

$$(10) \frac{100a}{b} \approx 52,4$$

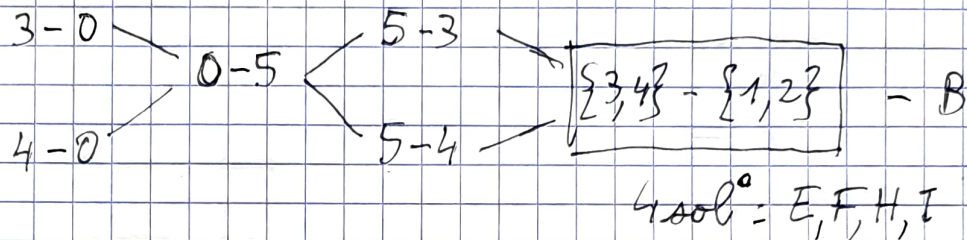
$$100a \approx 52,4b$$

$$2,4b \approx 50$$

$$b = \underline{\underline{21}}$$

$$21 \times 52,4 = 1000 + 50 + 50,4 = 1100,4$$

(11)



$$3 \rightarrow 1 \text{ ou } 2$$

$$4 \rightarrow 1 \text{ ou } 2$$

$$(12) c + p = a$$

$$c^2 = a^2 - c^2 - p^2$$

$$2c^2 = a^2 - p^2 = c(a+p)$$

$$\left. \begin{aligned} 2c &= a+p \\ &= 2a - 2p \end{aligned} \right\}$$

$$\rightarrow 3p = a \rightarrow \frac{a^2}{p^2} = \underline{\underline{9}}$$

(13)

$$\begin{array}{ccc} 9 & n & 8 \\ a & b & \\ 6 & c & 5 \end{array}$$

$$60 - 23 \times 2 = 14$$

$$a + c = 14 =$$

$$a + n = 17$$

$$\begin{array}{ccc} 9 & 16 & 8 \\ & 1 & 2 \\ 6 & 13 & 5 \end{array}$$

$$\begin{array}{ccc} 9 & 15 & 8 \\ & 2 & 3 \\ 6 & 12 & 5 \end{array}$$

$$\begin{array}{ccc} 9 & 14 & 8 \\ & 3 & 4 \\ 6 & 11 & 5 \end{array}$$

$$\begin{array}{ccc} 9 & 7 & 8 \\ & 10 & 11 \\ 6 & 4 & 5 \end{array}$$

$$\begin{array}{ccc} 9 & 4 & 8 \\ & 13 & 14 \\ 6 & 1 & 5 \end{array}$$

5 sol°
4, 7, 14, 15, 16

14

9876543210
12345678

abc9
1

a b (+) (0001)

1329876540
1234571

→ 1234~~5~~71?

1331111111

2019876543
123457

→ 123457

2020000000

$$\frac{n(n-3)}{2} + \frac{(n+1)(n-2)}{2} = 2023$$

$$n^2 - 2n - 1 = 2023$$

$$n^2 - 2n - 2024 = 0$$

$$2025/9 = 225$$

$$\Delta' = 1 + 2024 = 2025 = 45^2$$

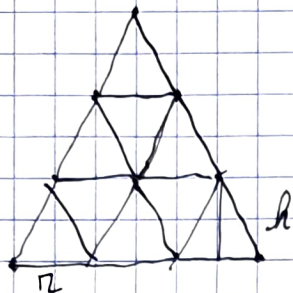
$$n = 1 + 45 = 46$$

Verif: $23 \times 43 = 989$
 $47 \times 22 = 1034$

2023

$$46 + 47 = \underline{\underline{93}}$$

$$(16) R = 21/2$$



$$h = R \frac{\sqrt{3}}{2}$$

$$2h = R$$

$$R = R\sqrt{3}$$

$$\text{Aire} = 12T - \pi r^2$$

$$T = \frac{Rr}{2} = r^2 \frac{\sqrt{3}}{4}$$

$$\text{Aire} = R^2 \left(3\sqrt{3} - \pi \right) = R^2 \left(\sqrt{3} - \frac{\pi}{3} \right)$$

$$= \frac{21^2}{4} \left(1,732 - \frac{22}{21} \right)$$

$$= 21^2 \times 0,433 - \frac{21 \times 11}{2}$$

$$= 21 \times (9,093 - 5,5)$$

$$= 21 \times 3,593$$

$$\rightarrow 75,5$$

$$\begin{array}{r} 433 \\ \times 21 \\ \hline 866 \\ 433 \\ \hline 9093 \end{array}$$

$$\text{Aire} = 75,5$$

$$\begin{array}{r} 3,593 \\ \times 21 \\ \hline 7186 \\ 3593 \\ \hline 75,453 \end{array}$$

$$(17) \quad 23^2 + a^2 = (a+1)^2 + b^2$$

$$23^2 = 2a + 1 + b^2$$

$$b^2 + 2a = 23^2 - 1 =$$

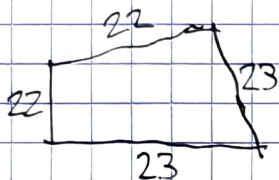
$$b \leq 22$$

$$\Rightarrow b \text{ pair} \quad b = 2c$$

$$c \leq 11$$

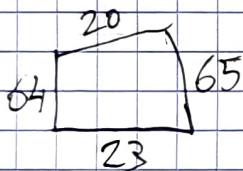
1st sol^o

$$b = 22 \rightarrow a = \frac{1}{2} (23^2 - 22^2 - 1) = \frac{1}{2} (45 - 1) = 22$$



$$22 \times 23 = \boxed{506}$$

$$b = 20 \rightarrow a = \frac{1}{2} (23^2 - 20^2 - 1) = \frac{1}{2} (129 - 1) = 64$$



$$\begin{array}{r} 65^2 = 4225 \\ + 400 \\ \hline \boxed{4625} \end{array}$$

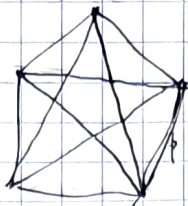
$$b = 18 \rightarrow a = \frac{1}{2} (23^2 - 18^2 - 1) = \frac{1}{2} (5 \times 41 - 1) = 102 \text{ OK}$$

$$b = 16 \rightarrow a = \frac{1}{2} (23^2 - 16^2 - 1) = \frac{1}{2} (7 \times 39 - 1) < 150 \text{ OK}$$

4 sol^o

$$\frac{1}{2} (9 \times 37 - 1) \text{ non}$$

(18) $3 \rightarrow 1$
 $4 \rightarrow 8$
 $5 \rightarrow 75$



$$3+4+3+2+2+1=15$$

$$15 \times 5 = 75$$

0 1 2 3 ... 21!
 0 1 8 75
 1 7 67
 6 60
 54

$$54 \frac{n(n-1)(n-2)}{6} + 6 \frac{n(n-1)}{2} + n$$

$$= 9n(n-1)(n-2) + 3n(n-1) + n$$

$$\begin{array}{r} 19 \\ \times 21 \\ \hline 38 \\ 19 \\ \hline 399 \end{array} \quad 20^2 - 1$$

$$n = 21 \rightarrow 9 \times 21 \times 20 \times 19 + 3 \times 21 \times 20 + 21$$

$$(= 9 \times 20 \times 399 + 1260 + 21)$$

$$21 \times (20 \times (171 + 3) + 1)$$

$$= 21 \times (20 \times 174) + 1$$

$$= 21 \times 3481$$

73101?

$$\begin{array}{r} 3481 \\ \times 21 \\ \hline 6962 \\ 3481 \\ \hline 73101 \end{array}$$