

MATHEMATIQUES NON VERBALES

CYCLE 2

PRESENTATION

Des enseignants ayant reçu en cours d'année des élèves non francophones nous ont contactés pour créer des activités adaptées. En voici quelques-unes qui utilisent le matériel des valises Le matériel utilisé est décrit dans la consigne. Il est dans les valises jeux cycle 2.

ACTIVITES NUMERIQUES

- 1-1 Quatre additions
- 1-2 Nombres dans un carré
- 1-3 Le double
- 1-4 Tounicomptine
- 1-5 Des additions
- 1-6 Des soustractions
- 1-7 Des multiplications
- 1-8 Trois opérations

ACTIVITES DANS LE PLAN

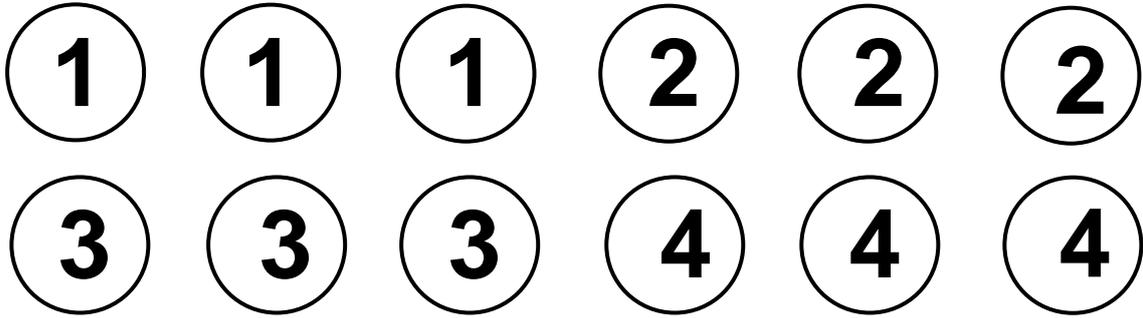
- 2-1 Avec deux pièces
- 2-2 Trois pièces roses et un rectangle
- 2-3 Quatre pièces rouges et un rectangle
- 2-4 Quatre pièces bleues et un rectangle
- 2-5 Cinq pièces vertes et un carré
- 2-6 Avec quatre pièces
- 2-7 Carré et rectangle

- 2-8 Des disques dans un carré
- 2-9 Trois couleurs et trois hauteurs
- 2-10 Les quatre couleurs
- 2-11 Figures colorées

ACTIVITES DANS L'ESPACE

- 3-1 La pyramide inca
- 3-2 Le pavé rouge. Le pavé vert
- 3-3 Le tas d'oranges
- 3-4 Tirer à boulets rouges
- 3-5 Le pavé de toutes les couleurs
- 3-6 La pyramide verte
- 3-7 Le cube en kit

QUATRE ADDITIONS



$$\bigcirc + \bigcirc = \bigcirc$$

NOMBRES DANS UN CARRE

1
3
4
5
8

6	+		+	7	=	14
+		+		+		
	+		+		=	16
+		+		+		
9	+		+	2	=	15
=		=		=		
18		10		17		

2
3
6
7
9

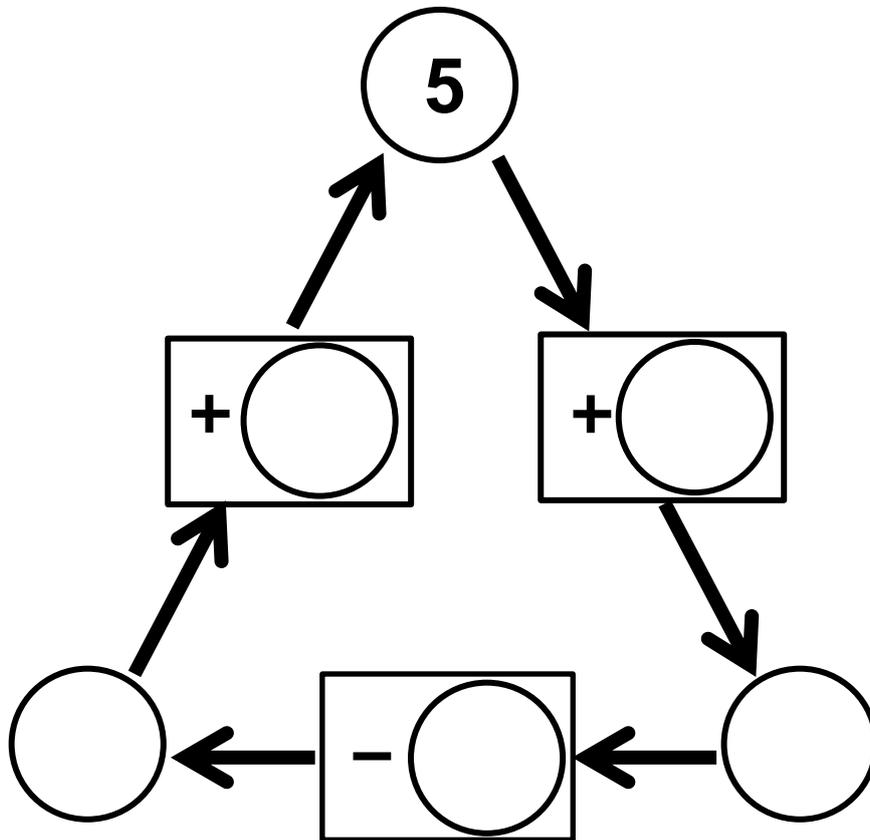
8	+		+	1	=	16
+		+		+		
	+		+		=	11
+		+		+		
4	+		+	5	=	18
=		=		=		
18		18		9		

LE DOUBLE

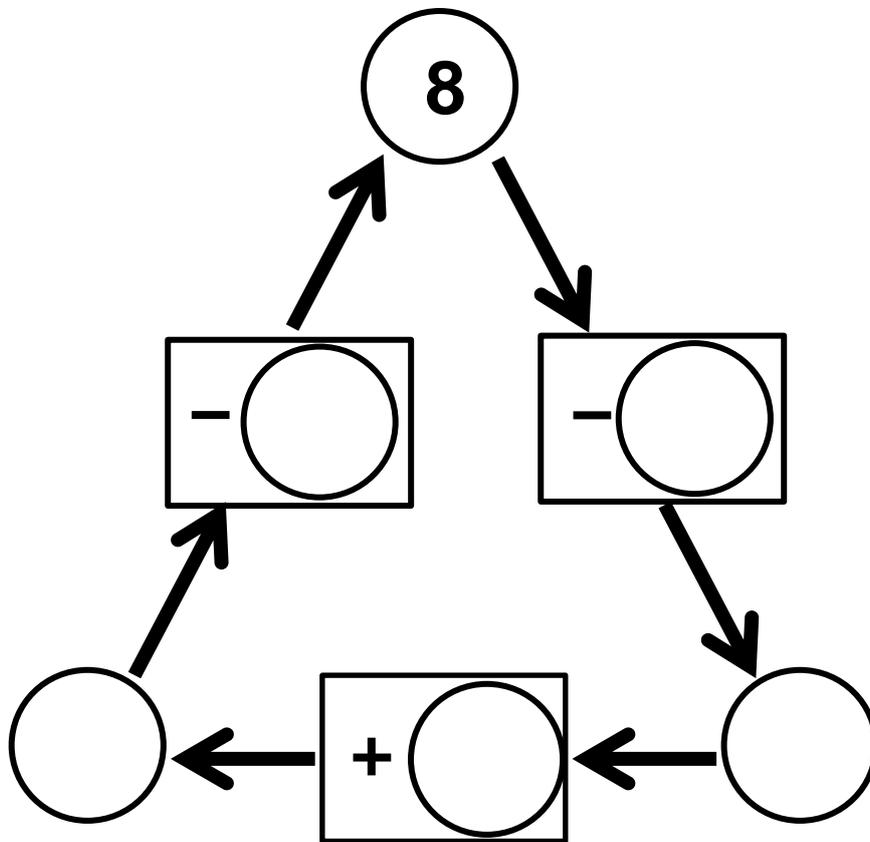


$$\begin{array}{r} \bigcirc \quad \bigcirc \quad 7 \\ \times \quad \quad 2 \\ \hline \bigcirc \quad \bigcirc \quad \bigcirc \end{array}$$

