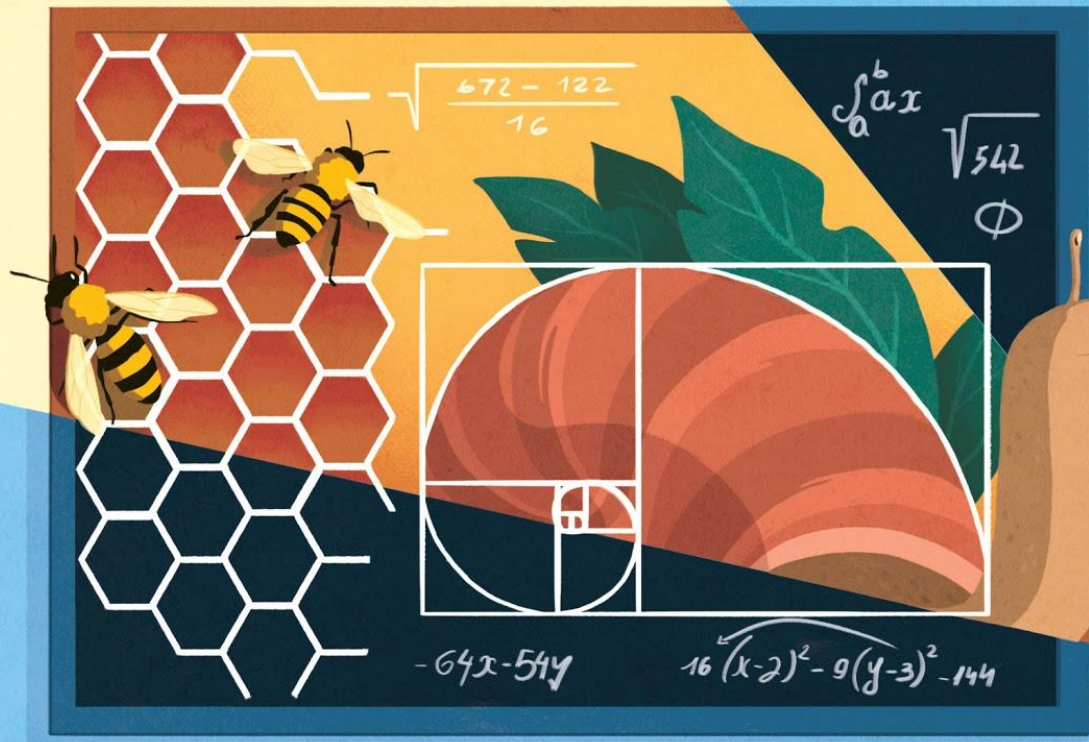


MATE *live* SCIENZE



MATE*live*
SCIENZE

Algoritmi e dintorni

Antonella Castellini

Il gruppo



Antonella **Castellini**



Chiara **Giberti**



Alice **Lemmo**



Andrea **Maffia**



Per Contare

MATE *live*
SCIENZE

$$\begin{array}{r} 13 \times \\ 12 \\ \hline 26 \\ 130 \\ \hline 156 \end{array}$$

$$\begin{array}{r} 13 \times 12 \\ \hline 26 \\ 130 \\ \hline 156 \end{array}$$

facciamola
insieme

$$3 \times 2 \dots 6$$

$$2 \times 1 \dots 2$$

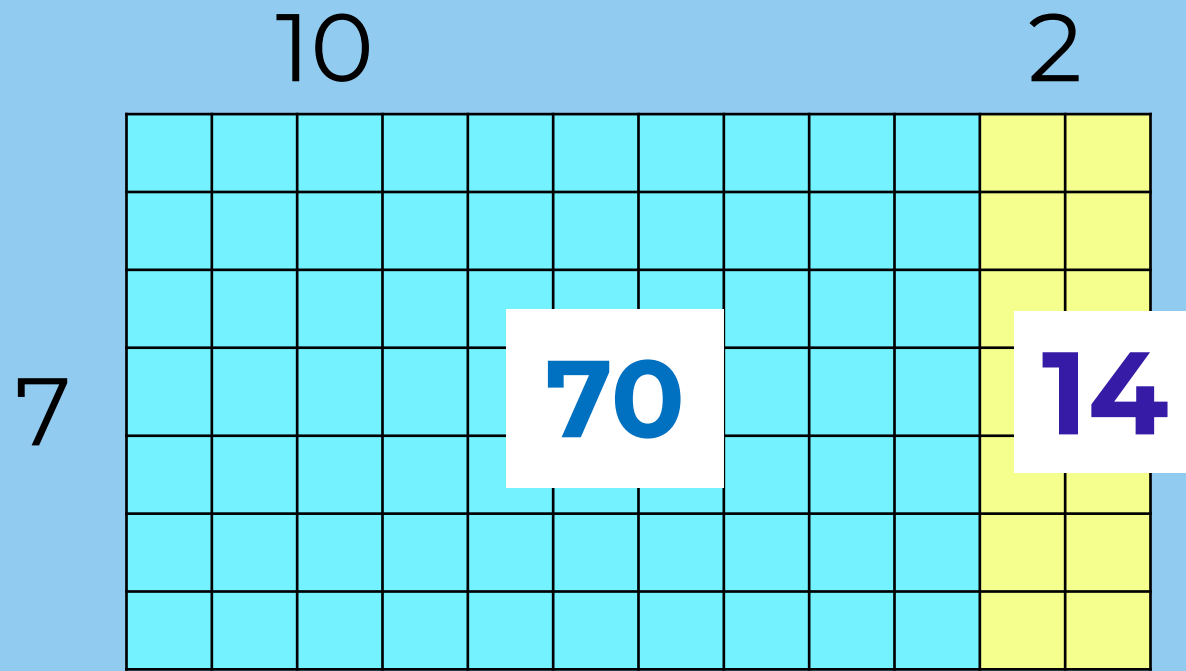
Scalo cifra

$$1 \times 3 \dots 3$$

$$1 \times 1 \dots 1$$

Cosa ci siamo persi?

Perché si fa così?

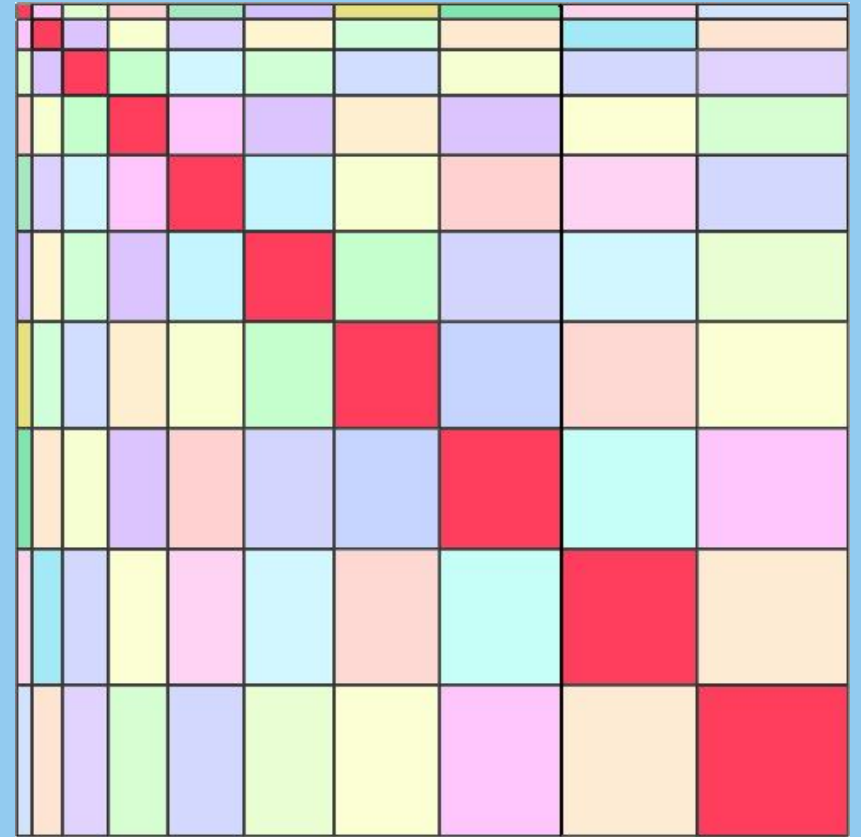
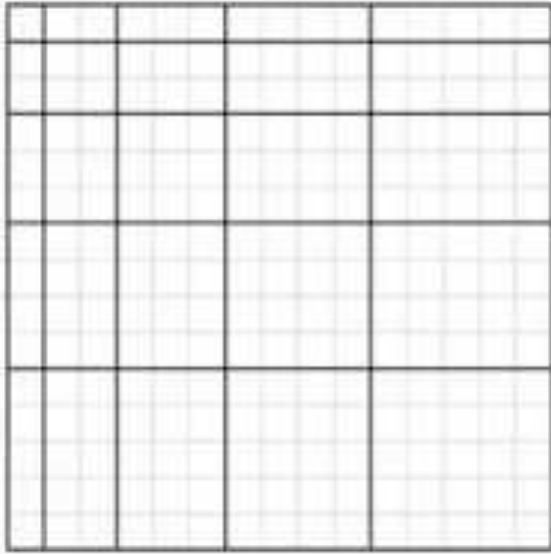


