48)

$$R_D + R_E = B$$

divisor

$$14 + 19 = B$$

$$33 = B$$

$$A | B = 33$$

$$14 | 81$$

$$A = 33(81) + 14 = 2687$$

$$\text{Sum of even terms} = 163$$

$$29 + 1 = 163$$

$$29 = 162$$

$$9 = 81$$

$$(50) \quad 32000 \dots 0_{(6)}$$

$$\uparrow \text{4 fms}$$

$$32_{(6)} \times 0^n$$

$$20$$

$$2^2 \cdot 5 \times 2^n \times 3^n$$

$$2^{n+2} \cdot 3^n \cdot 5^1$$

$$\#D_c = 2(n+1)(n+3) - 4 = 444$$

$$2(n+1)(n+3) = 448$$

$$(n+1)(n+3) = 14(16)$$

$$20 \mid 13$$

$$\begin{array}{r|l} 224 & 2 \\ 112 & 2 \\ 56 & 2 \\ 14 & 2 \end{array}$$

$$(51) \quad N = 30^a$$

$$2^a \cdot 3^a \cdot 5^a$$

$$2(2^{a-1} \cdot 3^{a-1} \cdot 5^{a-1}) = 2418$$

$$(2^a - 1)(3^{a+1} - 1)(5^{a+1} - 1) = 3(24)(124)$$

$$a=2$$

$$\begin{array}{r|l} 2418 & 2 \\ 1209 & 3 \\ 403 & 13 \\ 31 & 31 \\ 1 & 1 \end{array}$$

$$N = 2^2 \cdot 3^2 \cdot 5^2$$

$$\#D = 3(3)(3) - 4$$

$$(23)$$

$$(52) \quad 20^x \cdot 30^{x+2}$$

$$2^{2x} \cdot 5^x \cdot 2^{x+2} \cdot 3^{x+2} \cdot 5^{x+2}$$

$$2^{3x+2} \cdot 3^{x+2} \cdot 5^{2x+2}$$

$$(x+3)(2x+2) = 48$$

$$x=3$$

$$(53) \quad N = 2^a \cdot 3^b$$

$$\#D = (a+1)(b+1) = 21 = 3(7)$$

$$a=6$$

$$b=2$$

$$N = 2^6 \times 3^2$$

$$64 \times 9$$

$$N = 576$$

$$(54) \quad 2^\alpha \cdot 5^\beta \cdot 3^1$$

$$16 \text{ DIVISORS } (15)$$

$$3 \times 5 (2 \cdot 5)^{\beta-1}$$

$$\beta(\alpha+1) = 16$$

$$4(3+1)$$

$$N = 2^3 \cdot 5^4 \cdot 3^1$$

$$(2^3) \cdot (5^4) \cdot 3^1$$

$$\#D = 2(2) = 4$$

#Pairs

$$16 \text{ DIVISORS } (20)$$

$$2^2 \times 5 (2 \cdot 5)^{\alpha-2} (3)^{\beta-1}$$

$$2\beta(\alpha-1) = 16$$

$$\beta(\alpha-1) = 4(2)$$

$$\alpha=3$$

$$(55) \quad \overline{abab}_{10}$$

$$(10^2+1) \overline{ab}$$

$$101 \overline{ab}$$

$$101 \cdot P$$

$$\#D = 2(3) = 6$$

$$\overline{ab} = \text{prime}_2$$

$$25 = 5^2$$

$$49 = 7^2$$



56 $a^2 \times b^3$ TIENE 35 DIVISORES
 $a = x^2$ $x^4 y^6$ $5(7)$
 $b = y^2$ $(4+1)(6+1)$

$(ab)^n$ POSEE PG DIVISORES
 $x^{2n} y^{2n} \rightarrow \#D = (2n+1)^2 = PG$
 $n=3$
 $p=4$
 $n+p=7$

57 $N = 128ab$

$2^7 a^1 b^1$

$\frac{2^8-1}{2-1} \cdot \frac{a^2-1}{a-1} \cdot \frac{b^2-1}{b-1} = \frac{85}{28} (128ab)$