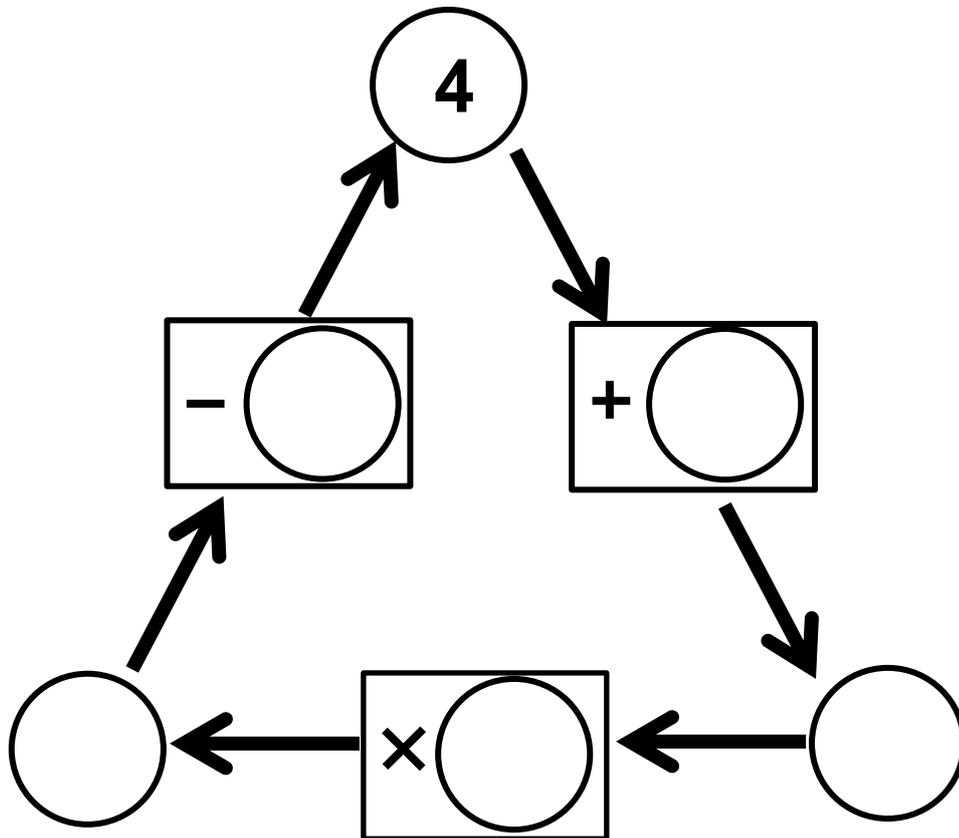
TOURNICOMPTINE



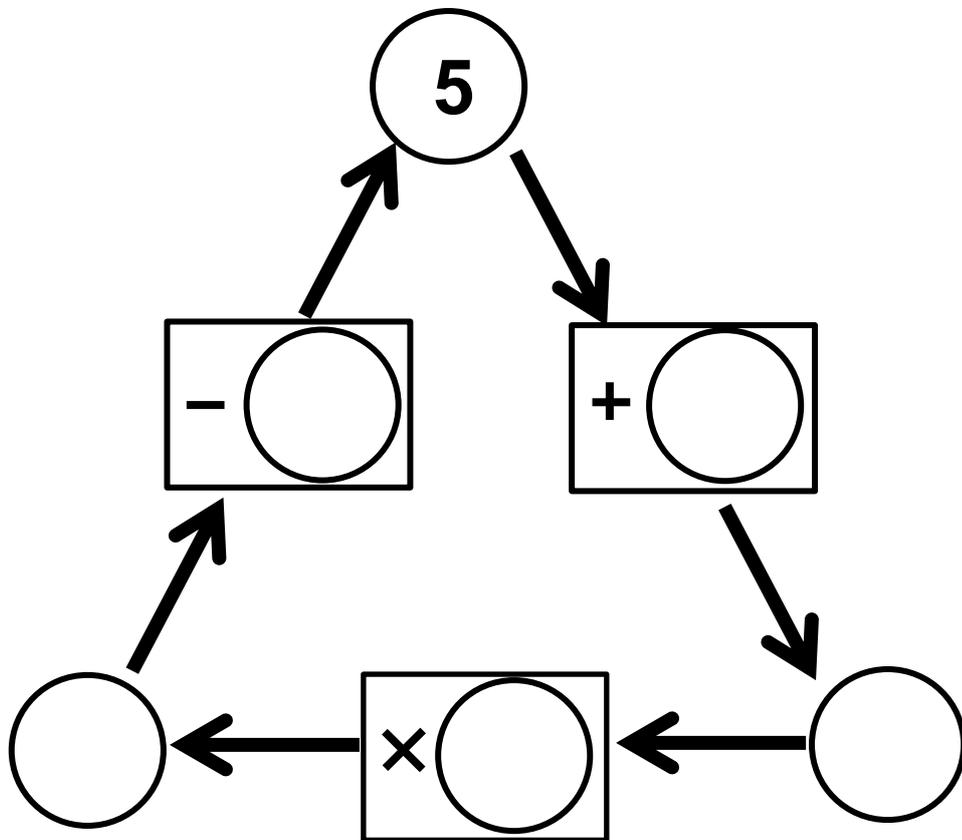
TOURNICOMPTINE



TOURNICOMPTINE



TOURNICOMPTINE



DES ADDITIONS

$$\begin{array}{cc} \textcircled{1} & \textcircled{2} \\ \textcircled{4} & \textcircled{9} \end{array}$$

$$\begin{array}{cc} \textcircled{} & + & \textcircled{} & = & 11 \\ + & & + & & \\ \textcircled{} & + & \textcircled{} & = & 5 \\ = & & = & & \\ \mathbf{6} & & \mathbf{10} & & \end{array}$$

$$\begin{array}{cc} \textcircled{2} & \textcircled{11} \\ \textcircled{13} & \textcircled{16} \end{array}$$

$$\begin{array}{cc} \textcircled{} & + & \textcircled{} & = & 15 \\ + & & + & & \\ \textcircled{} & + & \textcircled{} & = & 27 \\ = & & = & & \\ \mathbf{18} & & \mathbf{24} & & \end{array}$$

$$\begin{array}{cc} \textcircled{3} & \textcircled{8} \\ \textcircled{15} & \textcircled{18} \end{array}$$

$$\begin{array}{cc} \textcircled{} & + & \textcircled{} & = & 11 \\ + & & + & & \\ \textcircled{} & + & \textcircled{} & = & 33 \\ = & & = & & \\ \mathbf{23} & & \mathbf{21} & & \end{array}$$

DES SOUSTRATIONS

$$\begin{array}{cc} \textcircled{2} & \textcircled{4} \\ \textcircled{7} & \textcircled{10} \end{array}$$

$$\begin{array}{c} \textcircled{\quad} \\ \hline \end{array} - \begin{array}{c} \textcircled{\quad} \\ \hline \end{array} = 6$$
$$\begin{array}{c} \textcircled{\quad} \\ \hline \\ \hline \\ \text{3} \end{array} - \begin{array}{c} \textcircled{\quad} \\ \hline \\ \hline \\ \text{2} \end{array} = 5$$

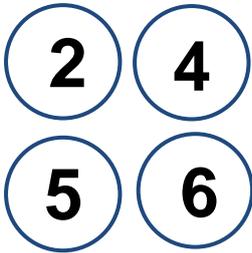
$$\begin{array}{cc} \textcircled{3} & \textcircled{6} \\ \textcircled{9} & \textcircled{16} \end{array}$$

$$\begin{array}{c} \textcircled{\quad} \\ \hline \end{array} - \begin{array}{c} \textcircled{\quad} \\ \hline \end{array} = 10$$
$$\begin{array}{c} \textcircled{\quad} \\ \hline \\ \hline \\ \text{7} \end{array} - \begin{array}{c} \textcircled{\quad} \\ \hline \\ \hline \\ \text{3} \end{array} = 6$$

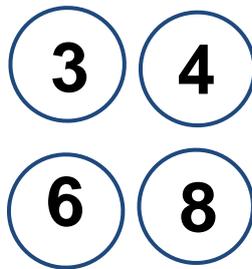
$$\begin{array}{cc} \textcircled{6} & \textcircled{8} \\ \textcircled{19} & \textcircled{22} \end{array}$$

$$\begin{array}{c} \textcircled{\quad} \\ \hline \end{array} - \begin{array}{c} \textcircled{\quad} \\ \hline \end{array} = 14$$
$$\begin{array}{c} \textcircled{\quad} \\ \hline \\ \hline \\ \text{3} \end{array} - \begin{array}{c} \textcircled{\quad} \\ \hline \\ \hline \\ \text{2} \end{array} = 13$$

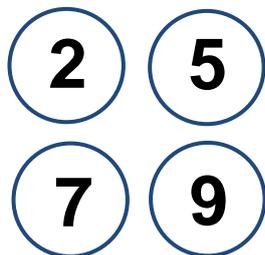
DES MULTIPLICATIONS



$$\begin{array}{ccc} \bigcirc & \times & \bigcirc = 12 \\ \times & & \times \\ \bigcirc & \times & \bigcirc = 20 \\ = & & = \\ 24 & & 10 \end{array}$$

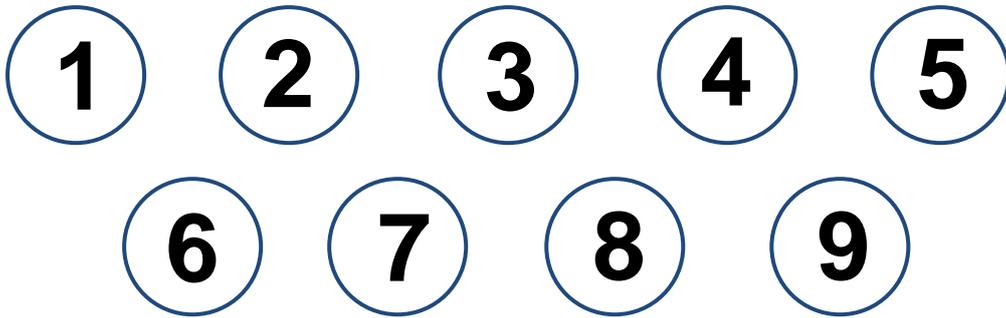


$$\begin{array}{ccc} \bigcirc & \times & \bigcirc = 24 \\ \times & & \times \\ \bigcirc & \times & \bigcirc = 24 \\ = & & = \\ 32 & & 18 \end{array}$$



$$\begin{array}{ccc} \bigcirc & \times & \bigcirc = 14 \\ \times & & \times \\ \bigcirc & \times & \bigcirc = 45 \\ = & & = \\ 35 & & 18 \end{array}$$