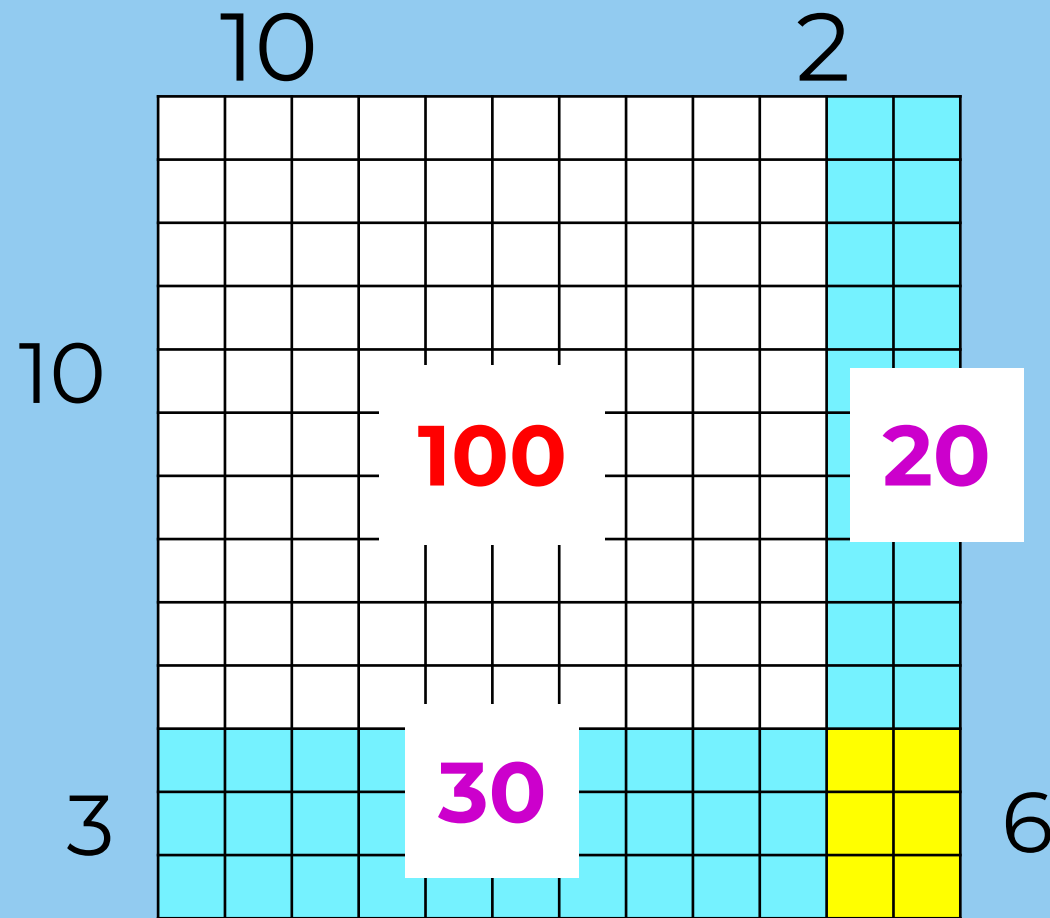
$$12 \times 7$$

$$(10 + 2) \times 7 = 10 \times 7 + 2 \times 7$$



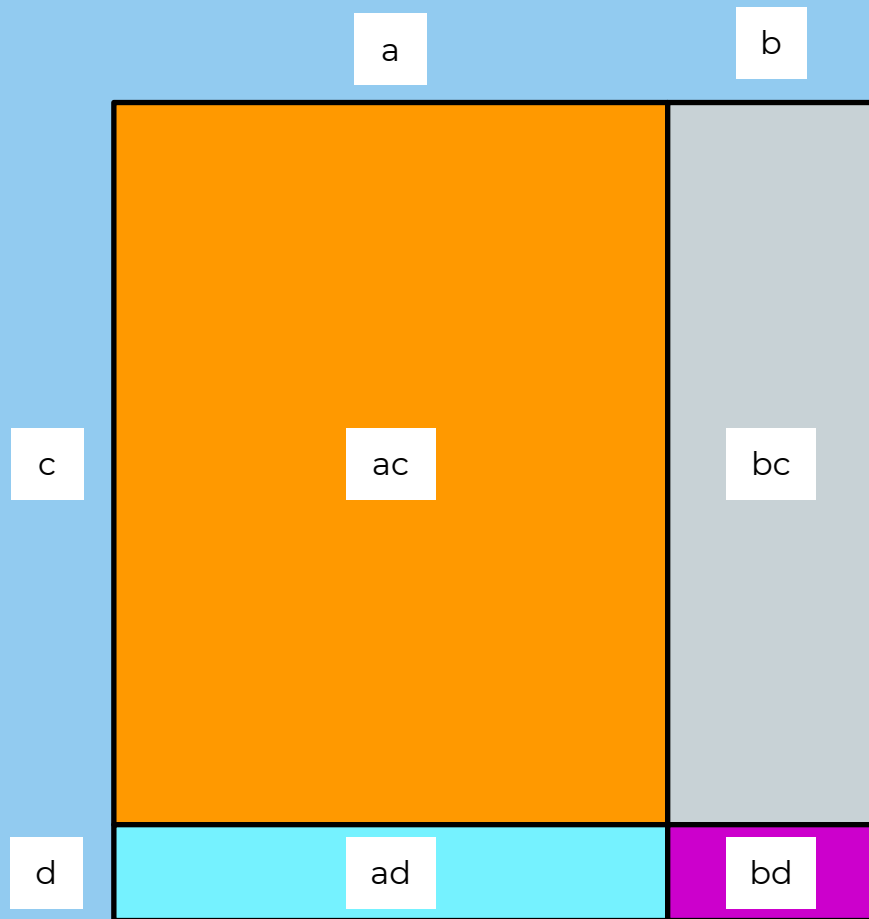
Charles Laisant
1915



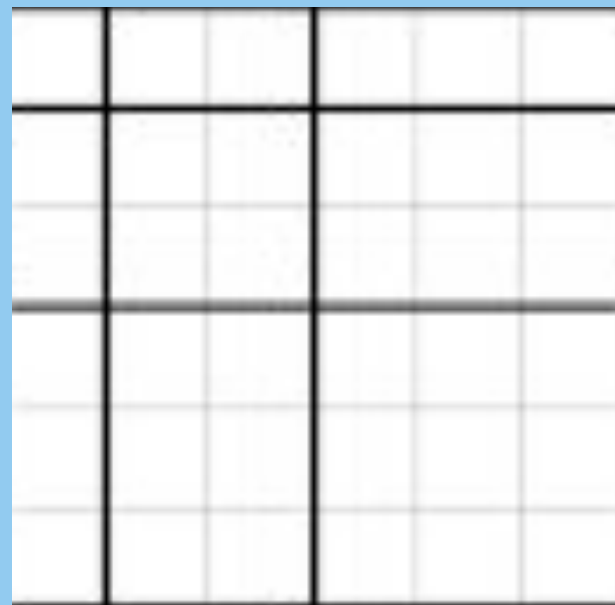


$$\begin{array}{r}
 13 \times \\
 12 \\
 \hline
 26 \\
 130 \\
 \hline
 156
 \end{array}$$

