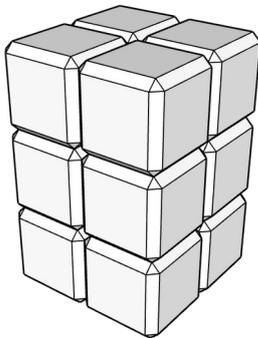


# Les nombres de 0 à 100



Planches illustrées pour l'école

- Pour apprendre les tables de multiplication.
- Représentation visuelle 3D des nombres.
- Des nombres carrés ou cubes ?
- Nombre triangulaires ?
- Les nombres des tables qu'on n'apprend pas
- Et des nombres qu'on ne trouve dans aucune table de multiplication : les nombres premiers.

Ecole Voltaire, Montreuil 2024

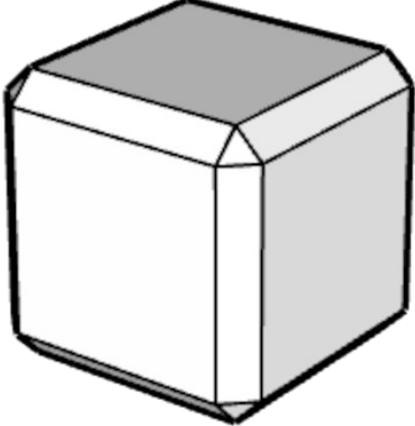
## Indispensables

<b>0</b>	<b>zéro</b>

**zéro** \ze.ʁo\

De l'italien zero, altération de zefiro, issu du latin médiéval zephirum, lui-même de l'arabe صفر, şifr (« vide »), lui-même calque du sanskrit शून्य, śūnya.

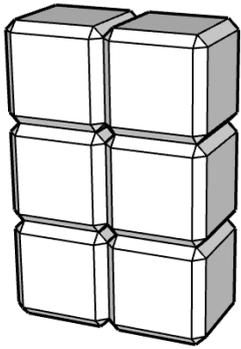
Le şifr arabe nous donne aussi le mot chiffre qui avait le sens « zéro » en ancien français et en moyen français avant de se spécialiser, à partir de la fin du XIVe siècle, dans celui de « signe du système numérique arabe », qu'il a toujours.

	
<b>1</b>	<b>un</b>

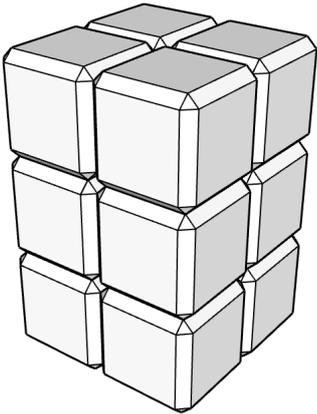
**un** \œ\ *cardinal*

(Antéposé) Marque l'unité, le fait qu'une personne ou une chose est seule, unique en son espèce.

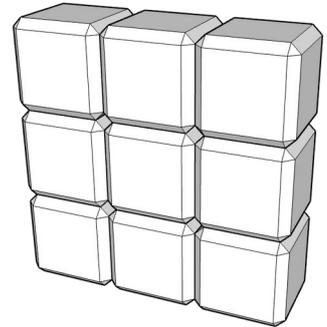
# Des multiples de 3



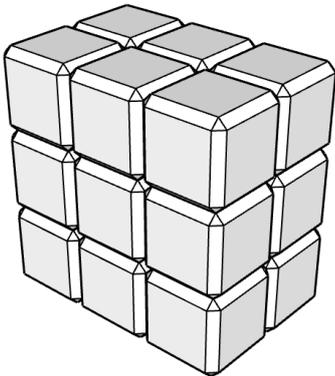
$$3 \times 2 = 6$$



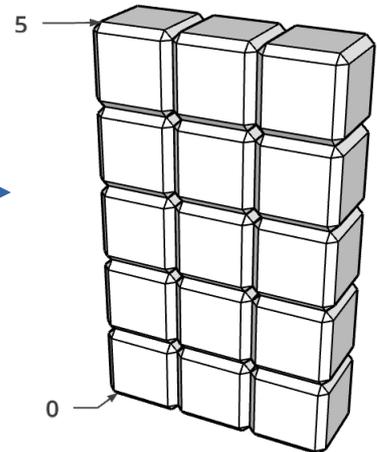
$$3 \times 3 = 9$$



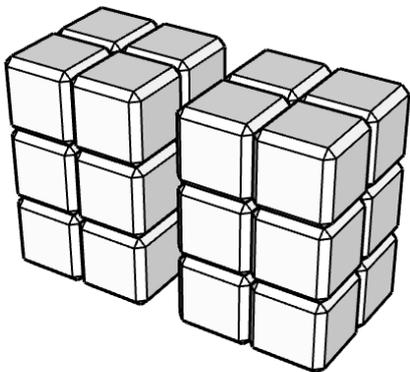
$$3 \times 4 = 12$$



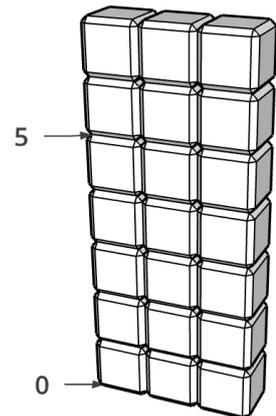
$$3 \times 5 = 15$$



$$3 \times 6 = 18$$



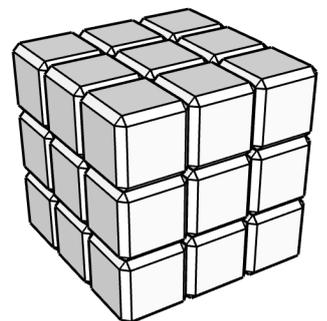
$$3 \times 7 = 21$$



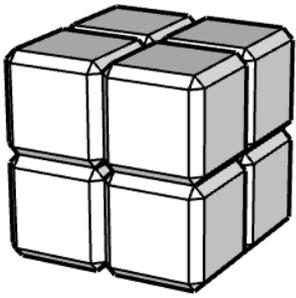
$$3 \times 8 = 24$$



$$3 \times 9 = 27$$

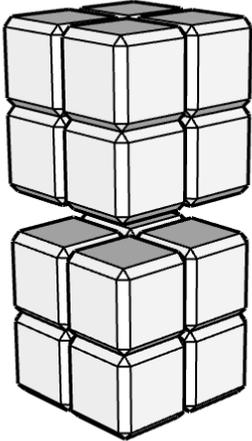
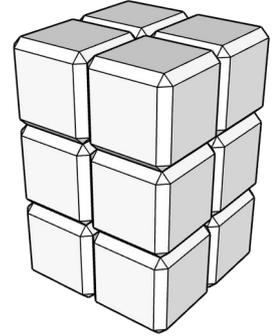