TROIS OPERATIONS

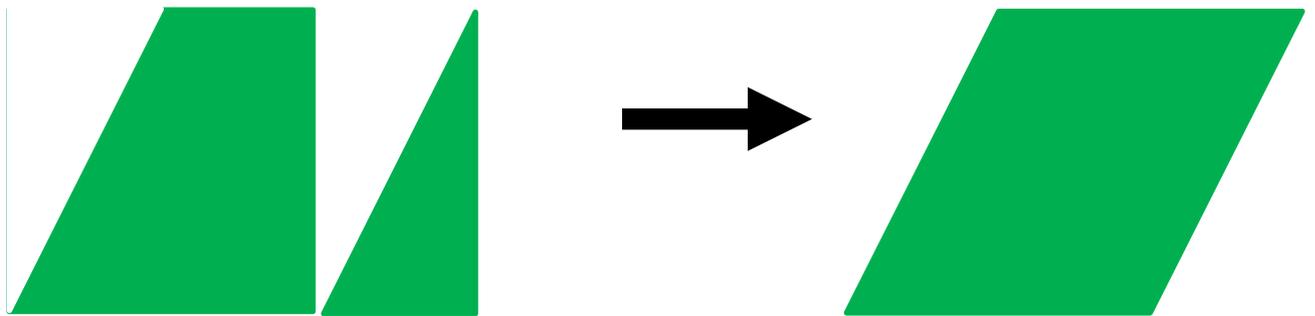
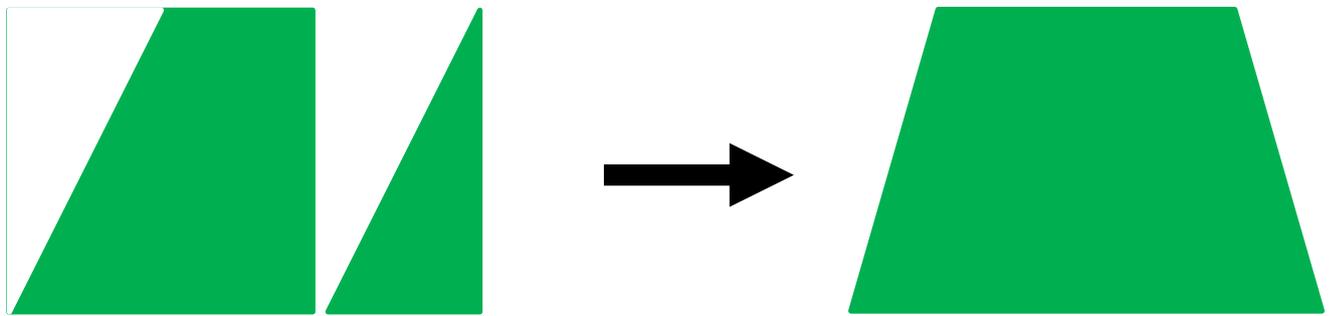
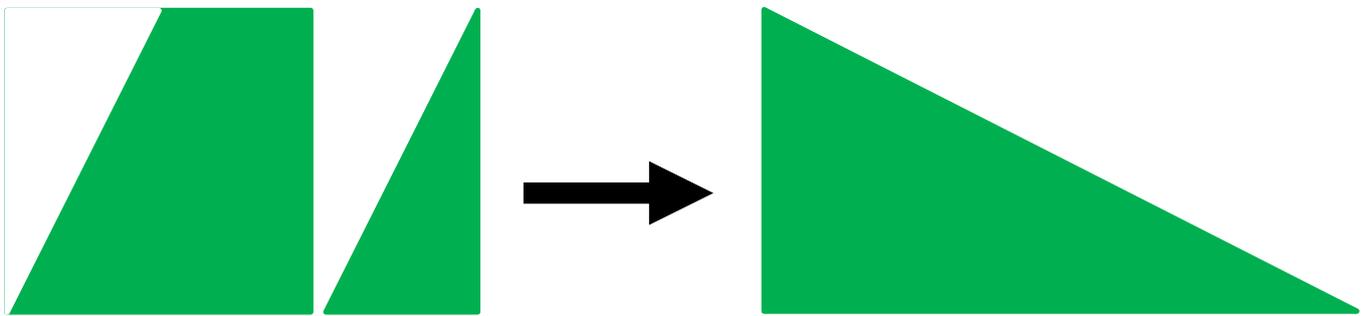
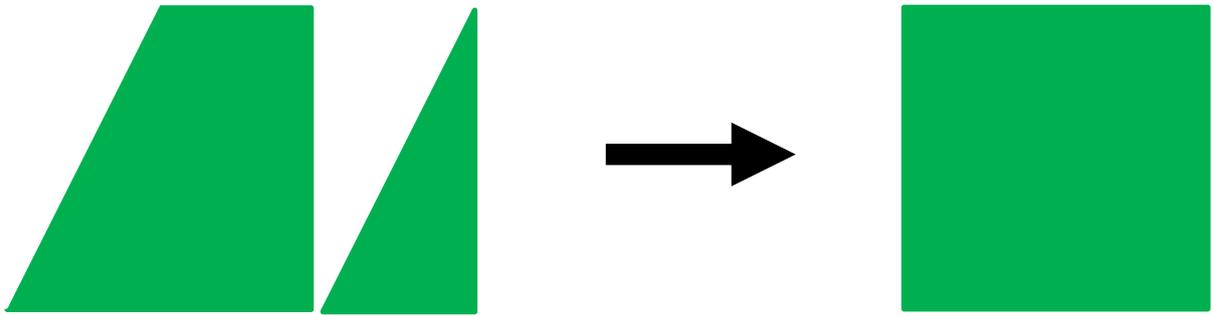


