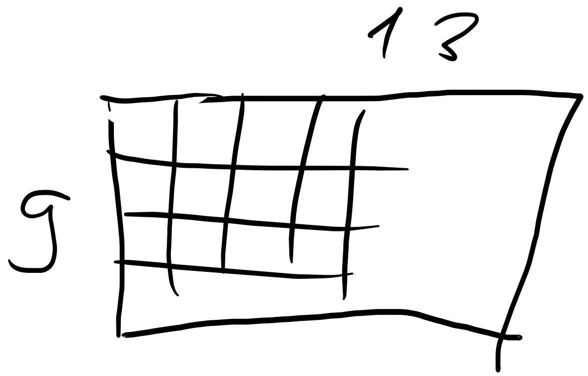
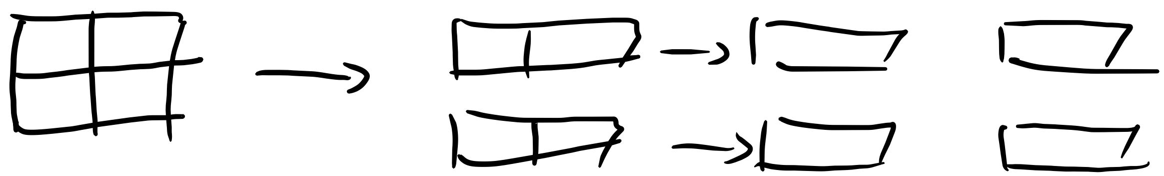


A lehető legkevesebb töréssel kis téglalapokra bontsuk, 9 × 13 darabra.



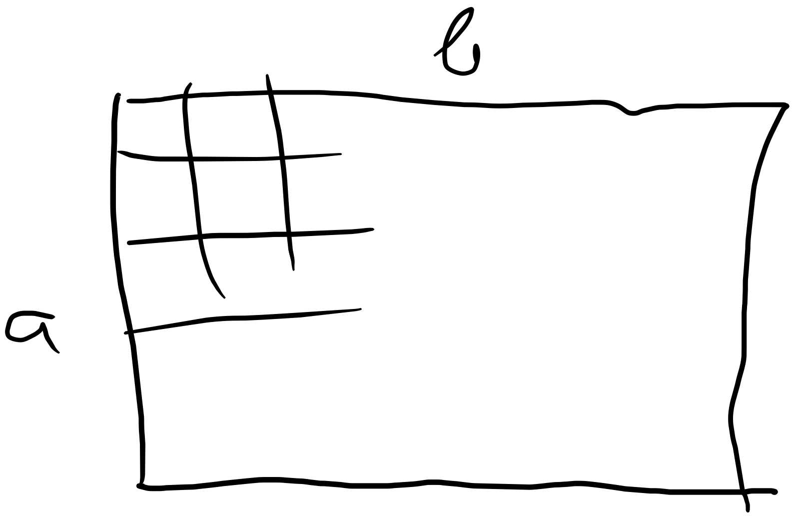
3 db.

1. törés 2 db lesz
2. – " – 3 – " –
3. – " – 4 – " –
...

$\boxed{13 \cdot 19 - 1}$ 13 · 19 db

∀ stratégia esetén száma, 13 · 19 − 1 töréssel jár.

ÖTLET



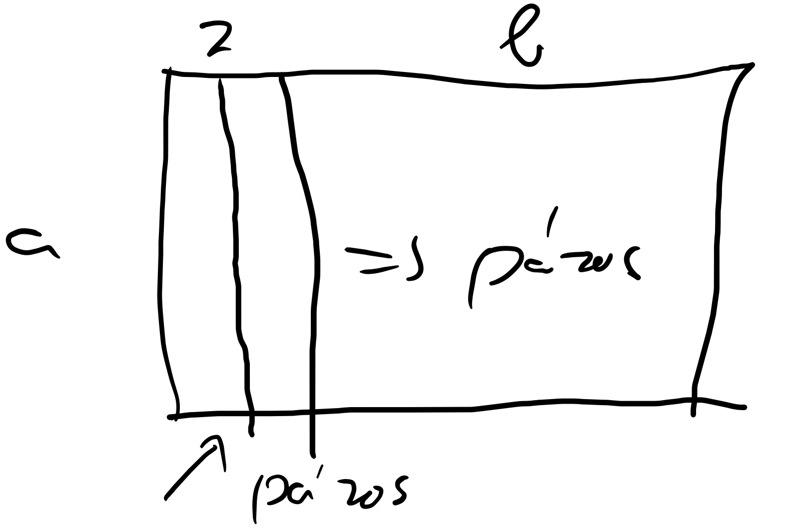
$a \cdot b$ páros

$\overset{?}{\Longrightarrow}$ a vagy b páros?