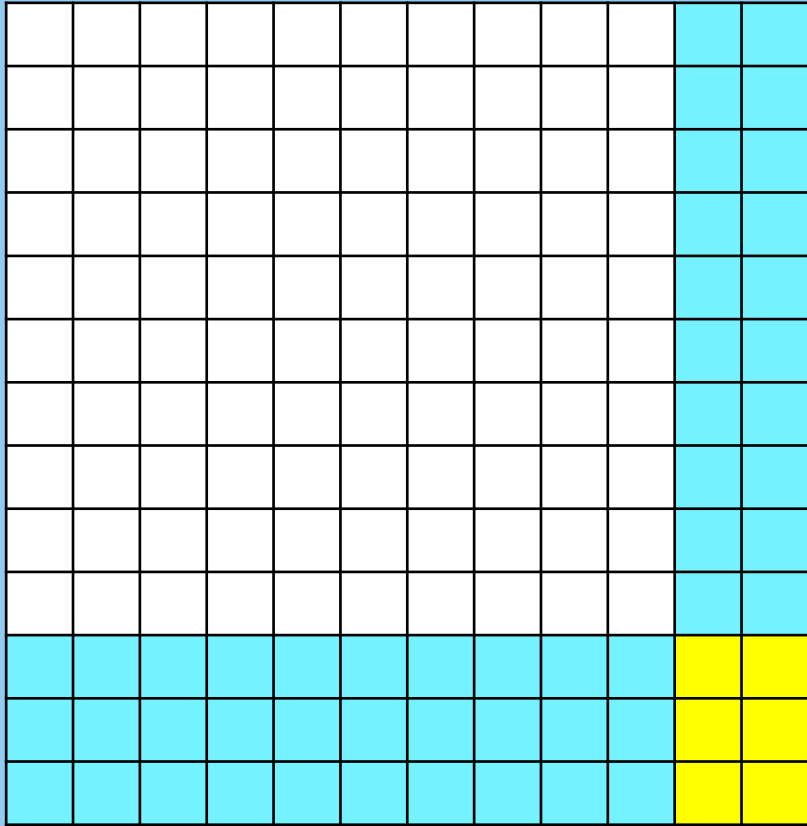
$$(10 + 2) \times (10 + 3) = \\
 10 \times 10 + 2 \times 10 + 10 \times 3 + 2 \times 3$$



$$(a + b) \times (c + d) = ac + ad + bc + bd$$



Dai rettangoli alla tabella



	10	2
10	100	20
3	30	6

	10	2
10	100	20
3	30	6

$$(10 + 2) \times (10 + 3) =$$

$$10 \times 10 + 2 \times 10 + 10 \times 3 + 2 \times 3 =$$

$$100 + 50 + 6 = 156$$

$$12 \times 13$$

8 + 4

	8	4
7	56	28
6	48	24

7 + 6

$$(8 + 4) \times (7 + 6) = 56 + 28 + 48 + 24 = 156$$

$$56 \times 34$$

	30	20	6
20	600	400	120
10	300	200	60
4	120	80	24

	50	6
30	1500	180
4	200	24

Procedimento per «sapezzo» o per spezzato

Si scompongono entrambi i fattori nella somma di due o più addendi, a piacere.

Es. **56 x 34**

$$56 = 30 + 20 + 6 \quad 34 = 20 + 10 + 4$$

Il prodotto si ottiene applicando alla moltiplicazione

$$(30 + 20 + 6) \times (20 + 10 + 4)$$

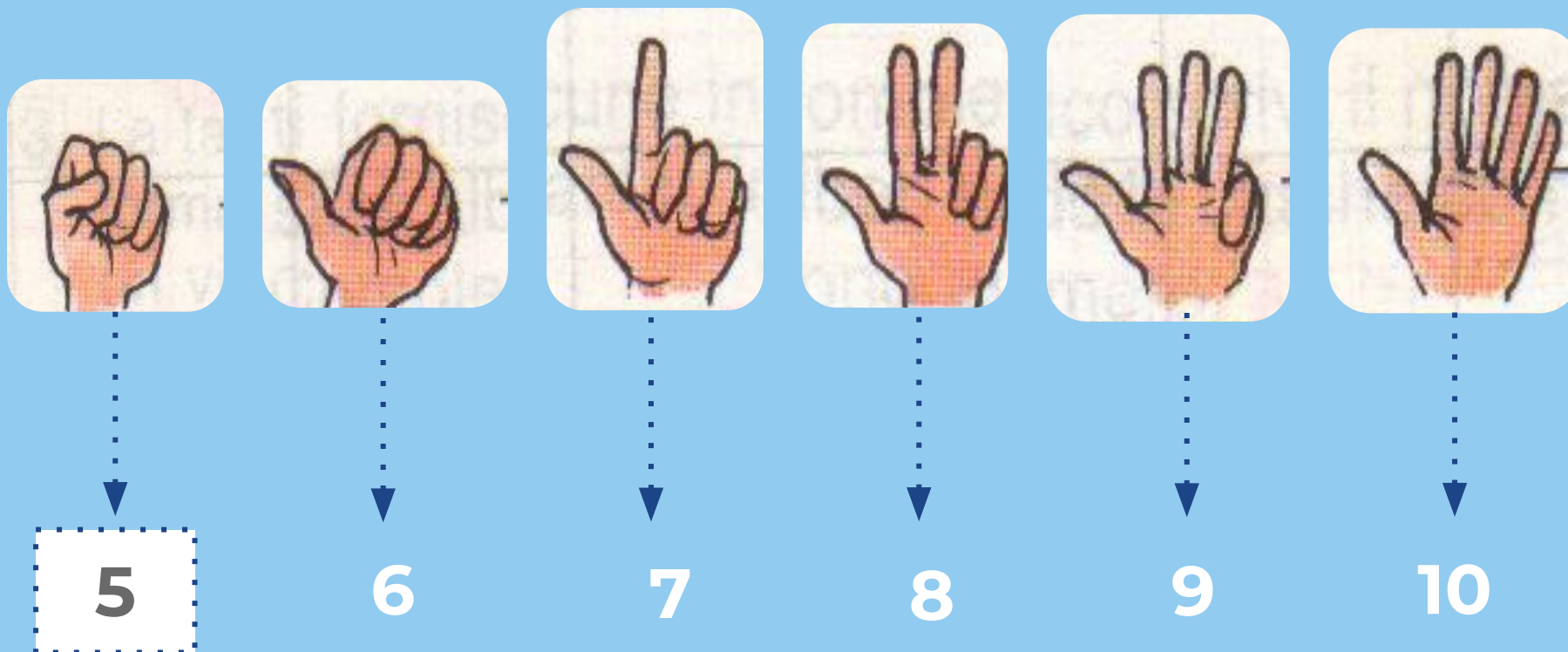
la proprietà distributiva rispetto all'addizione.