$$\bigcirc + \bigcirc = \bigcirc$$

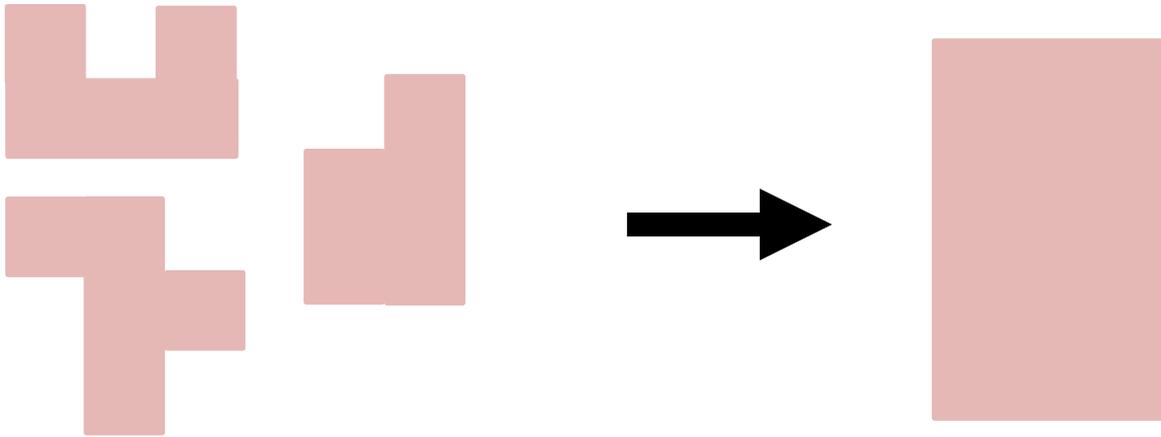
$$\bigcirc \times \bigcirc = \bigcirc$$

$$\bigcirc - \bigcirc = \bigcirc$$

AVEC DEUX PIÈCES



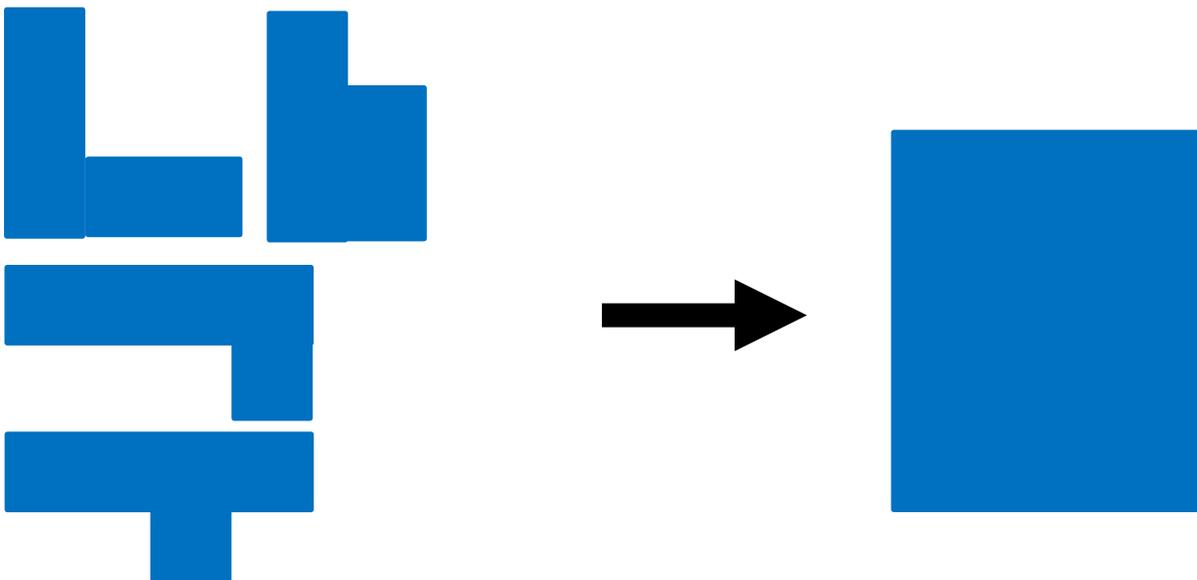
TROIS PIECES ROSES ET UN RECTANGLE



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2-2

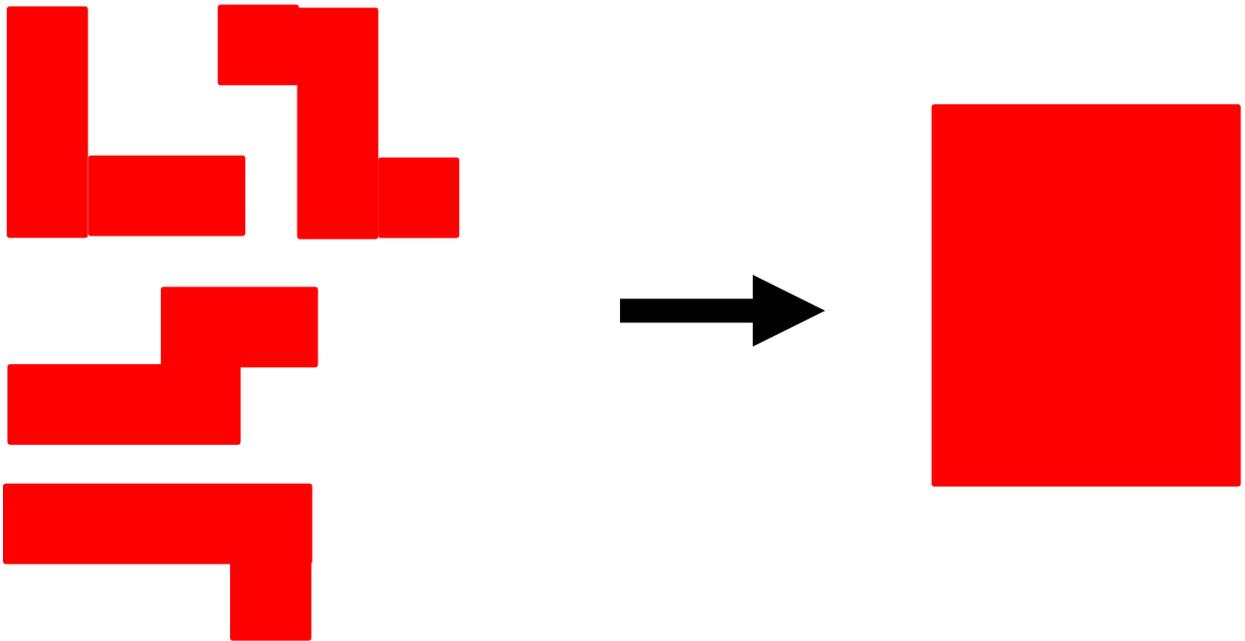
QUATRE PIECES BLEUES ET UN RECTANGLE



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2-3

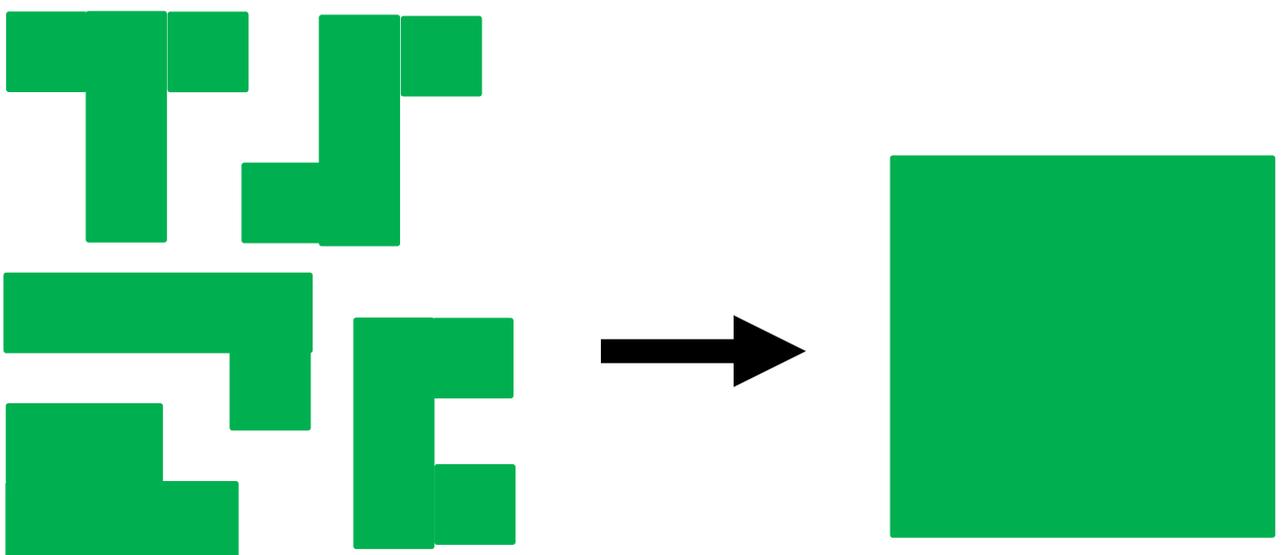
QUATRE PIÈCES ROUGES ET UN RECTANGLE



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2-4

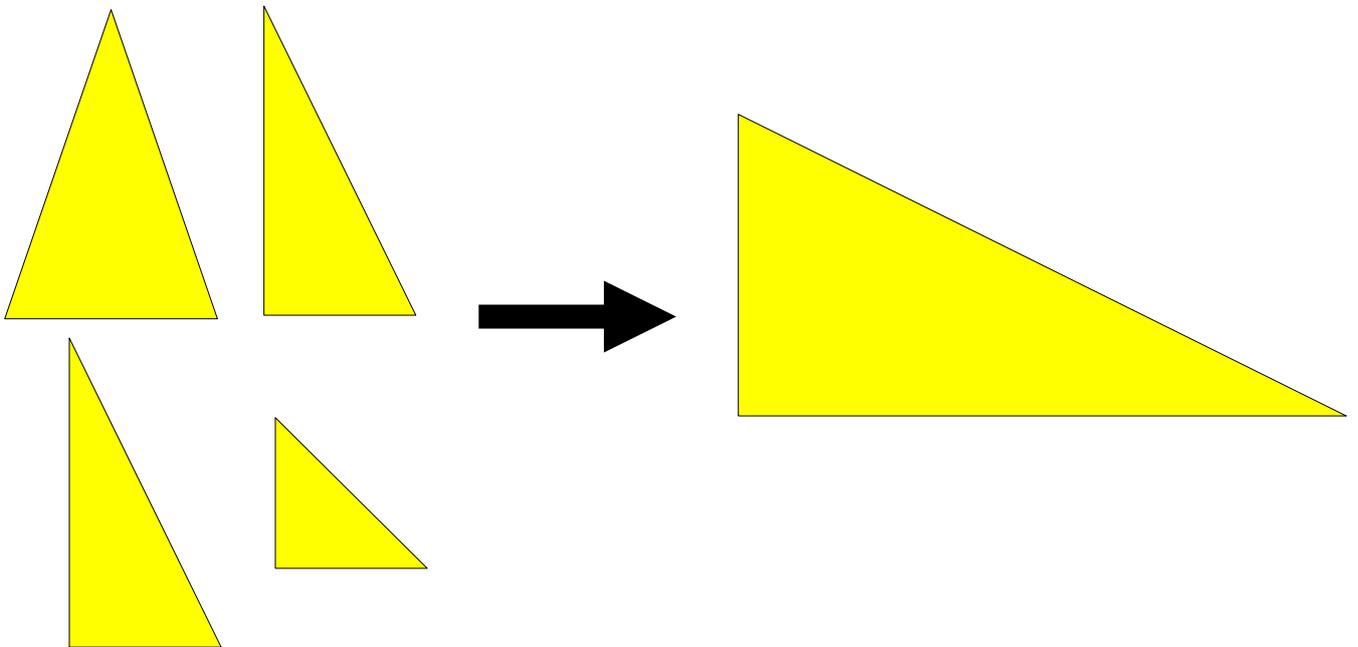
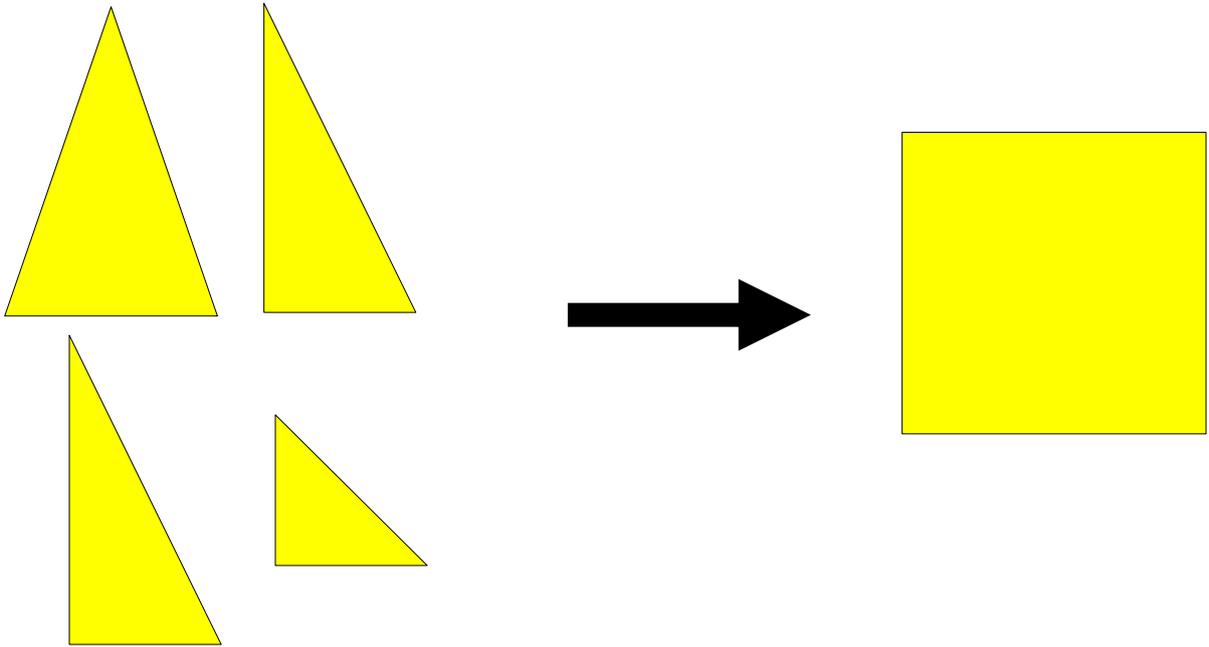
CINQ PIÈCES VERTES ET UN CARRE