# Des multiples de 4



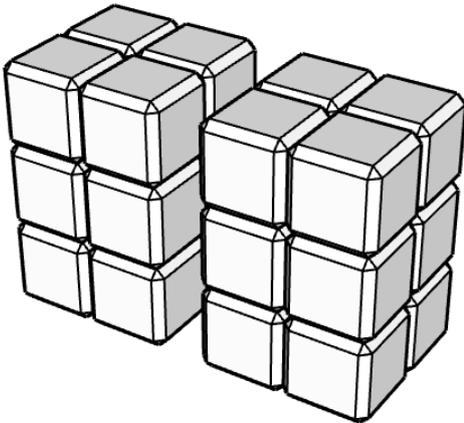
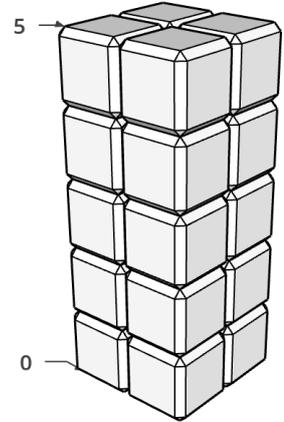
$$4 \times 2 = 8$$

$$4 \times 3 = 12$$



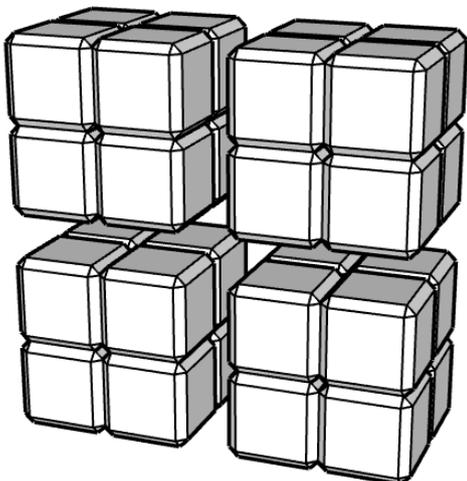
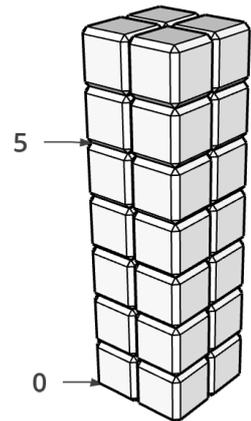
$$4 \times 4 = 16$$