126 x 214



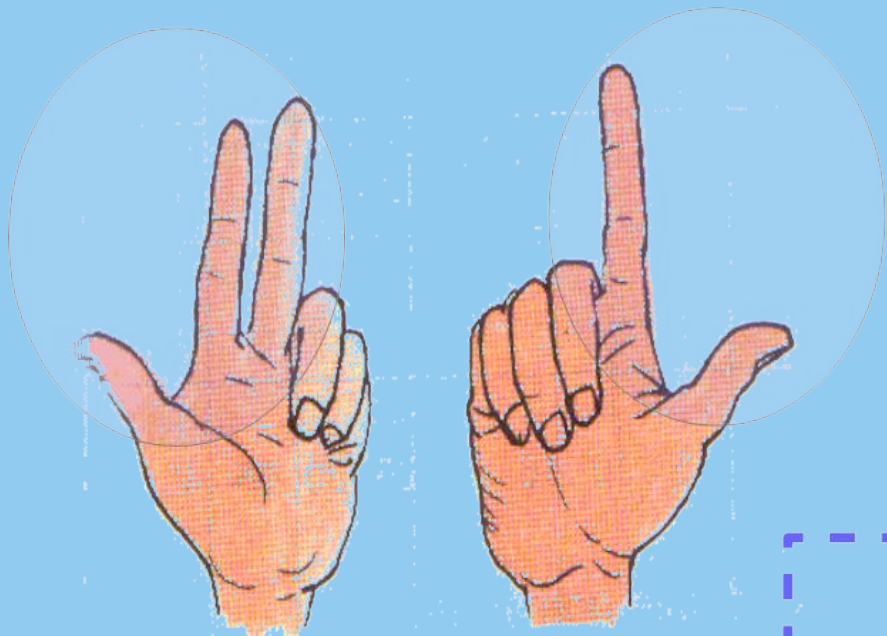
<https://it.padlet.com/antocastellini/lc57eitctuz7t383>

MATE *live*
SCIENZE



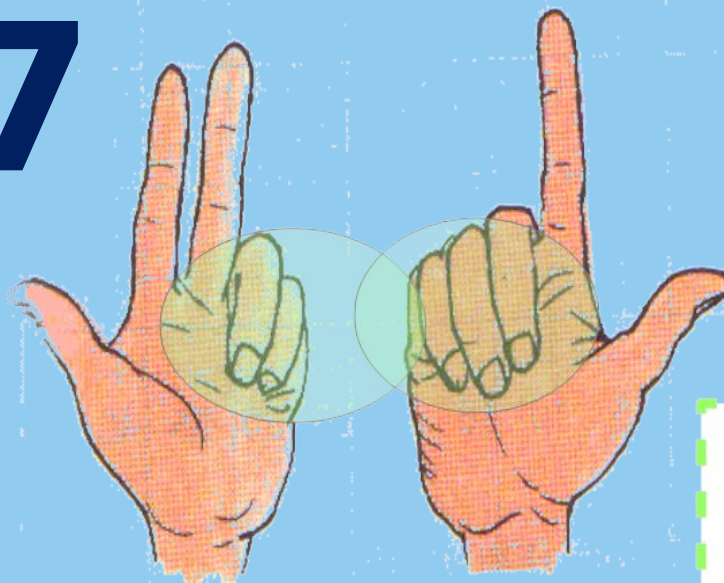
Tabelline ...che passione!