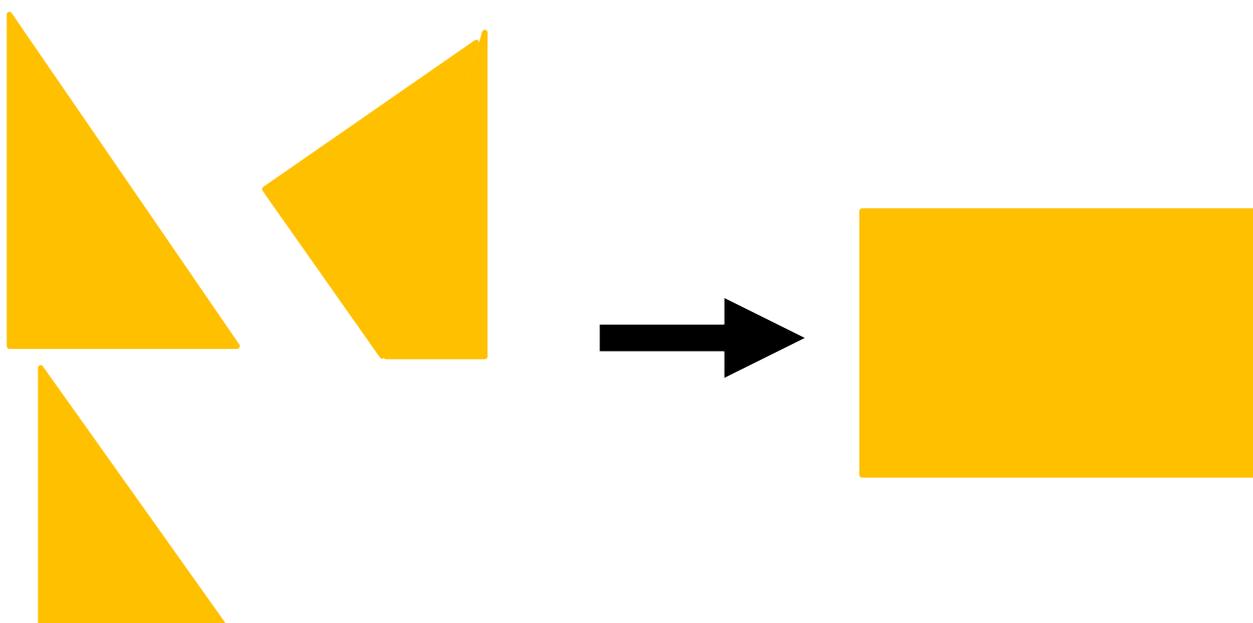
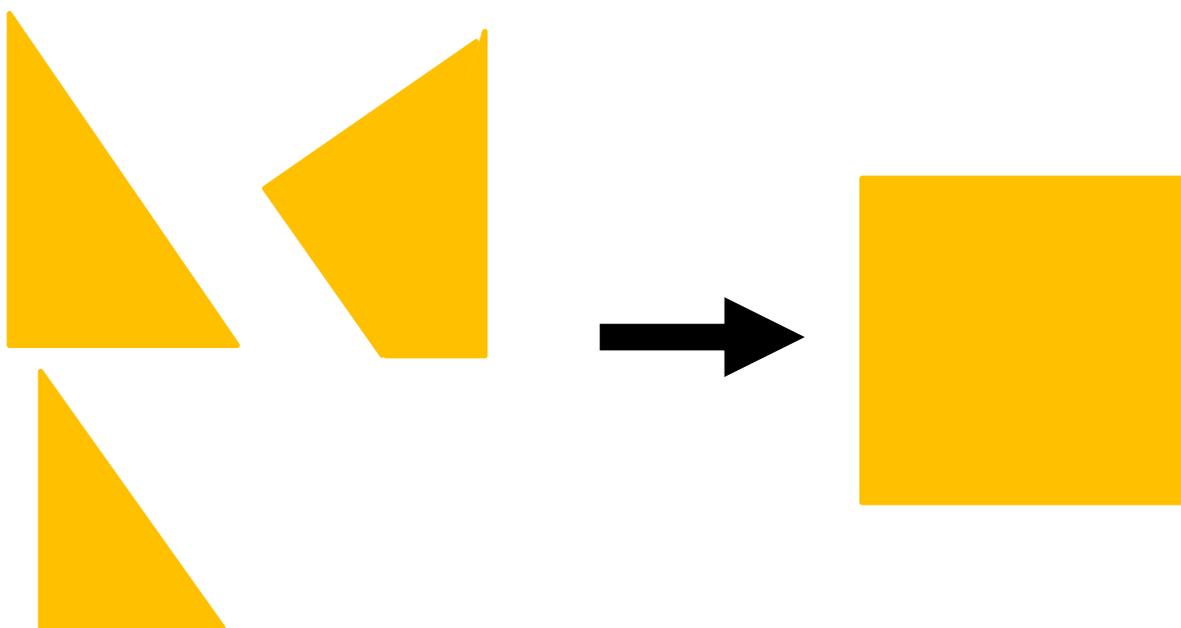
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2-5

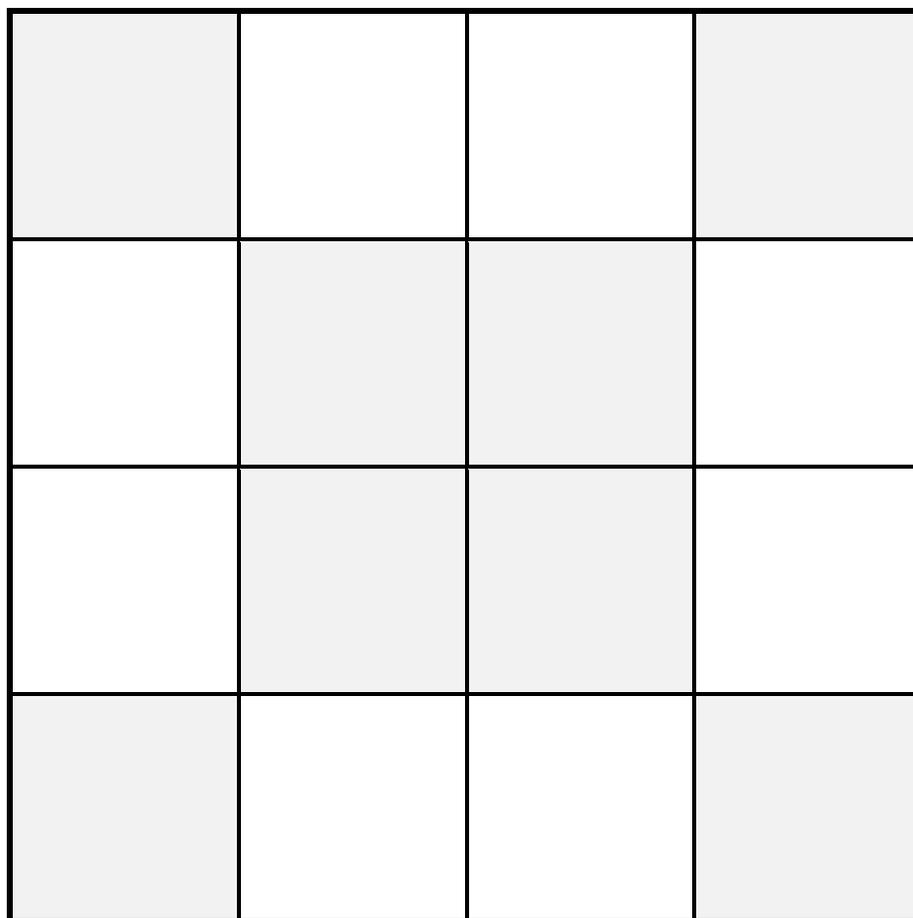
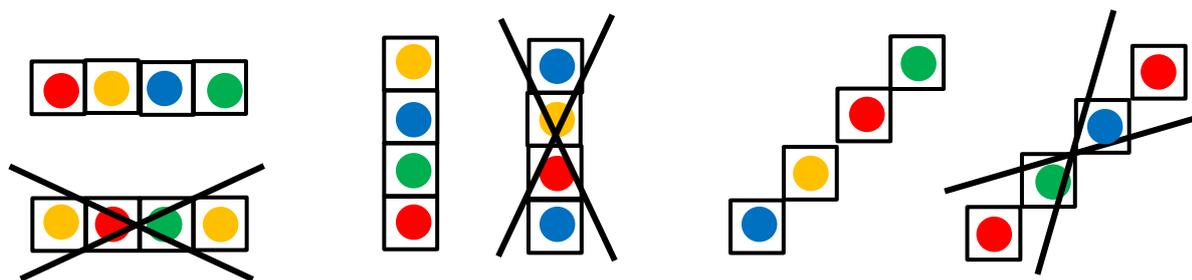
AVEC QUATRE PIÈCES