$$4 \times 5 = 20$$



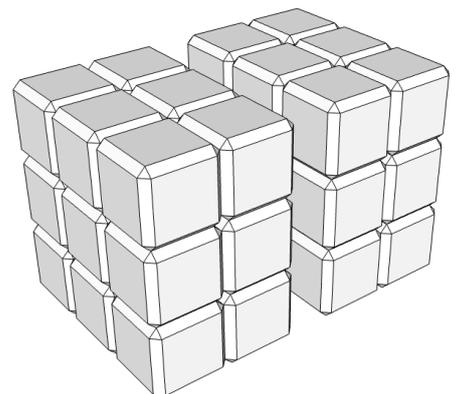
$$4 \times 6 = 24$$

$$4 \times 7 = 28$$



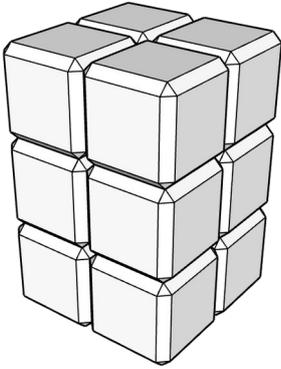
$$4 \times 8 = 32$$

$$4 \times 9 = 36$$

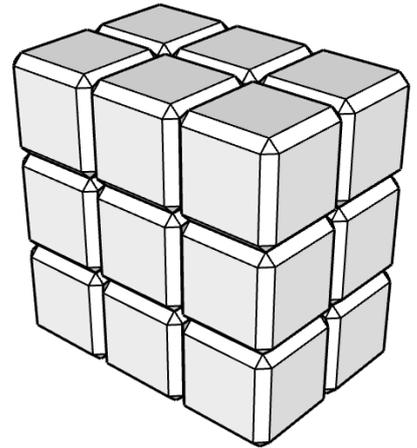


# Des multiples de 6

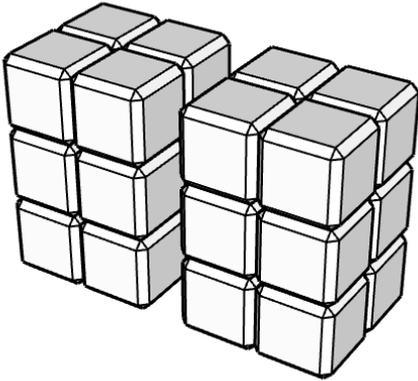
$$6 \times 2 = 12$$



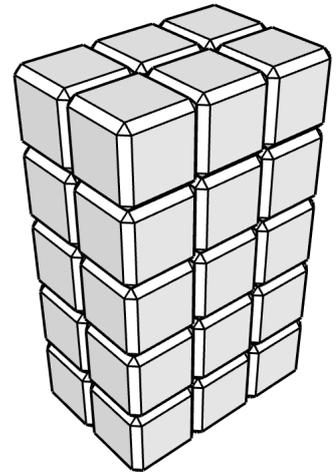
$$6 \times 3 = 18$$



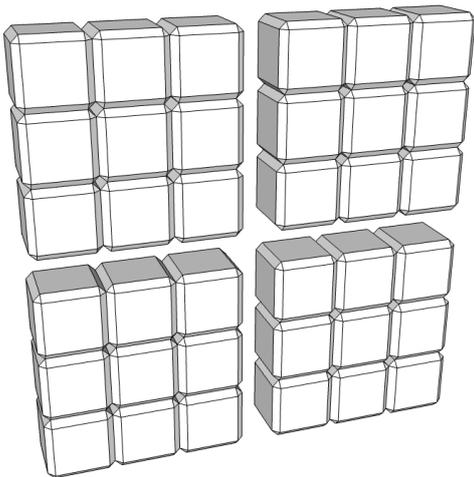
$$6 \times 4 = 24$$



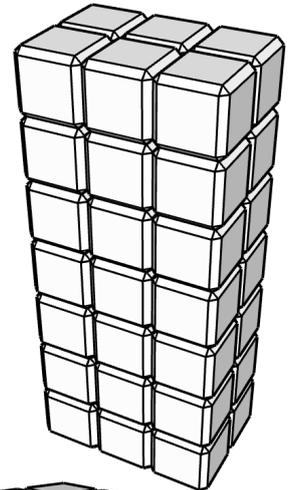
$$6 \times 5 = 30$$



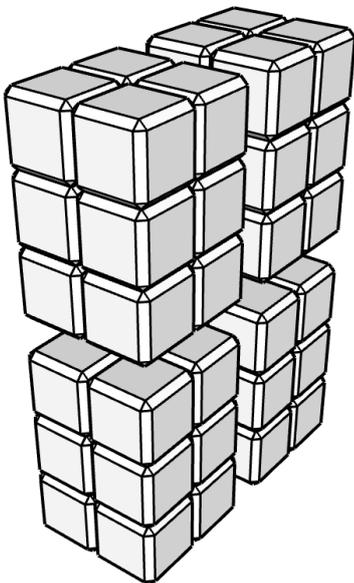
$$6 \times 6 = 36$$



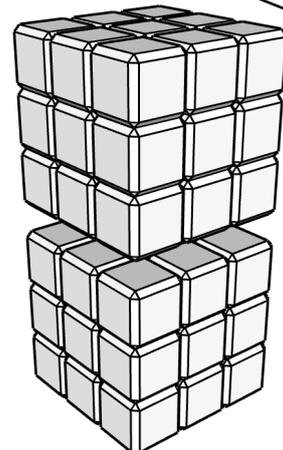
$$6 \times 7 = 42$$



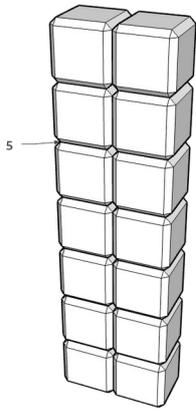
$$6 \times 8 = 48$$



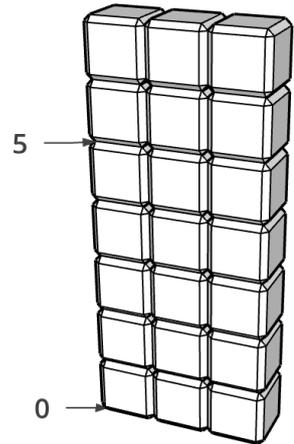
$$6 \times 9 = 54$$