$$8 \times 7$$



$$3 + 2$$

5
decine



$$3 \times 2$$

6
unità

50 + 6

56

$$6 \times 7$$



proviamo a fare insieme

$$6 \times 8$$

dita alzate

1 e 3

$$1 + 3 = 4$$

4 decine = 40

48

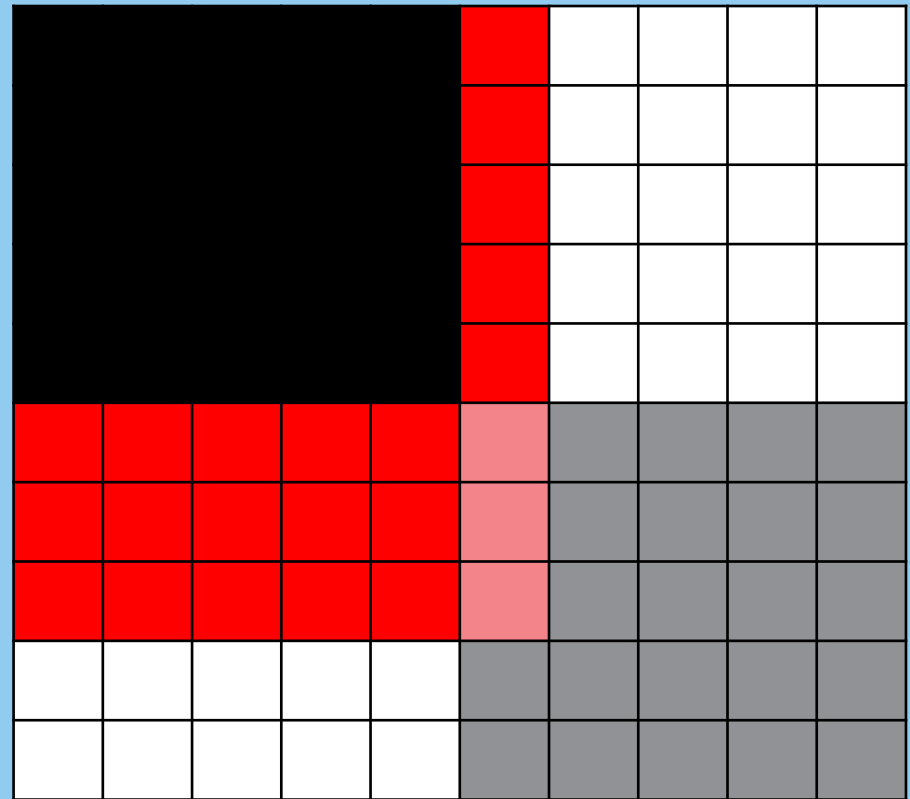
dita abbassate

4 e 2

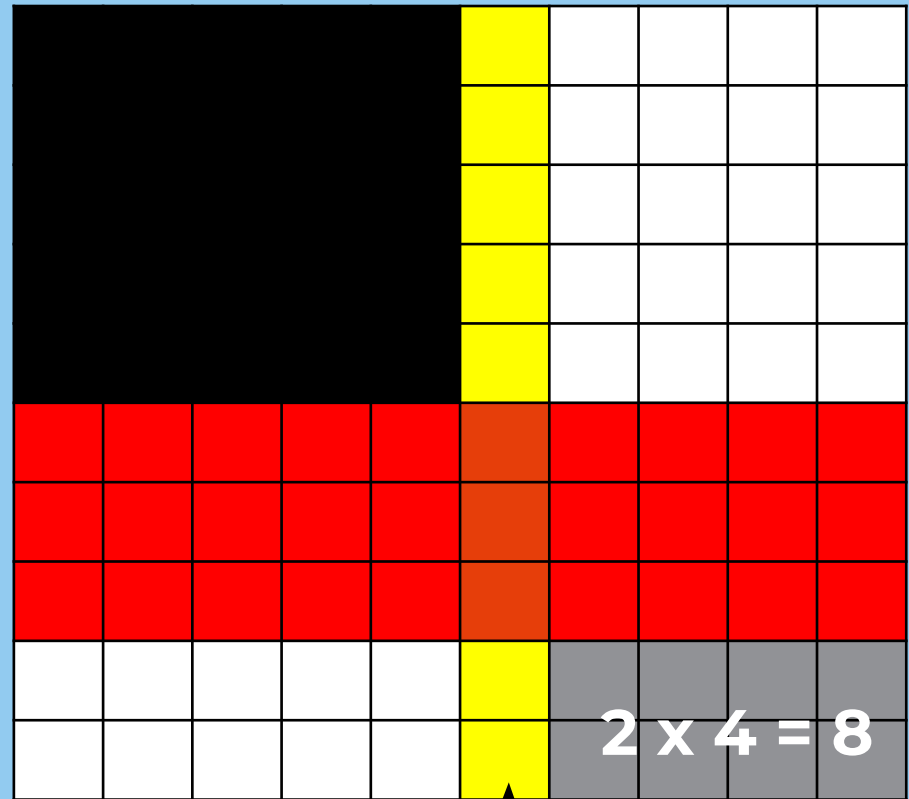
$$4 \times 2 = 8$$

8 unità

$$6 - 5 = 1$$



$$8 - 5 = 3$$

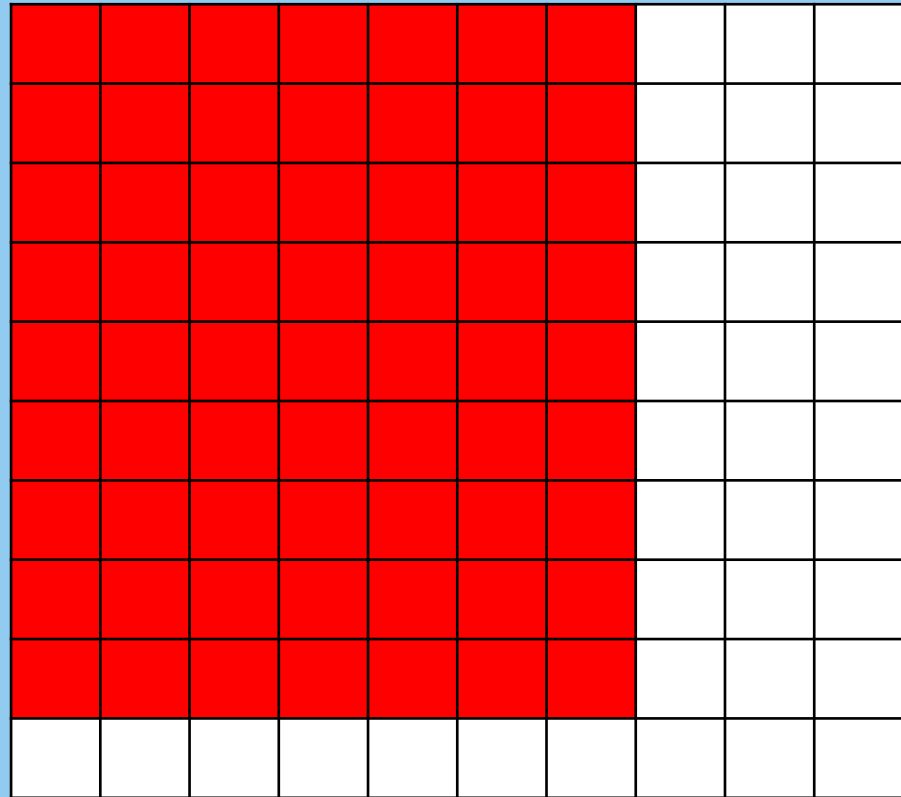


$$10 \times (8 - 5)$$



$$2 \times 4 = 8$$

$$10 \times (6 - 5)$$



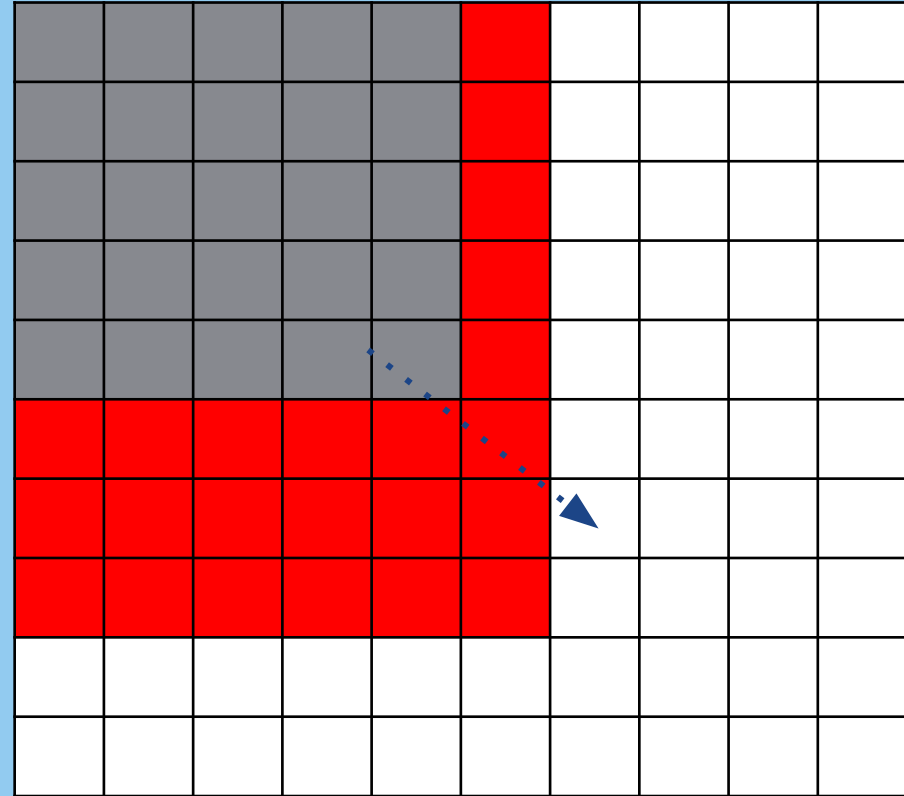
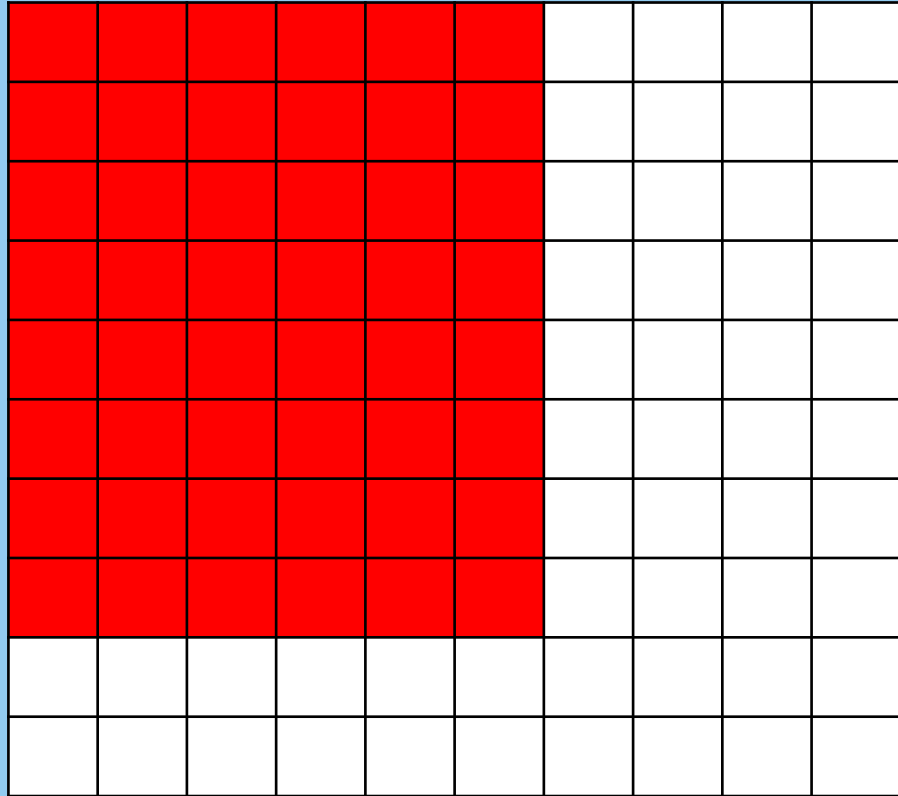
Prova tu.