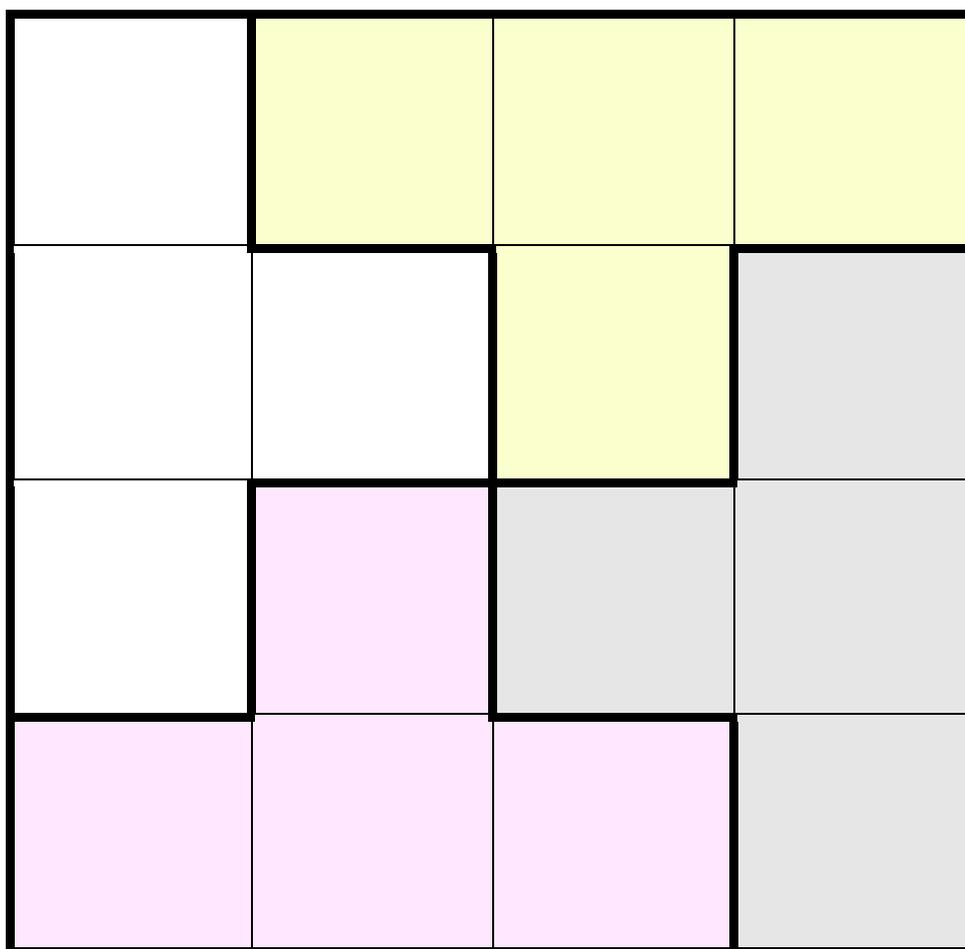
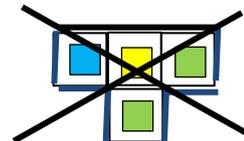
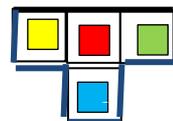
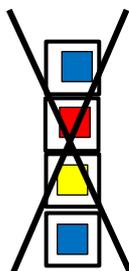
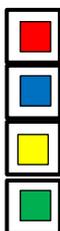
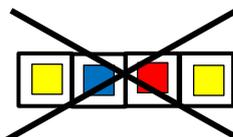
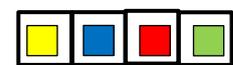
CARRE ET RECTANGLE



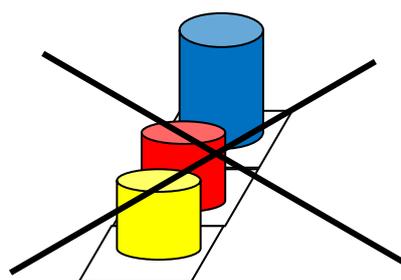
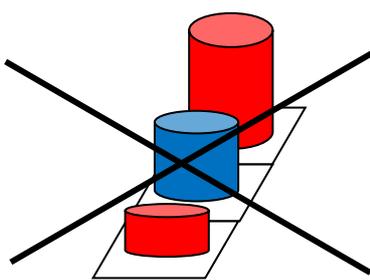
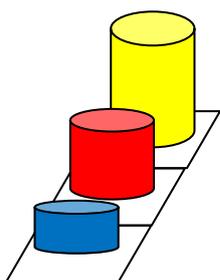
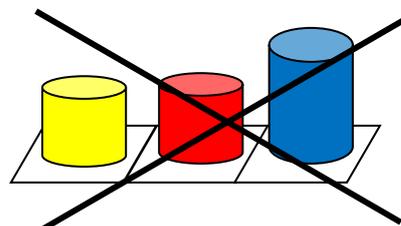
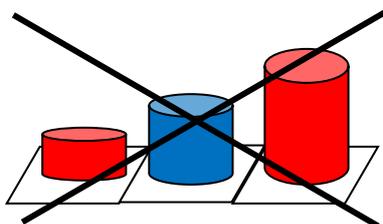
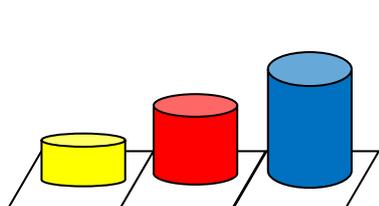
DES DISQUES DANS UN CARRE



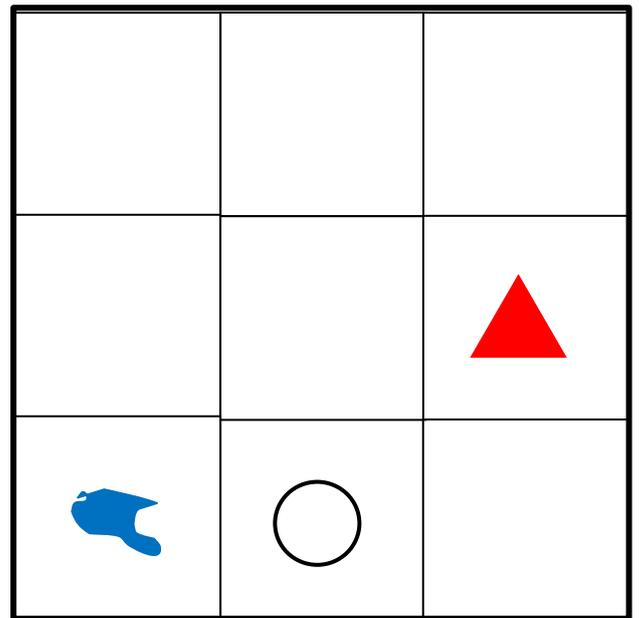
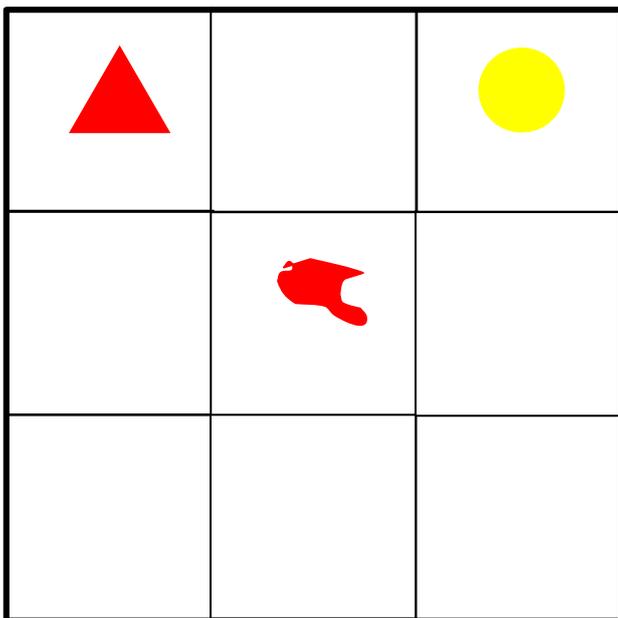
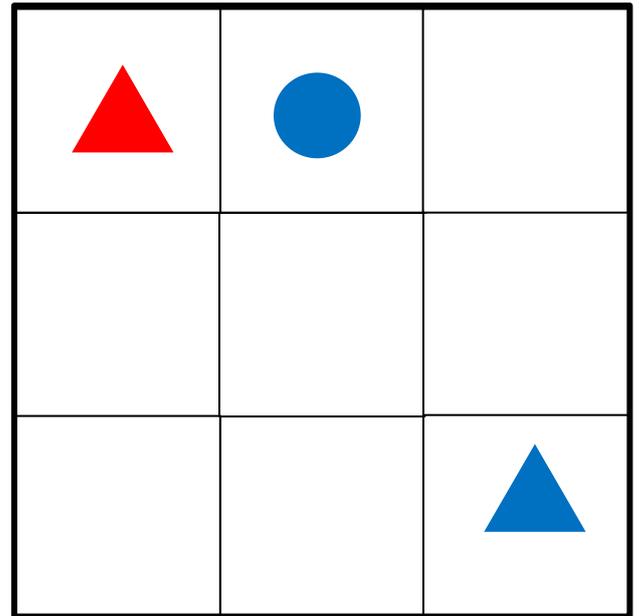
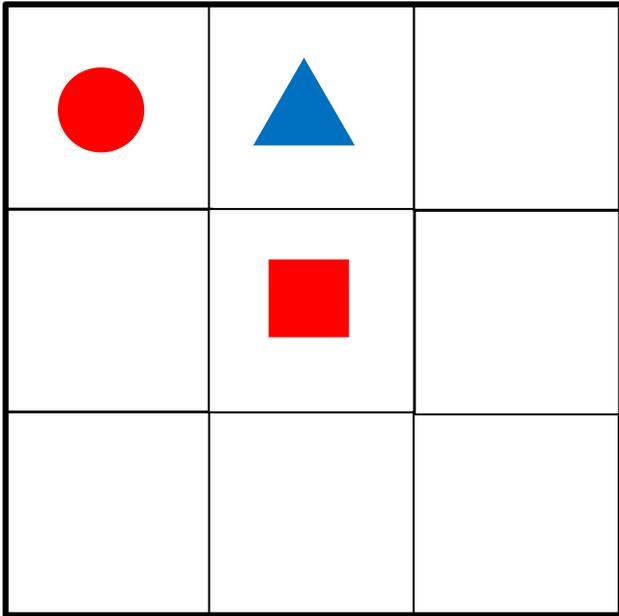
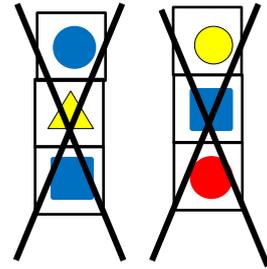
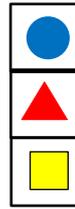
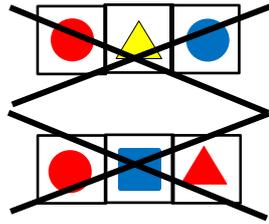
LES QUATRE COULEURS