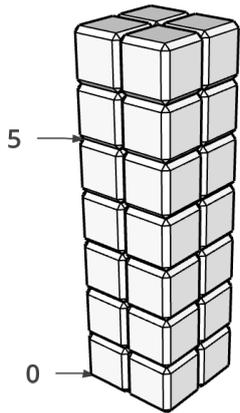
# Des multiples de 7



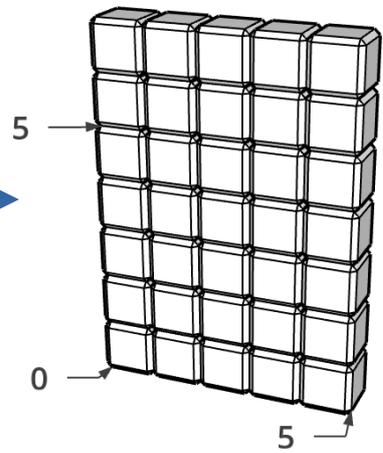
$$7 \times 2 = 14$$



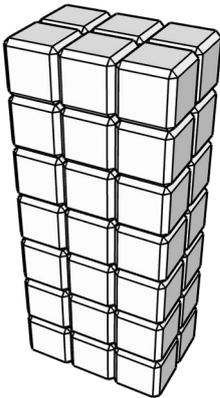
$$7 \times 3 = 21$$



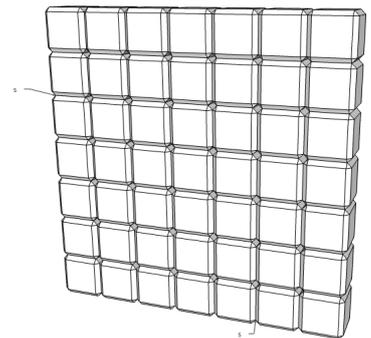
$$7 \times 4 = 28$$



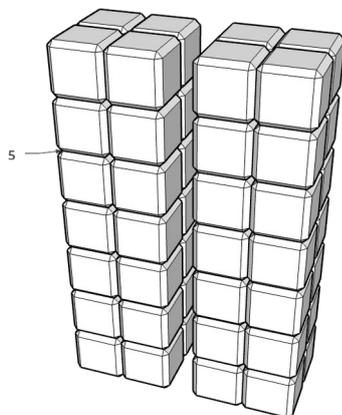
$$7 \times 5 = 35$$



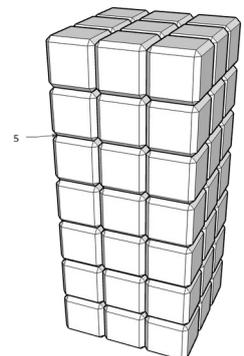
$$7 \times 6 = 42$$



$$7 \times 7 = 49$$

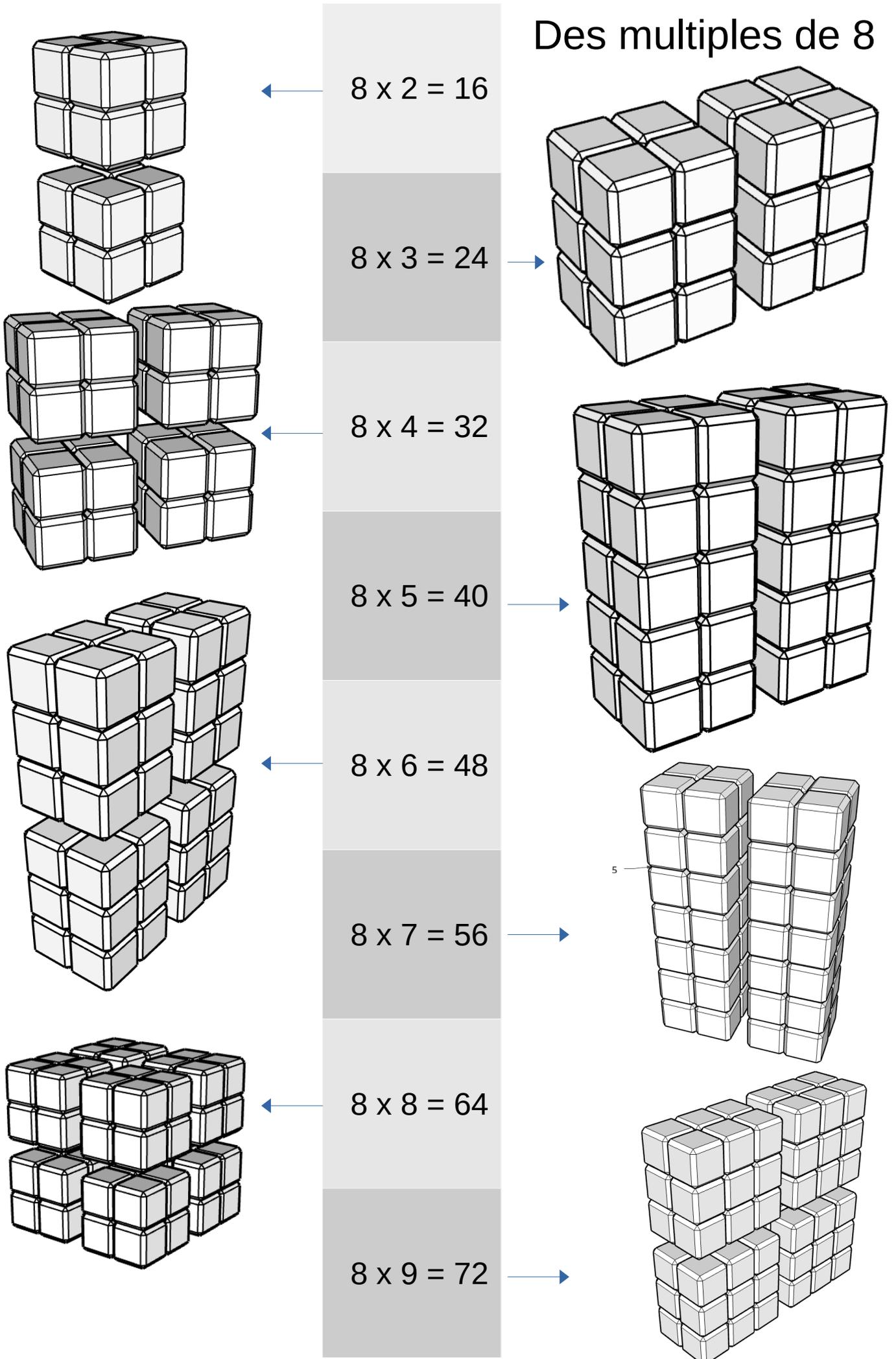


$$7 \times 8 = 56$$

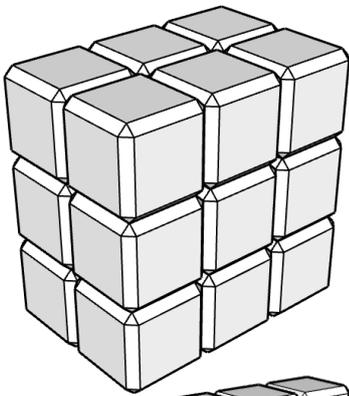


$$7 \times 9 = 63$$

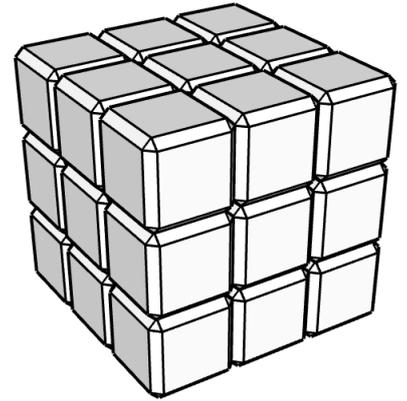
# Des multiples de 8



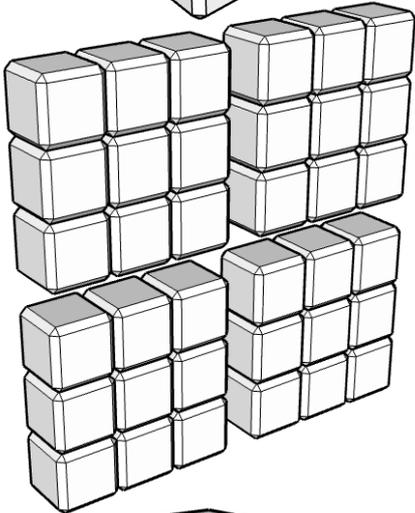
# Des multiples de 9



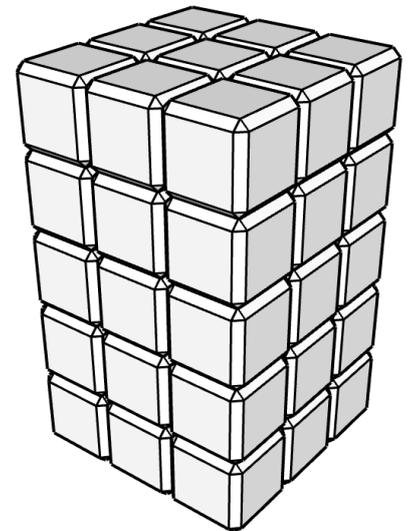
$$9 \times 2 = 18$$