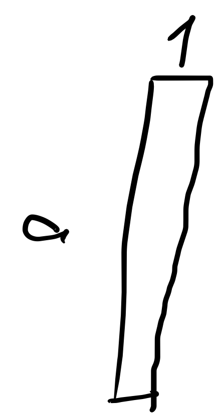
$3 \mid a \cdot b \Rightarrow 3 \mid a$ vagy $3 \mid b$

$101 \mid a \cdot b \Rightarrow 101 \mid a$ vagy 101.

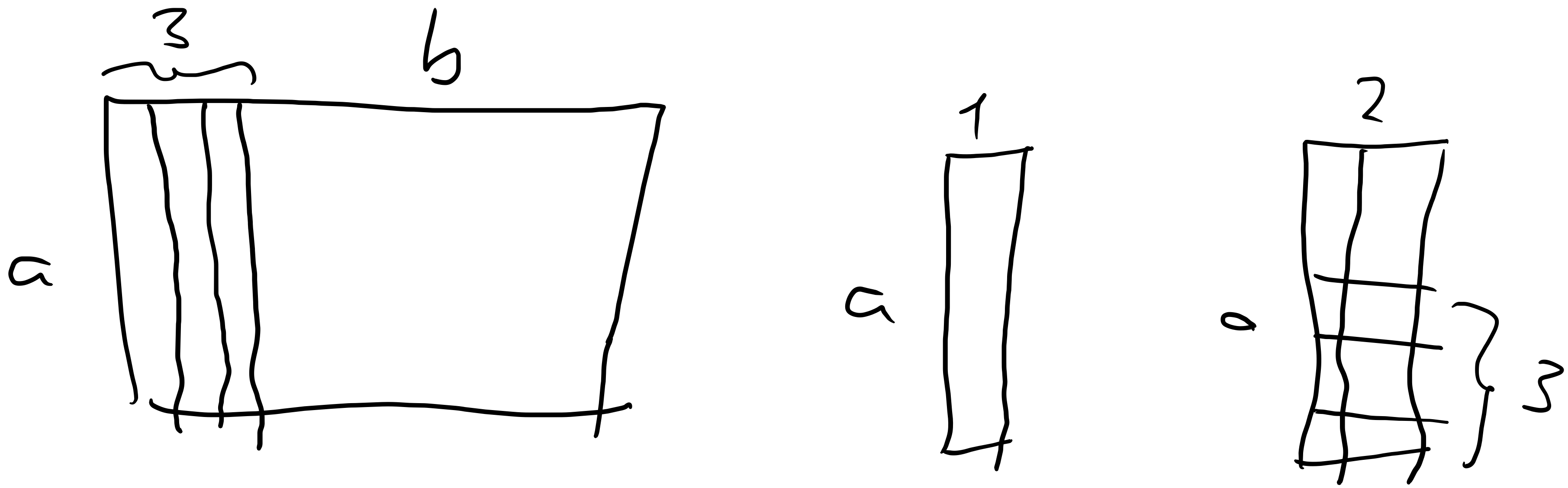
$a \cdot b$ páros.

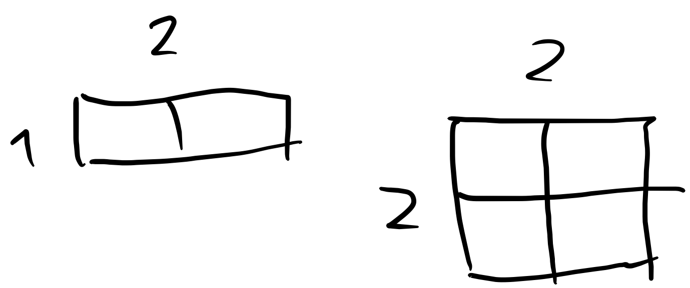


b ptlan



ps sor
[illegible]
⇒ a páros.