$2^3 (a+1)(b+1) = \frac{85}{7} \cdot 32ab$

$3 \times 7 (a+1)(b+1) = 32ab$

$a=3$ $b=7$

$a+b=10$

58

$N = 360$

$N = 2^3 \cdot 3^2 \cdot 5^1 \#D = 24$

$\#D = \frac{2^4-1}{2-1} \times \frac{3^3-1}{3-1} \times \frac{5^2-1}{5-1}$

$\#D = 15 \times 13 \times 6$

$\#D = 1170$

$\overline{X} = \frac{1170}{24} = 48.75$

24

59 31! divisores

31 | 2
15 2
7 2
3 2
2 M

Smo. 26 $\#D = 24K = 1$
 $K = \frac{n}{24}$

32! = 32 · 31!
 $2^5 \cdot 2^{26} M$

$\#D = 32K = \frac{32 \cdot 1}{24}$

60
 PIERRE 20%
 GANS 50%
 $T = 240$
 $T = 200$

61
 M 100
 70 + X
 H 30 + X
 $30 + X = \frac{3}{100} (70 + X)$
 $150 + 5X = 210 + 3X$
 $2X = 60$
 $X = 30$

$$(62) S = \frac{10(80)}{100} = 8$$

$$\frac{4(80+x)}{100} = 8 \quad (2)$$

$$X = 120$$

$$40\% = \frac{2}{5}$$

$$(63) \frac{2}{3} \cdot 110 + \frac{1}{2} \cdot \frac{1}{3} \cdot 100 + \frac{1}{2} \cdot \frac{1}{3} (100-x) = 100$$

$$440 + 100 + 100 - x = 600$$

$$400 - x$$

(64)

$$R \quad 2(7x)$$

$$D \quad 14x = 2(7x)$$

$$ND \quad 5(2x)$$

$$10x = 10(2) = 20$$

$$NR \quad 5(7x)$$

$$35x + 4x = 78$$

$$X = 2$$

65

BSAR



~~PIERDE 20%~~

$$\frac{80}{100} = \frac{4}{5}$$

$$\frac{115(5p)}{100} = 4(11, 5)$$

$$\frac{115(5p)}{100} = 4(11, 50)$$

$$P=8$$

66

$$\frac{90}{100} \times \frac{80}{100} \times 2 = 36$$

$$2L = 50$$

$$L = 25$$

70

OH: 45%

H₂O: 25%

VOLUMEN

DP

PESO

750

250

1000

$$\frac{750}{720} = \frac{250}{a}$$

720

250

970

3a = 720

a = 240

OH: 25%

250

H₂O: 45%

750

1000

240

750

990

80

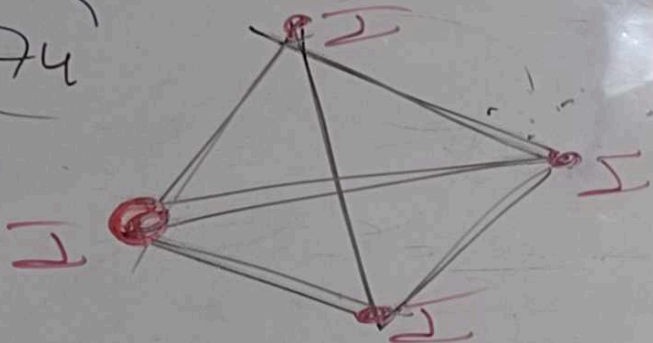
H₂O

Azul

$$\frac{7+x}{350} = \frac{1}{5}$$

x = 63

(74)



(I=4)

$$N_e = \frac{I-2}{2}$$

$$N_{lr} = \frac{4-2}{2} = 1$$

$$X = 1,2 \text{ min} \times 60$$

(72)

$$\frac{8,4 \text{ min}}{7} = \frac{X}{1}$$

$$7X = 8,4$$

(71)

$$\frac{25}{100} (30 + X) = 12$$

$$30 + X = 48$$

$$X = 18$$