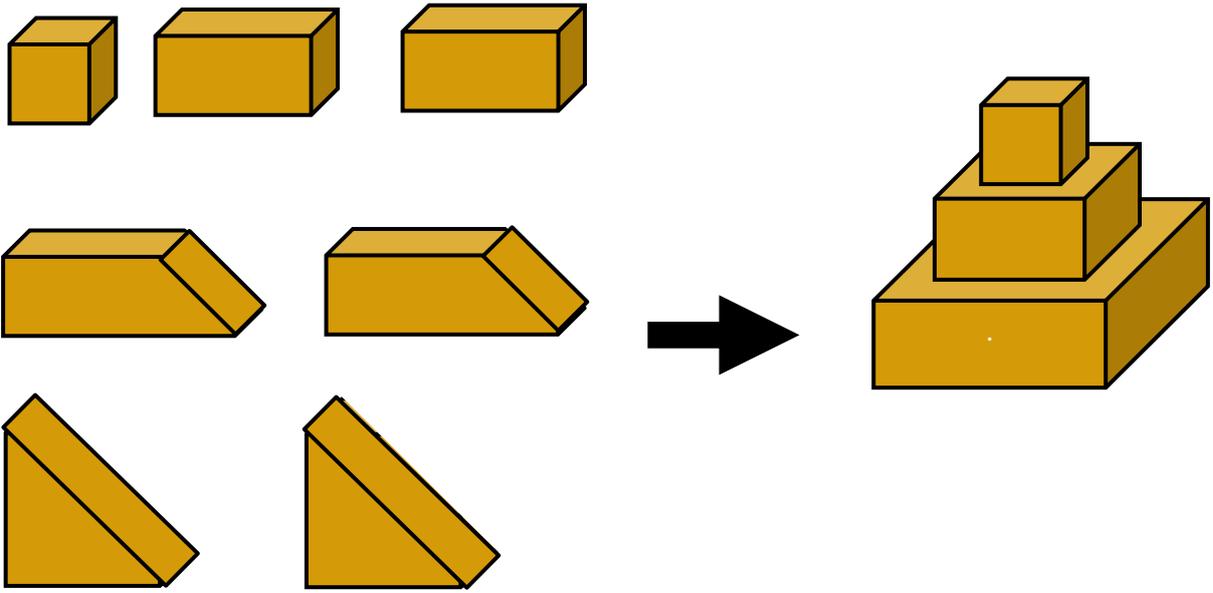
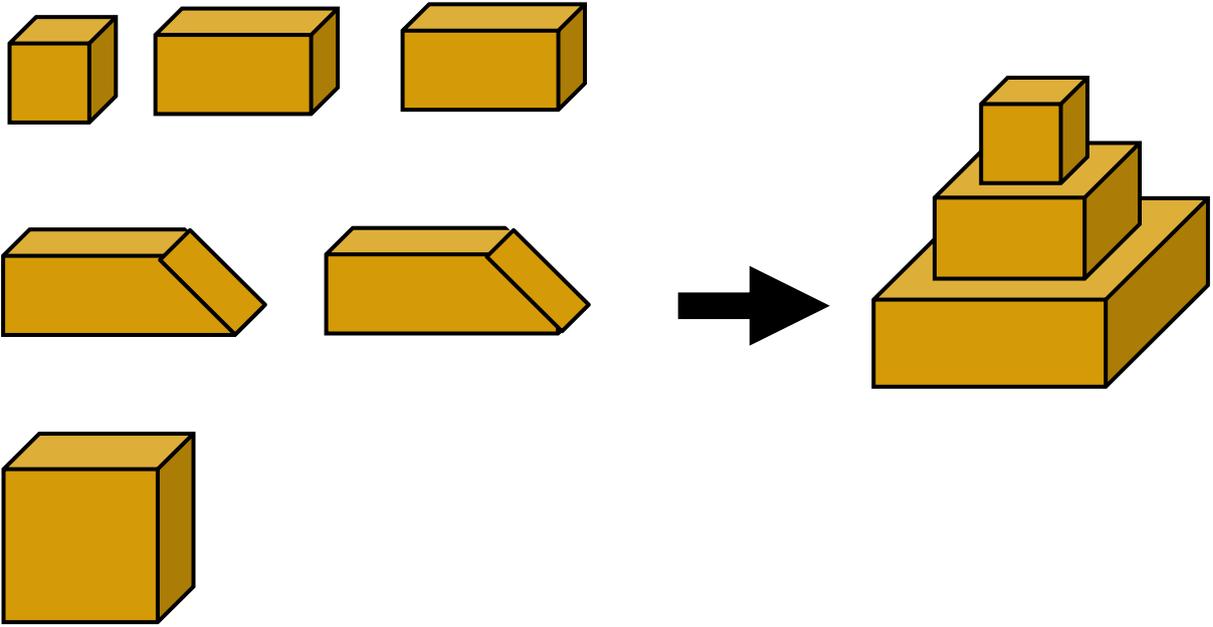
TROIS COULEURS ET TROIS HAUTEURS