$3 \mid a$

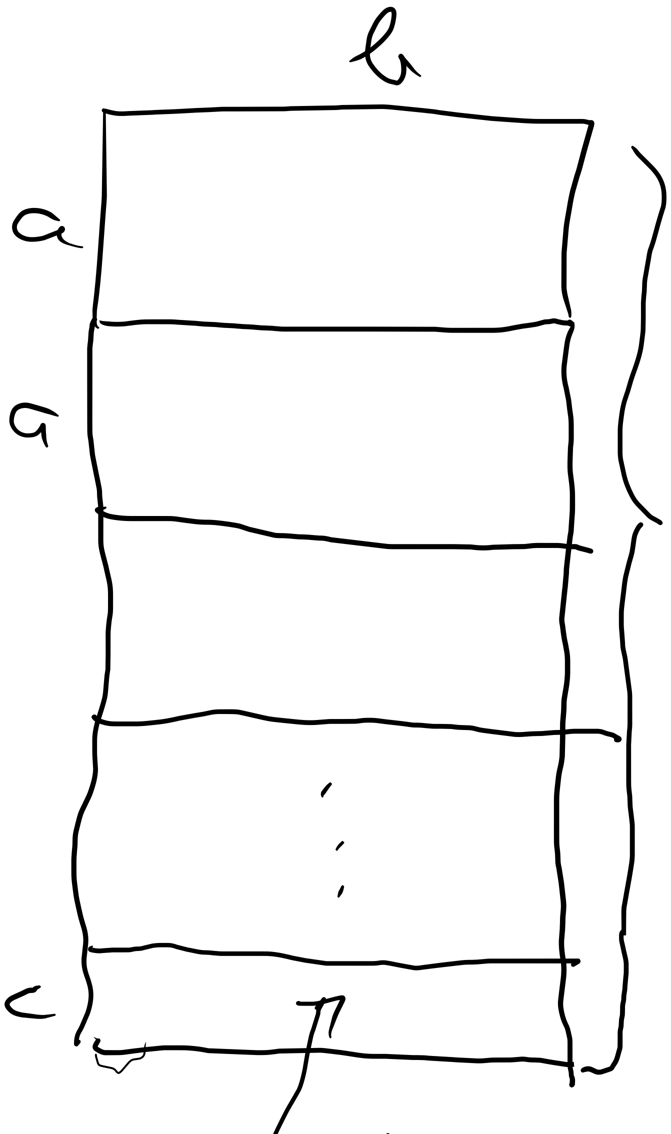
101

$101 \mid a \cdot b$

$1 \leq a, b < 100$

vagdosással.

Kell más egy ötlet.



$1 \leq a, b < 101$

$101 \mid ab$

(kisebb téglalap)

$101 \mid cb$

$1 \leq c, b < 101.$

vagy $c = 0$.

a osztója 101-nek

$\Rightarrow a = 1$ vagy 101

$a \leq 100 \Rightarrow a = 1$

$c < a$ 101-gyel osztható. $101 \mid 1 \cdot b \Rightarrow 101 \mid b.$

101-nek pozitív osztója csak 1 és 101.

$\Rightarrow 101 \mid ab \Rightarrow 101 \mid a$ vagy $101 \mid b$.

$3 + 5 + 7 + \ldots + 41 + 43 = ?$

planok?

prímek?

$\sum$ = add össze

$\bigcirc$ ← amit összeadunk

$\bigcirc$ mik a tagok.

$$\sum_{\substack{3 \le p \le 43 \\ p \text{ prím}}} p \qquad \sum_{\substack{3 \le p \le 43 \\ p \text{ plan.}}} p = \sum_{k=1}^{21} 2k+1$$

$\prod$ szorozni kell.

$$\sum_{j=6}^{9} (-1)^j = (-1)^6 + (-1)^7 + (-1)^8 + (-1)^9 =$$
$$= 1 - 1 + 1 - 1 = 0$$

$$\sum_{2<j<5} 2j+1 = 7 + 9 = 16$$

$$\sum_{2<j<k<6} j \cdot k = 3\cdot 4 + 3\cdot 5 + 4\cdot 5 = 12 + 15 + 20 =$$
$$= 47$$

$j = 3 \Rightarrow k = 4, 5$

$j = 4 \Rightarrow k = 5$

$$\sum_{p<7 \text{ prim}} p^2 = 2^2 + 3^2 + 5^2 = 4 + 9 + 25 = 38.$$

$$\prod_{1 \le i \le 100000000} (213 - i)$$

$$(-212)(-211)\ldots(-3)(-2)(-1)\,0 \,\cdot\, \ldots = \underline{\underline{0}}$$

stánteni součet.

$$\sum_{i=1}^{n} i = 1 + 2 + \ldots + n = S = \frac{n(n+1)}{2}$$

$$n + n-1 + \ldots + 1 = S$$

$$\underbrace{(n+1) + (n+1) + \ldots + (n+1)}_{n \text{ dlb}} = n(n+1) = 2S$$

$$\boxed{2^a \cdot 2^b = 2^{a+b}}$$

$$\prod_{i=1}^{n} 2^i = 2^{1+2+\ldots+n} = 2^{\frac{n(n+1)}{2}}$$

$n+1$ tag!

$$\sum_{i=0}^{n} q^i = ? = \frac{q^{n+1}-1}{q-1}.$$

mértani sorozat kivéve $q = 1$ $\boxed{n+1}$

$$(a-b)\sum_{i=0}^{n-1} a^i b^{n-i-1} = ?$$

HF $a^n - b^n$.