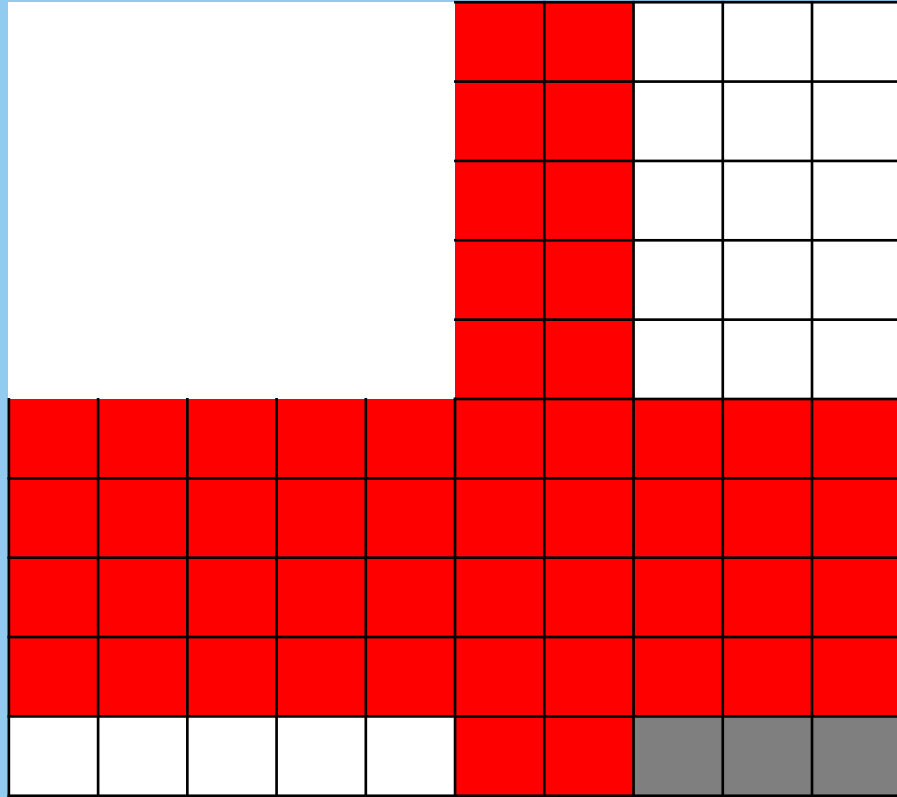
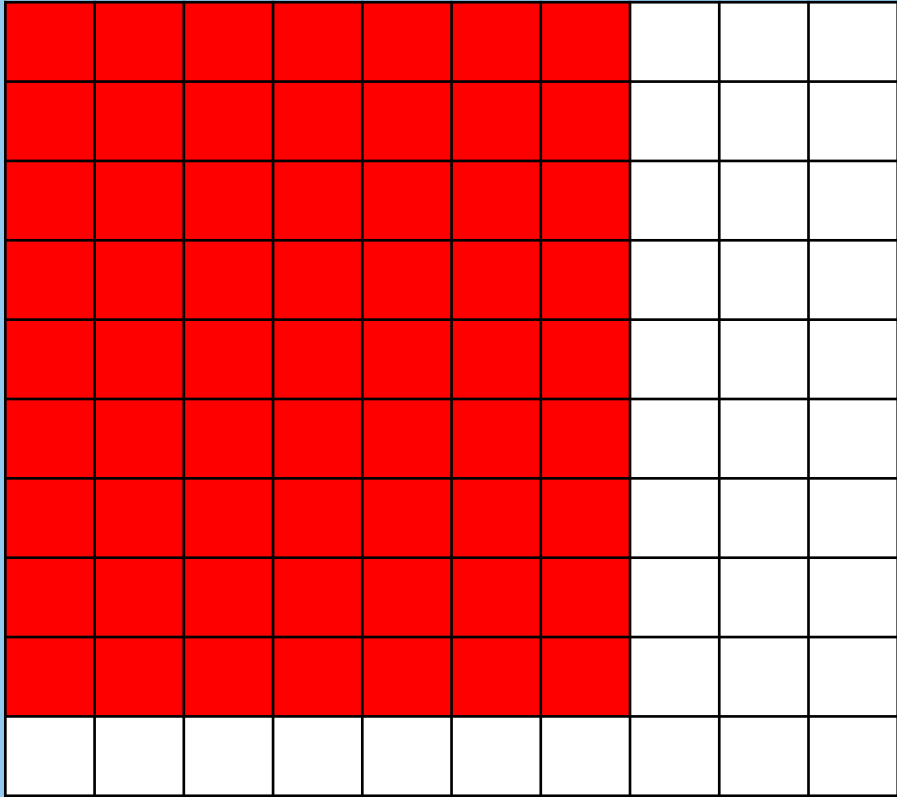
Che moltiplicazione è?

Disegna le mani

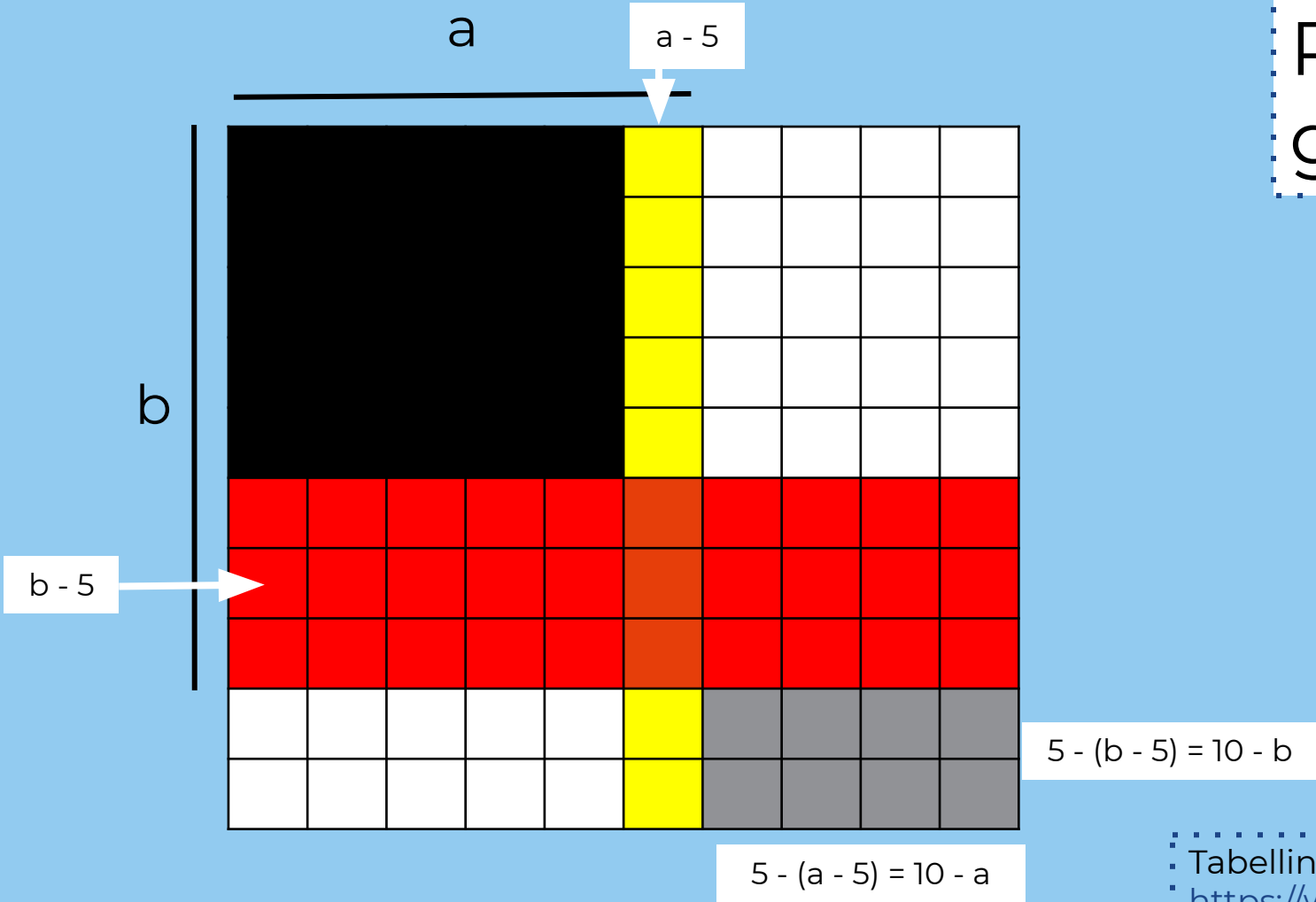
Risolvila con i rettangoli

Metti foto su padlet





Proviamo a generalizzare



$$10 \times [(a - 5) + (b - 5)]$$

dita distese

+

$$(10 - a) \times (10 - b)$$

dita piegate

Tabelline con i rettangoli
<https://www.youtube.com/watch?v=oClIHEcKKvc>

~~$$10a - 50 + 10b - 50 + 100 - 10b - 10a + ab = ab$$~~

Andiamo in Egitto

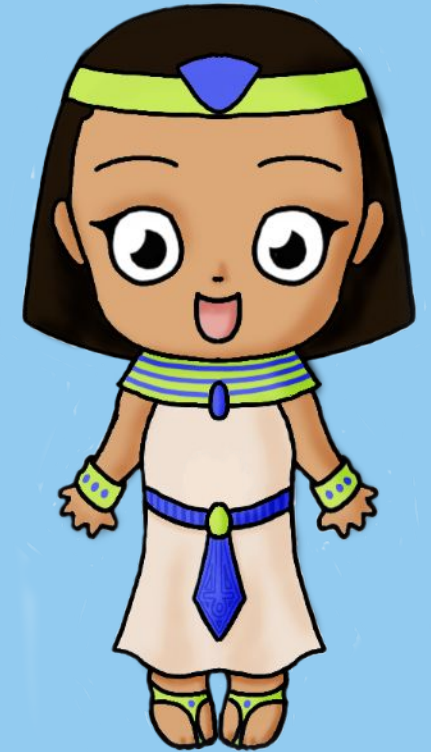
Iside figlia di Ramses VI pregò gli dei perché temeva che il Nilo inondasse la città. Il Dio Hapy simbolo di abbondanza le disse

farò rientrare il Nilo solo se risolverai le seguenti moltiplicazioni:

9×5 12×11 e 25×12

Iside è molto preoccupata ma il Dio Thot della sapienza l'aiuta...

TI INSEGNO A MOLTIPLICARE SOLO CON ADDIZIONI E RADDOPPI!



<https://youtu.be/nQYLywxtelY>



MATE *live*
SCIENZE

9 X 5

9	1
18	2
36	4
72	8



$$4 + 1 = 5$$

$$9 + 36 = 45$$

12 X 11

12	1
24	2
48	4
96	8
192	16

$$1 + 2 + 8 = 11$$

$$12 + 24 + 96 = 132$$

Aiutiamo Iside!
come si farà a
fare 25×12 ?

provate e
mettete foto
nel padlet

9 X 5

9	1	←
18	2	
36	4	←
72	8	

4 + 1 = 5

9 + 36 = 45

12 X 11

12	1	←
24	2	←
48	4	
96	8	←
192	16	

1 + 2 + 8 = 11

12 + 24 + 96 = 132

25 X 12

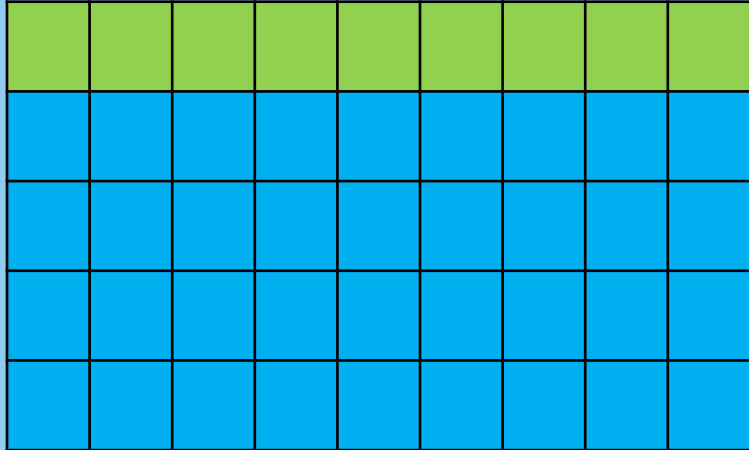
25	1	
50	2	
100	4	←
200	8	←
400	16	

4 + 8 = 12

100 + 200 = 300

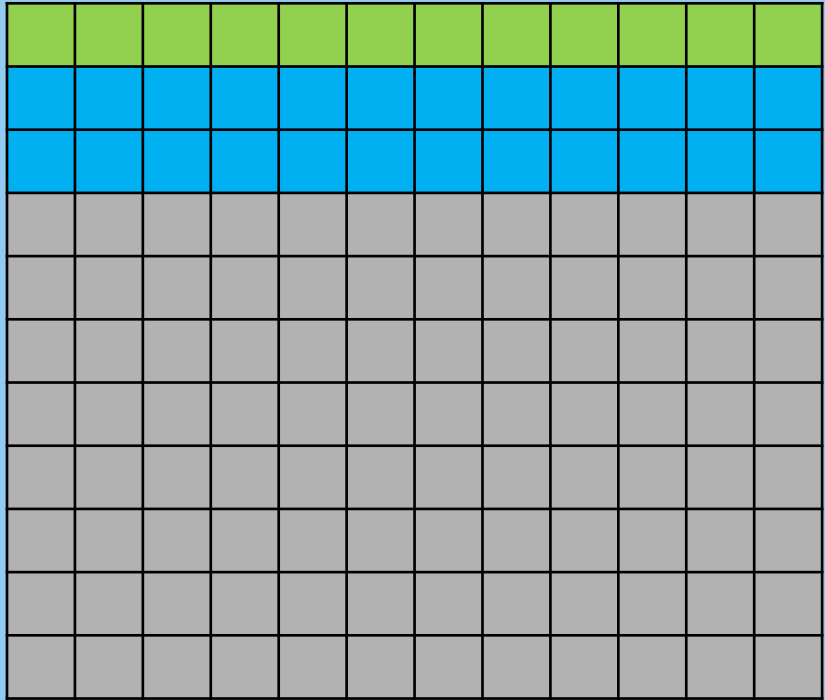
ma perché?

9	1
18	2
36	4
72	8



9 X 5

12 X 11



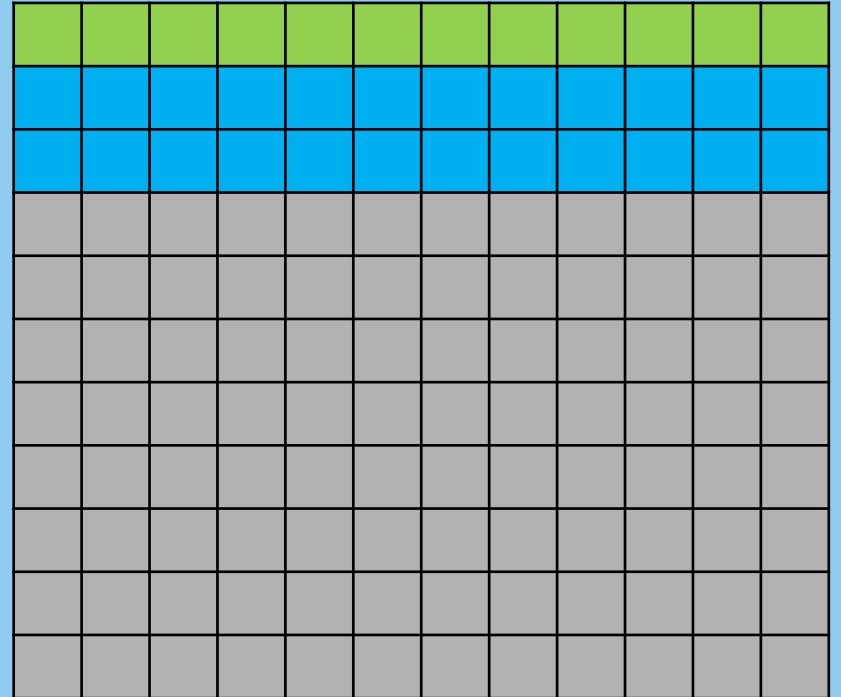
12	1
24	2
48	4
96	8
192	16

12	1
24	2
48	4
96	8
192	16

$$12 \times 11 =$$

$$12 \times (1 + 2 + 8)$$

$$12 \times 1 + 12 \times 2 + 12 \times 8$$



124 x 64

	1	2	4	1	
	2	4	8	2	
	4	9	6	4	
	9	9	2	8	
1	9	8	4	16	
3	9	6	8	32	
	7	9	3	6	64

124 x 13

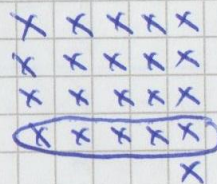
	1	2	4	1	
	2	4	8	2	
	4	9	6	4	
	9	9	2	8	
1	9	8	4	16	
3	9	6	8	32	
	7	9	3	6	64



**prova e
metti foto
nel padlet**

...e la divisione?

$$21 : 5$$



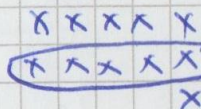
→ 1 volta

$$21 - 5 = 16$$



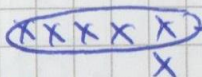
→ 1 volta

$$16 - 5 = 11$$



→ 1 volta

$$11 - 5 = 6$$



→ 1 volta

$$6 - 5 = 1$$

RESTO

4 QUOZIENTE

Ho 21 figurine e 5 amici.