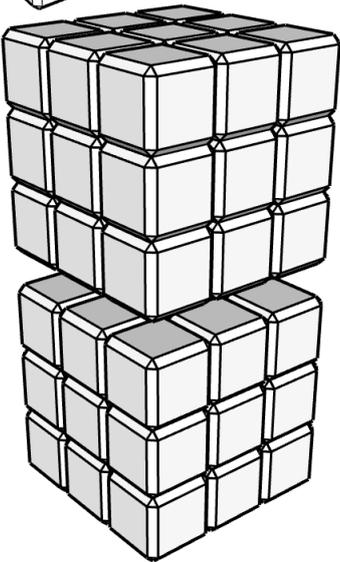
$$9 \times 3 = 27$$



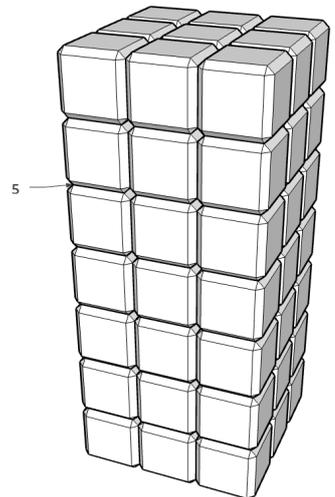
$$9 \times 4 = 36$$



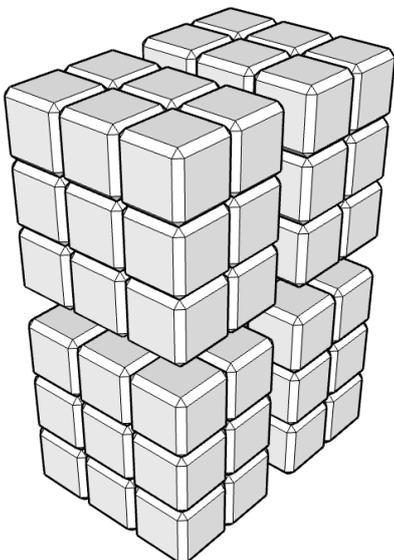
$$9 \times 5 = 45$$



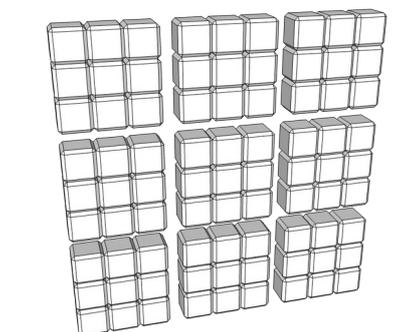
$$9 \times 6 = 54$$



$$9 \times 7 = 63$$



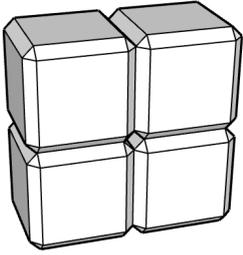
$$9 \times 8 = 72$$



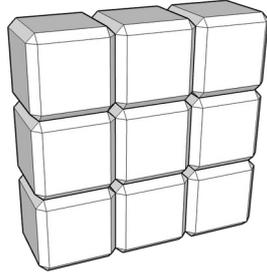
$$9 \times 9 = 81$$

# Des (nombres) carrés

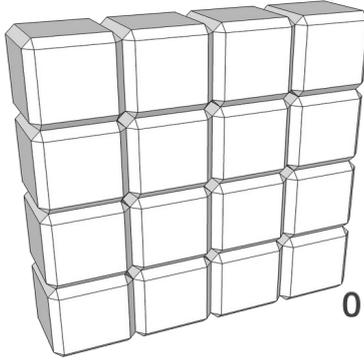
$2 \times 2 = 4$



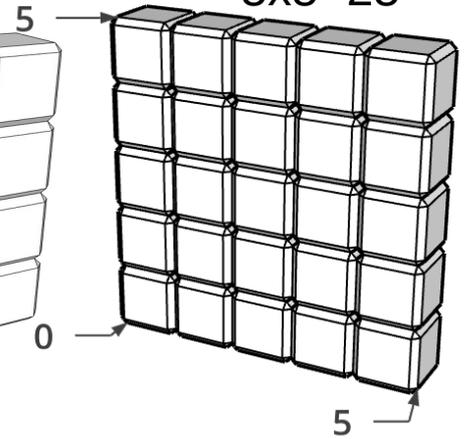
$3 \times 3 = 9$



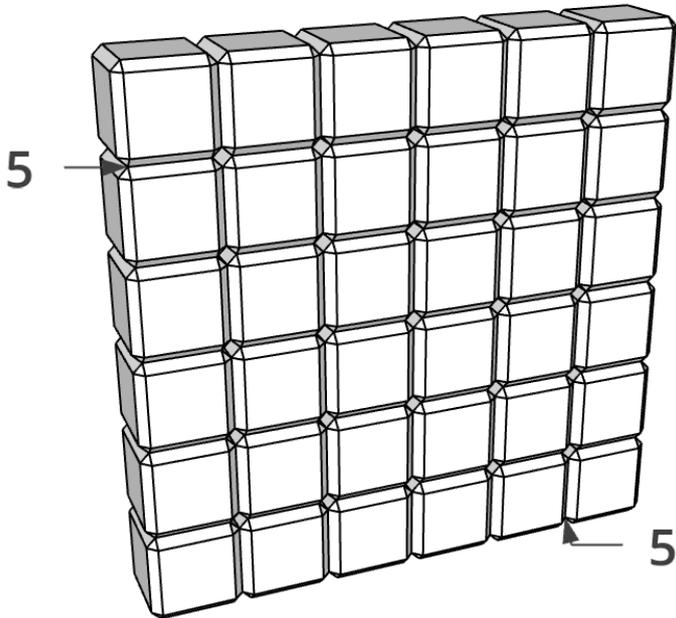
$4 \times 4 = 16$



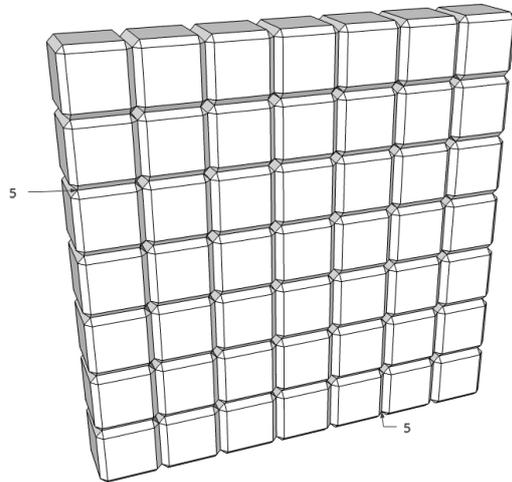
$5 \times 5 = 25$



$6 \times 6 = 36$

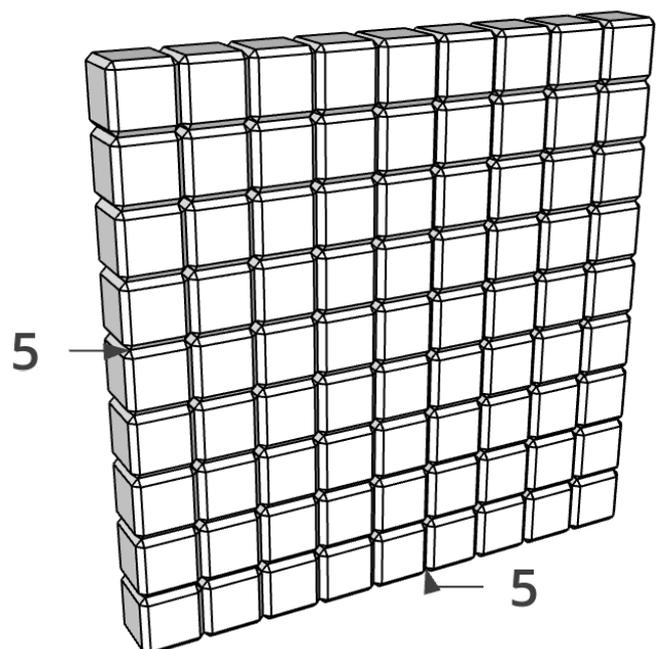
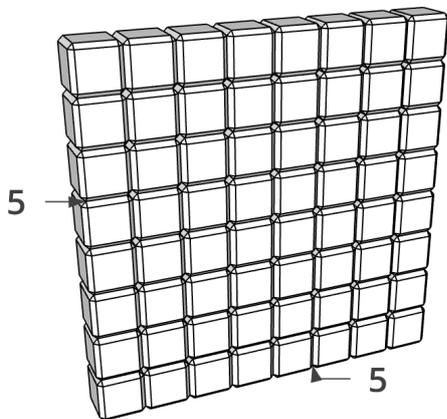