$n=3$.

$$(a-b)\,(\underbrace{b^2}_{i=0} + \underbrace{ab}_{i=1} + \underbrace{a^2}_{i=2}) =$$

$$= \cancel{ab^2} + \cancel{a^2 b} + a^3 + - b^3 - \cancel{ab^2} - \cancel{a^2 b} = \underline{\underline{a^3 - b^3}}$$

$$b^2 + ab + a^2 = \frac{a^3-b^3}{a-b}$$

$b=1$
$a=q$

$$1 + q + q^2 = \frac{q^3-1}{q-1}$$

$$(a-b)(b^2+ab+a^2) = a^3-b^3$$

$$1+q+q^2 = \frac{q^3-1}{q-1} \qquad q \neq 1$$

$q = b/a$ $\qquad 1+b/a+b^2/a^2 = \frac{(b/a)^3-1}{b/a-1} \Big| a^2$

$$a^2+ba+b^2 =$$

$$= \frac{a^3((b/a)^3-1)}{a(b/a-1)} =$$

$$= \frac{b^3-a^3}{b-a} = \frac{a^3-b^3}{a-b}. \qquad a \neq b$$

$$a^3 + b^3 = ?$$

$$a^3 - b^3 = (a-b)(a^2 + ab + b^2)$$

$$a \longmapsto a$$

$$b \longmapsto -b$$

$$a^3 - (-b)^3 = (a-(-b))(a^2 + a(-b) + (-b)^2)$$

$$a^3 + b^3 = (a+b)(a^2 - ab + b^2)$$

a šikovně počítat!

Ale pozor $\qquad a^4 - b^4 \rightsquigarrow a^4 - (-b)^4 =$

$$= a^4 - b^4.$$

$a^4 + b^4 \quad \not\mapsto \quad a^4 + 4b^4$ Stačí.

$$\sum_{i=1}^{100}\left(\sum_{j=1}^{20} i \cdot j\right) - \sum_{j=1}^{20}\left(\sum_{i=1}^{100} i \cdot j\right) = 0$$

$i \cdot j$ $\qquad$ $i \cdot j$

$i=1$: $\quad 1\cdot 1 + 1\cdot 2 + \dots + 1\cdot 20 +$

$i=2$: $\quad 2\cdot 1 + 2\cdot 2 + \dots + 2\cdot 20 +$

$\vdots$

$i=100$: $\quad 100\cdot 1 + 100\cdot 2 + \dots + 100\cdot 20$

$-$

$1\cdot 1 + 2\cdot 1 + \dots + 100\cdot 1 \quad j=1$

$1\cdot 20 + 2\cdot 20 + \dots + 100\cdot 20 \quad j=20$

$$\left(\sum_{i=1}^{n} a_i\right)\left(\sum_{j=1}^{n} b_j\right) \underset{\text{HF}}{=} \sum_{\substack{1\le i\le n\\ 1\le j\le n}} a_i b_j = \sum_{i=1}^{n}\sum_{j=1}^{n} a_i b_j$$

$$a^n \cdot a^m = a^{n+m}$$

$$(a^n)^m = a^{n\cdot m}$$

$$(a\cdot b)^n = a^n \cdot b^n \qquad (a\cdot b = b\cdot a)$$

$$\sqrt[n]{a} = a^{1/n}$$

$$\sqrt{8}\,\sqrt[4]{4} = (2^3)^{1/2}\cdot(2^2)^{1/4} = 2^{3/2+1/2} = 2^2 = \underline{\underline{4}}$$

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

$$n \neq 1$$

$$3\cdot 5+7 \neq 36$$

22

$$(2^3)^4 = 8^4 = 2^{12} = 4096$$

$$2^{3^4} = \underline{\underline{2^{81}}}$$

$$(x^1)^2 \cdot (x^2)^2 \cdot \ldots \cdot (x^n)^2 = x^{2(1+2+\ldots+n)} = x^{n(n+1)}$$

$$x^{1^2} x^{2^2} \cdot \ldots \cdot x^{n^2} = x^{\underbrace{1^2+2^2+\ldots+n^2}}$$

HF* $\dfrac{n(n+1)(2n+1)}{6}$

(pl. indukció)