Prendo 5 figurine e ne dò una a ciascuno

21 - 5 = 16 figurine rimanenti e **1** figurina a gruppo.

Continuo così

16 - 5 = 11 figurine rimanenti e **2** figurine a gruppo.

11 - 5 = 6 figurine rimanenti con **3** figurine a gruppo.

6 - 5 = 1 con **4** figurine a gruppo.

$$37 : 3$$

$$\begin{array}{r} 37 - \\ 3 \end{array} \quad 1$$

$$\begin{array}{r} 36 - \\ 3 \end{array} \quad 1$$

$$\begin{array}{r} 31 - \\ 3 \end{array} \quad 1$$

$$\begin{array}{r} 28 - \\ 3 \end{array} \quad 1$$

$$\begin{array}{r} 25 - \\ 3 \end{array} \quad 1$$

$$\begin{array}{r} 22 - \\ 3 \end{array} \quad 1$$

$$\begin{array}{r} 19 - \\ 3 \end{array} \quad 1$$

$$\begin{array}{r} 16 - \\ 3 \end{array} \quad 1$$

$$\begin{array}{r} 13 - \\ 3 \end{array} \quad 1$$

$$\begin{array}{r} 10 - \\ 3 \end{array} \quad 1$$

$$\begin{array}{r} 7 - \\ 3 \end{array} \quad 1$$

$$\begin{array}{r} 4 - \\ 3 \end{array} \quad 1$$

$$\begin{array}{r} 1 \end{array}$$

CERCHIAMO
UNA
SCORCIATOIA

$$\text{QUOZ } 12$$

$$\text{R370 } 1$$

$$37 = 3 \cdot 12 + 1$$

**DIVISIONE
CANADESE
O PER
SVUOTAMENTO**

$$37 : 3$$

$$\begin{array}{r} 37 - \\ \underline{3} \quad 1 \\ 34 - \end{array}$$

$$\begin{array}{r} 34 - \\ \underline{3} \quad 1 \\ 31 - \end{array}$$

$$\begin{array}{r} 31 - \\ \underline{3} \quad 1 \\ 28 - \end{array}$$

$$\begin{array}{r} 28 - \\ \underline{3} \quad 1 \\ 25 - \end{array}$$

$$\begin{array}{r} 25 - \\ \underline{3} \quad 1 \\ 22 - \end{array}$$

$$\begin{array}{r} 22 - \\ \underline{3} \quad 1 \\ 19 - \end{array}$$

$$\begin{array}{r} 19 - \\ \underline{3} \quad 1 \\ 16 - \end{array}$$

$$\begin{array}{r} 16 - \\ \underline{3} \quad 1 \\ 13 - \end{array}$$

$$\begin{array}{r} 13 - \\ \underline{3} \quad 1 \\ 10 - \end{array}$$

$$\begin{array}{r} 10 - \\ \underline{3} \quad 1 \\ 7 - \end{array}$$

$$\begin{array}{r} 7 - \\ \underline{3} \quad 1 \\ 4 - \end{array}$$

$$\begin{array}{r} 4 - \\ \underline{3} \quad 1 \\ 1 \end{array}$$

$$\begin{array}{r} 37 - \\ \underline{18} \quad 3 \times \underline{6} \\ 19 - \\ \underline{18} \quad 3 \times \underline{6} \\ 1 \end{array} \quad \begin{array}{l} \leftarrow 6 \\ \leftarrow 6 \\ (6+6) \\ 12 \end{array}$$

$$\begin{array}{r} 37 - \\ \underline{30} \quad 3 \times \underline{10} \\ 7 - \\ \underline{3} \quad 1 \\ 4 - \\ \underline{3} \quad 1 \\ 1 \end{array} \quad \begin{array}{l} \leftarrow 10 \\ \leftarrow 1 \\ \leftarrow 1 \\ (10+1+1) \\ 12 \end{array}$$

728 : 5
CON LA CANADESE

PROVATE E METTETE NEL PADLET

$$728 : 5 \quad 5 \times 100 = 500$$

$$728 - 500 = 228 \quad 5 \times 40 = 200$$

$$228 - 200 = 28 \quad 5 \times 5 = 25$$

$$28 - 25 = 3 \text{ RESTO}$$

ALGORITMI A
CONFRONTO

CANADESE Vs DANDA CORTA

$$\begin{array}{r|l} 728 & 5 \\ 22 & \\ 28 & \\ 3 & \end{array}$$

5 NEL 7 1 VOLTA

ABBASSO 2 ..NEL 22

ABBASSO 8 ..NEL 28

4 VOLTE

5 VOLTE

$$728 : 5 \quad 5 \times 100 = 500$$

$$728 - 500 = 228 \quad 5 \times 40 = 200$$

$$228 - 200 = 28 \quad 5 \times 5 = 25$$

$$28 - 25 = 3 \text{ RESTO}$$

728 | 5
22
28
3

5 NEL 7

ABBASSO 2 ..NEL 22

ABBASSO 8 ..NEL 28

1 VOLTA
4 VOLTE
5 VOLTE

DANDA CORTA vs DANDA LUNGA

728 | 5
5

22
20

28
25

3

5 NEL 7

ABBASSO 2 ..NEL 22

ABBASSO 8 ..NEL 28

1 VOLTA

4 VOLTE

5 VOLTE

UN ALTRO MODO

MATE *live*
SCIENZE

$$\underline{728 : 5}$$

$$(500 + 50 + 50 + 50 + 50 + 5 + 5 + 5 + 5 + 5 + 3) : 5$$

$$100 + 10 + 10 + 10 + 10 + 1 + 1 + 1 + 1 + 1 = 145 \quad \text{RESTO } 3$$

$$145 \times 5 + 3/5$$

PER SCAPEZZO?

$$\underline{728 : 5}$$

$$(500 + 50 + 50 + 50 + 50 + 5 + 5 + 5 + 5 + 5 + 3) : 5$$

$$100 + 10 + 10 + 10 + 10 + 1 + 1 + 1 + 1 + 1 = 145 \quad \text{RESTO } 3$$

$$145 \times 5 + 3/5$$

$$\underline{728 : 5}$$

$$(500 + 200 + 20 + 5 + 3) : 5$$

$$100 + 40 + 4 + 1 = 145 \quad \text{RESTO } 3$$

$$145 \times 5 + 3/5$$

4 115 : 12

(1200 + 1200 + 1200 + 120 + 120 + 120 + 120 + 12 + 12 + 11) : 12

100 + 100 + 100 + 10 + 10 + 10 + 10 + 1 + 1 RESTO 11

SPOSTARE IL FOCUS

Promuovere un apprendimento significativo più che un addestramento ripetitivo

Sviluppare consapevolezza e controllo delle procedure

Promuovere il calcolo mentale per usare e comprendere le proprietà delle operazioni

Avere presente sempre l'ordine di grandezza (sistema decimale posizionale)

Controllo dei risultati

www.moltiplicazione.it

MATE *live*
SCIENZE

MATE*live*
SCIENZE

Grazie per l'attenzione

Antonella Castellini
antocastellini@gmail.com

 **MONDADORI**
EDUCATION

Rizzoli
EDUCATION



FORMAZIONE SU MISURA



WWW.FORMAZIONESUMISURA.IT

MATE *live* SCIENZE



$$\frac{672 - 122}{16}$$

$$\int_a^b ax$$

$$\sqrt{542}$$

$$\Phi$$

$$-64x - 54y$$

$$16(x-2)^2 - 9(y-3)^2 - 144$$