$7 \times 7 = 49$



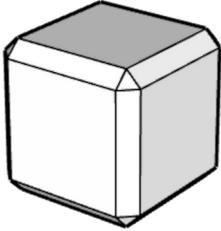
$9 \times 9 = 81$

$8 \times 8 = 64$

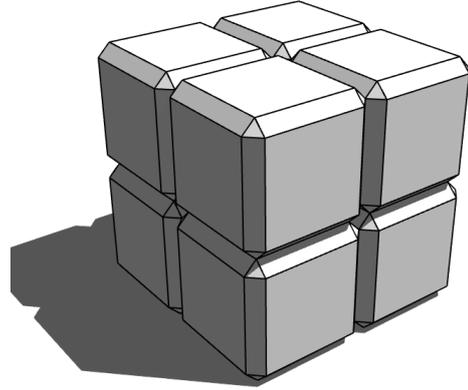


# Des (nombres) cubes

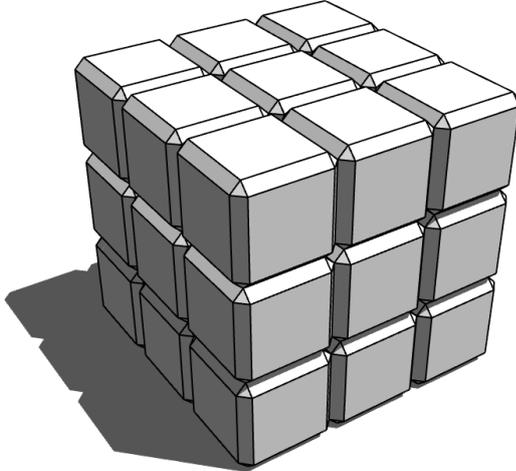
$$1 \times 1 \times 1 = 1$$



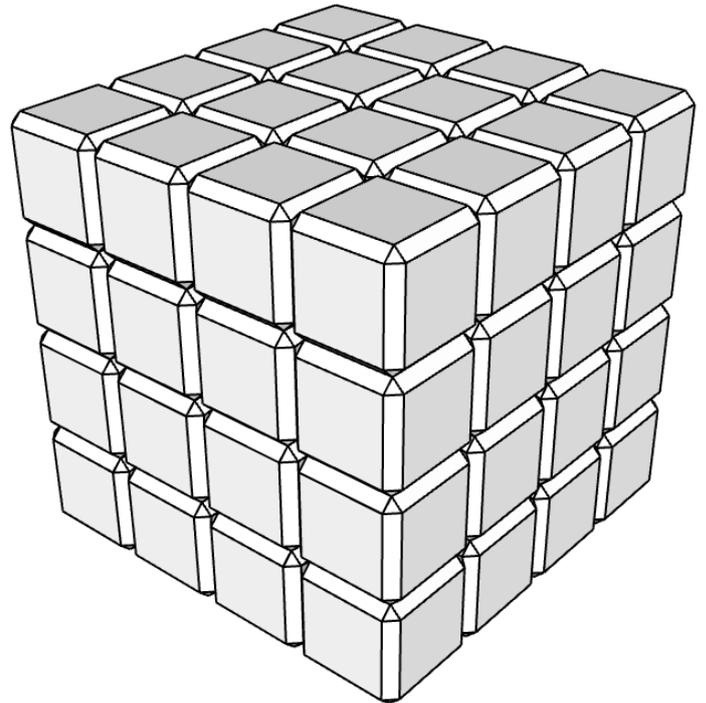
$$2 \times 2 \times 2 = 8$$



$$3 \times 3 \times 3 = 27$$



$$4 \times 4 \times 4 = 64$$



$$5 \times 5 \times 5 = 125$$

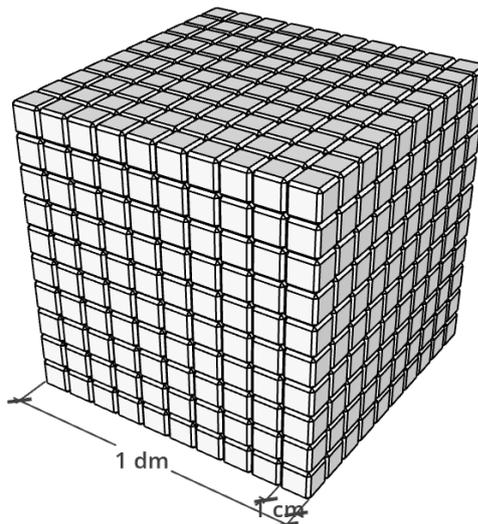
$$6 \times 6 \times 6 = 216$$

$$7 \times 7 \times 7 = 343$$

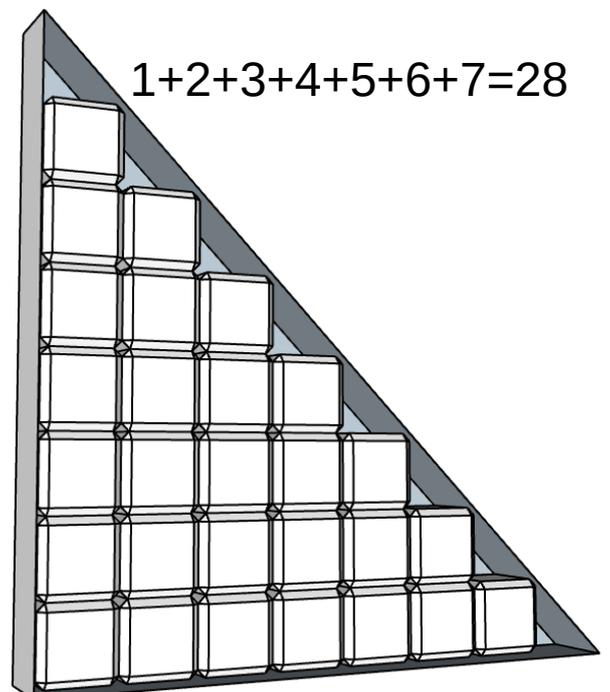
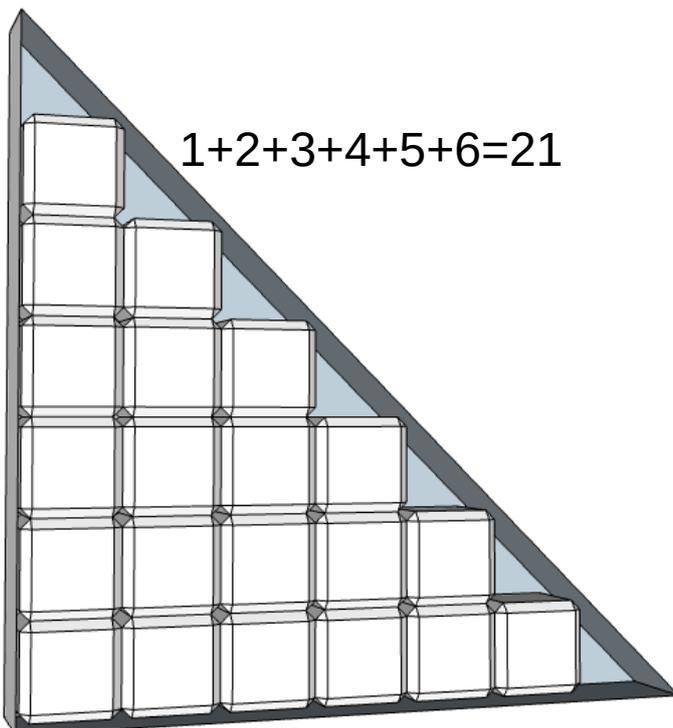
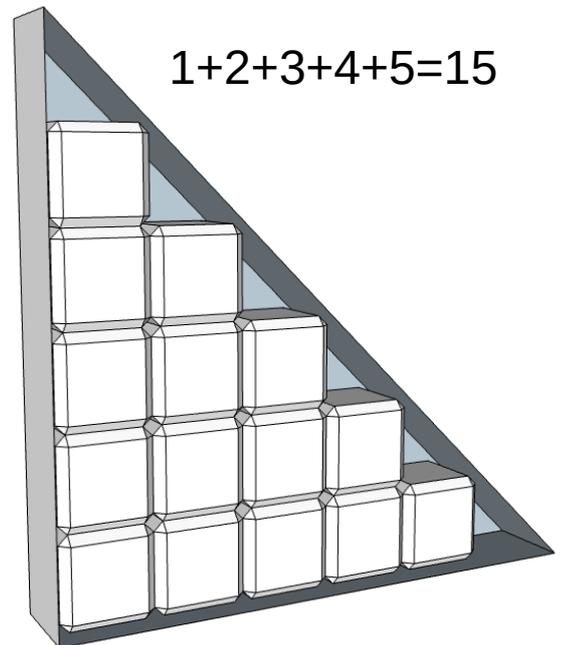
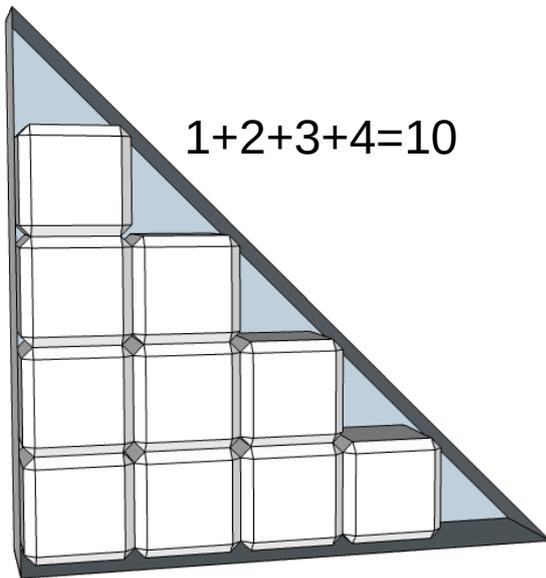
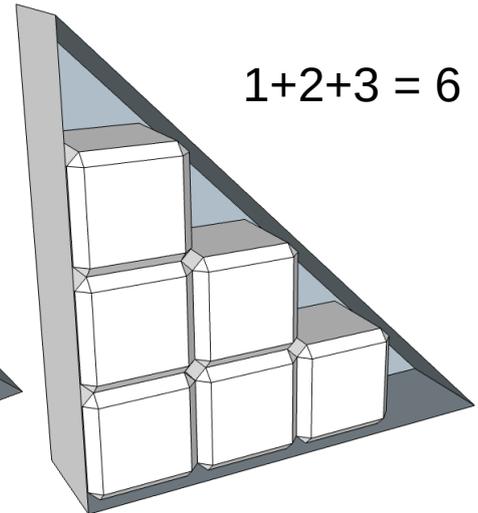
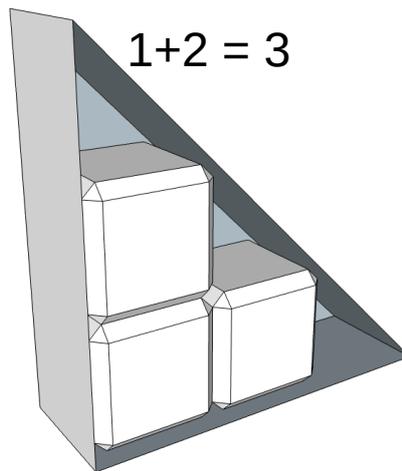
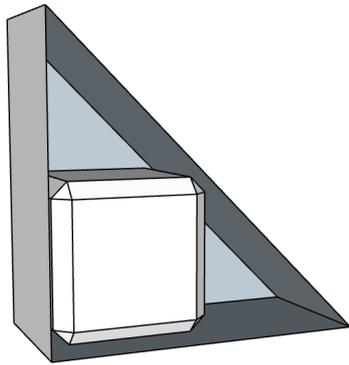
$$8 \times 8 \times 8 = 512$$

$$9 \times 9 \times 9 = 729$$

$$10 \times 10 \times 10 = 1000$$



# Des nombres triangulaires !



# Nombres premiers

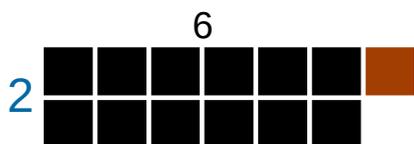
0	1	2	3	2x2 =4	5	2x3 =6	7	2x4 =8	3x3 =9
2x5 =10	11	3x4 =12	13	2x7 =14	5x3 =15	2x8 =16	17	2x9 =18	19
2x10 =20	3x7 =21	2x11 =22	23	2x12 =24	5x5 =25	2x13 =26	3x9 =27	4x8 =32	29
3x10 =30	31	2x16 =32	3x11 =33	2x17 =34	5x7 =35	6x6 =36	37	2x19 =38	3x13 =39
4x10 =40	41	2x21 =42	43	4x11 =44	5x9 =45	2x23 =46	47	6x8 =48	7x7 =49
5x10 =50	3x17 =51	2x26 =52	53	2x27 =54	5x11 =55	7x8 =56	57	2x29 =58	59
6x10 =60	61	2x31 =62	9x7 =63	8x8 =64	5x13 =65	6x11 =66	67	4x17 =68	3x23 =69
7x10 =70	71	8x9 =72	73	2x37 =74	3x25 =75	4x19 =76	7x11 =77	6x13 =78	79
8x10 =80	9x9 =81	2x41 =82	83	7x12 =84	5x17 =85	2x43 =86	87	8x11 =88	89
9x10 =90	7x13 =91	4x23 =92	3x31 =93	2x47 =94	5x19 =95	3x32 =96	97	2x49 =98	9x11 =99
10x10 =100									

Premier
  Composé

On montre un seul exemple de produit par case jaune.  
Il peut en avoir plusieurs autres.

# Nombres premiers

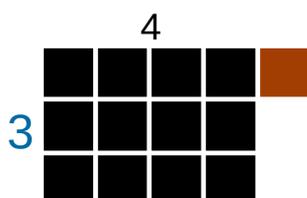
Exemple : 13 est-il premier ? On essaye de le partager en 2, 3, 4, 5, 6, 7...



$$13 = 2 \times 6 + 1$$

$$= 12 + 1$$

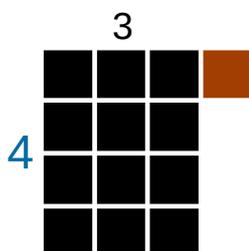
$$\begin{array}{r|l} 1 & 3 \\ \hline 1 & 2 \\ \hline & 1 \end{array} \begin{array}{l} 2 \\ 6 \end{array}$$



$$13 = 3 \times 4 + 1$$

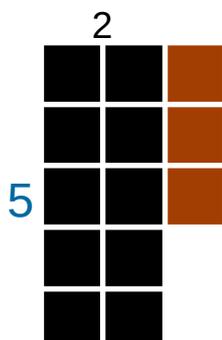
$$= 12 + 1$$

$$\begin{array}{r|l} 1 & 3 \\ \hline 1 & 2 \\ \hline & 1 \end{array} \begin{array}{l} 3 \\ 4 \end{array}$$



$$13 = 4 \times 3 + 1$$

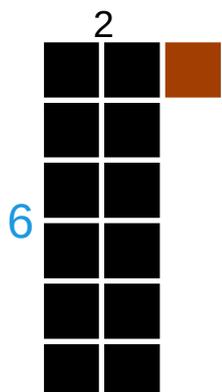
$$\begin{array}{r|l} 1 & 3 \\ \hline 1 & 2 \\ \hline & 1 \end{array} \begin{array}{l} 4 \\ 3 \end{array}$$



$$13 = 5 \times 2 + 3$$

$$= 10 + 3$$

$$\begin{array}{r|l} 1 & 3 \\ \hline 1 & 0 \\ \hline & 3 \end{array} \begin{array}{l} 5 \\ 2 \end{array}$$



$$13 = 6 \times 2 + 1$$

$$= 12 + 1$$

$$\begin{array}{r|l} 1 & 3 \\ \hline 1 & 2 \\ \hline & 1 \end{array} \begin{array}{l} 6 \\ 2 \end{array}$$

7  $7 \times 2 = 14$  est plus grand que 13. On s'arrête là.

Il y a toujours un **reste** quand on **partage** 13. Il est premier.

Définition exacte : Entier naturel possédant exactement deux diviseurs entiers positifs distincts, l'unité et lui-même. (niveau collège)

# Nombres premiers



2



3



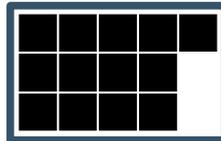
5



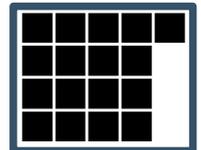
7



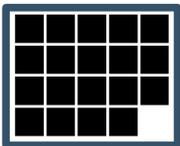
11



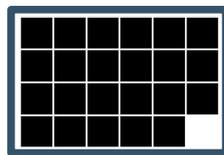
13



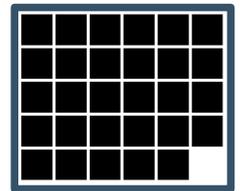
17



19



23



29

Des objets carrés dans une boîte rectangle laissent toujours des trous si leur nombre est premier, sauf 2. Essayez !

Conception, illustrations : Clément Marshall, parent d'élève

Outils :

LibreOffice : Tableur et dessin vectoriel, libre et gratuit.

[Sketchup](#) : dessin 3D simple version gratuite

<https://help.sketchup.com/fr/sketchup-web/sketchup-web>

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Documentation et téléchargement :

<https://github.com/7clem/VisualTimesTables>

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