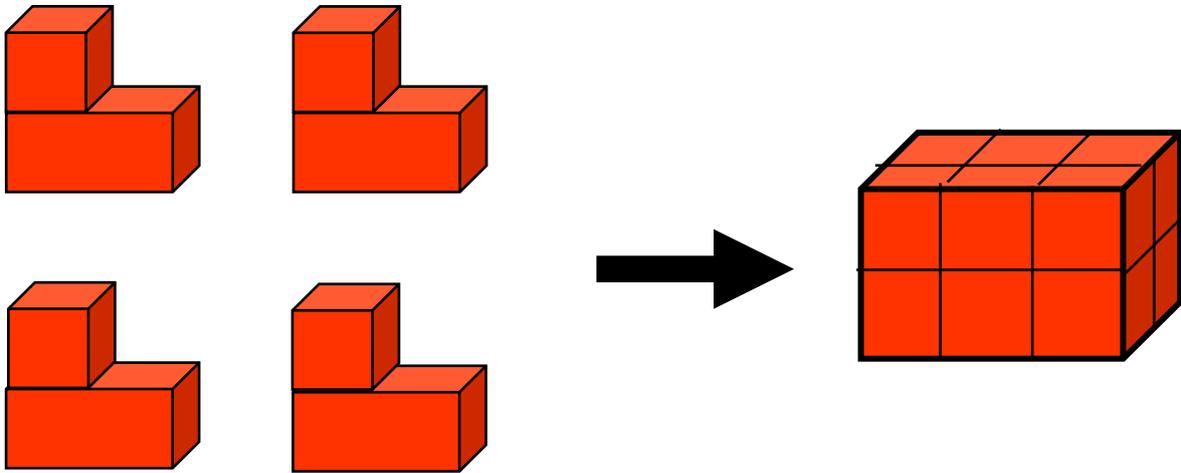
FIGURES COLOREES



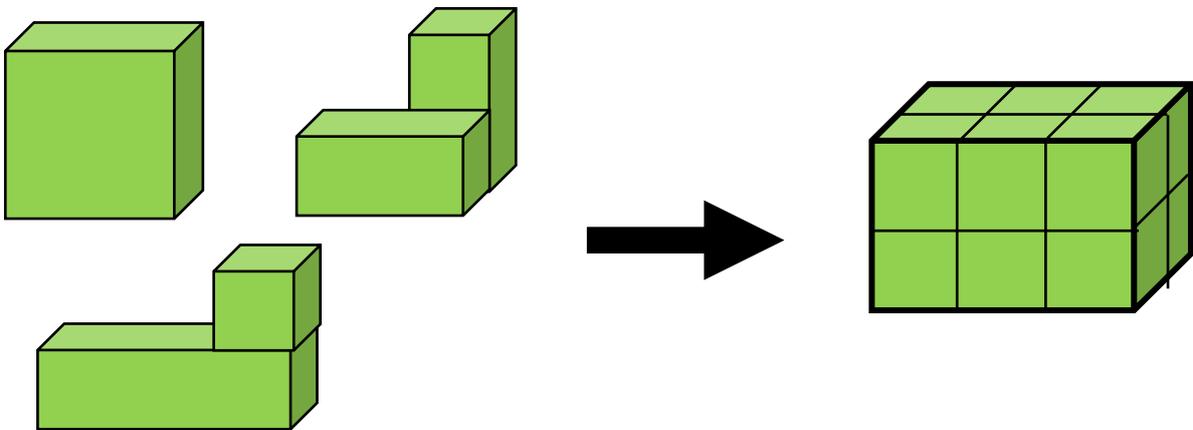
LA PYRAMIDE INCA



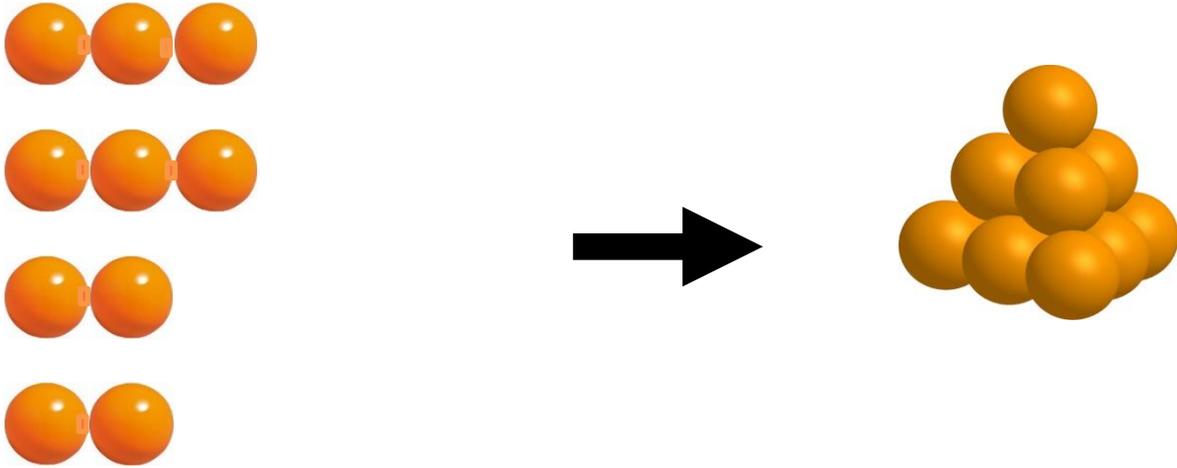
LE PAVE ROUGE



LE PAVE VERT



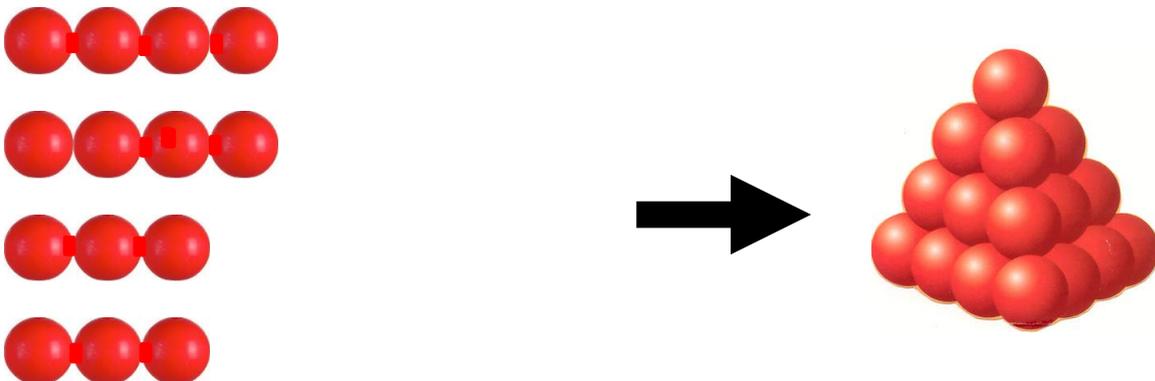
LE TAS D'ORANGES



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3-3

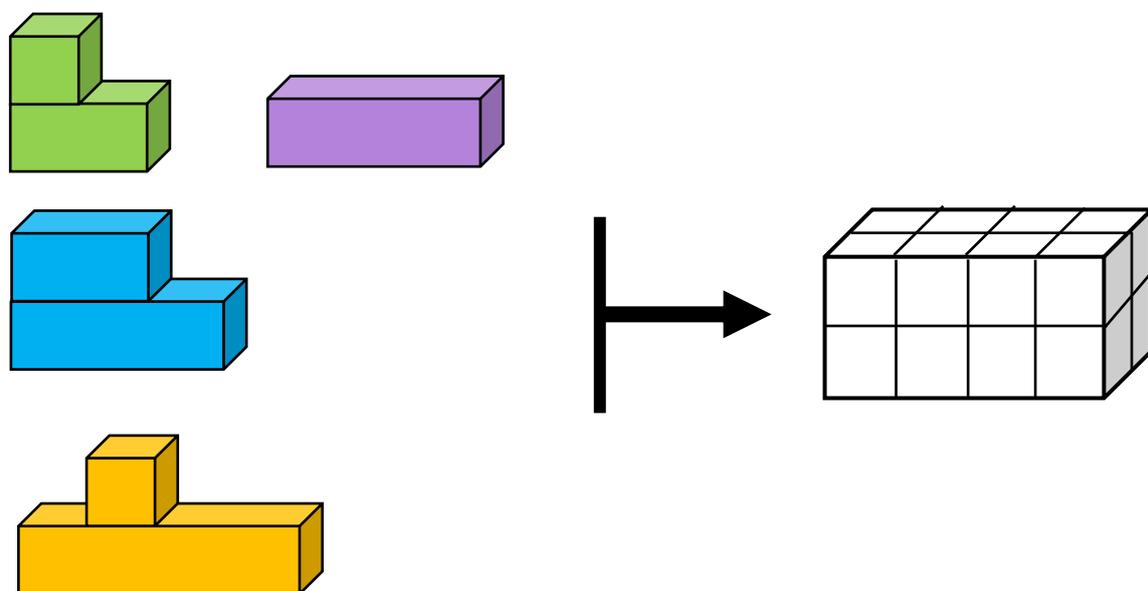
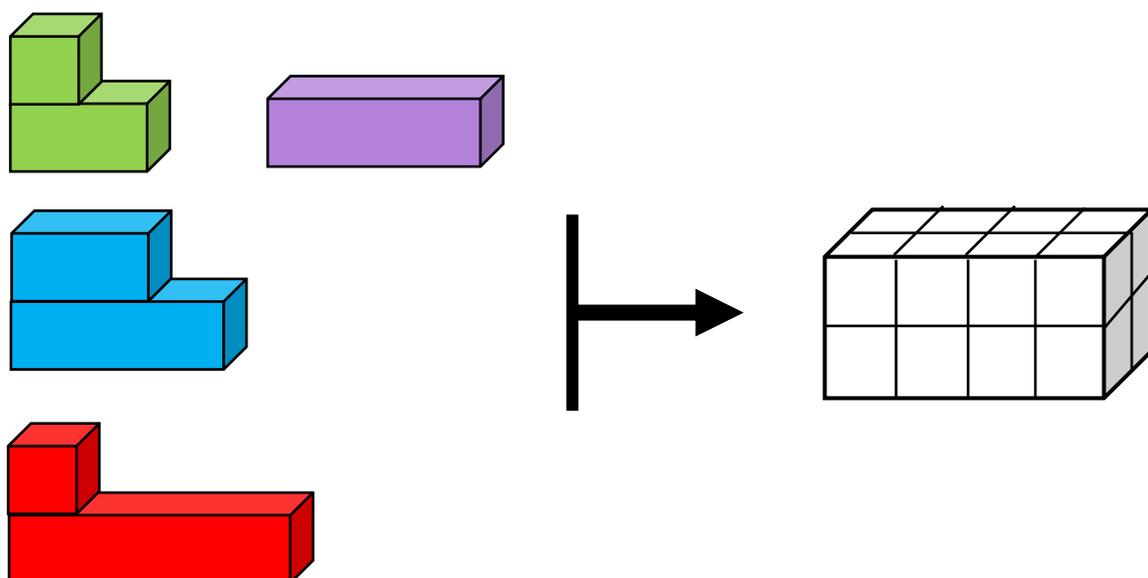
TIRER A BOULETS ROUGES



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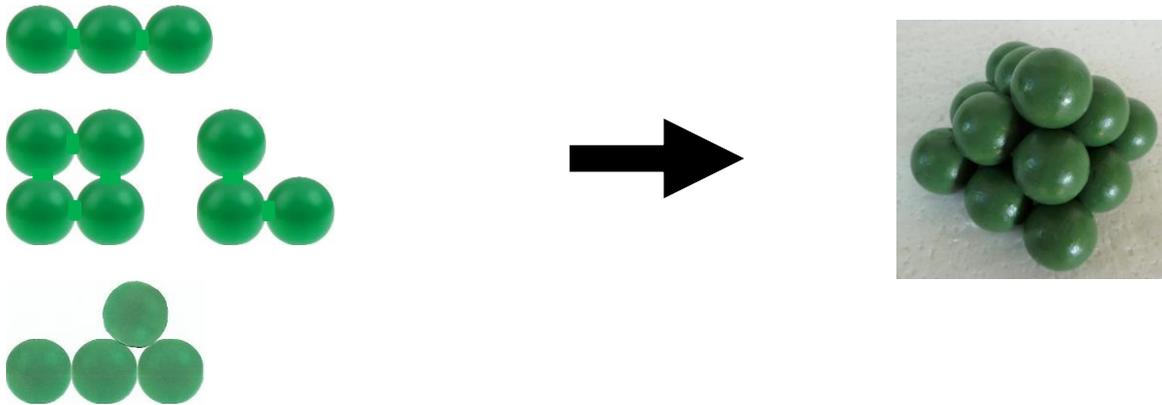
3-4

LE PAVE DE TOUTES LES COULEURS



LA PYRAMIDE VERTE

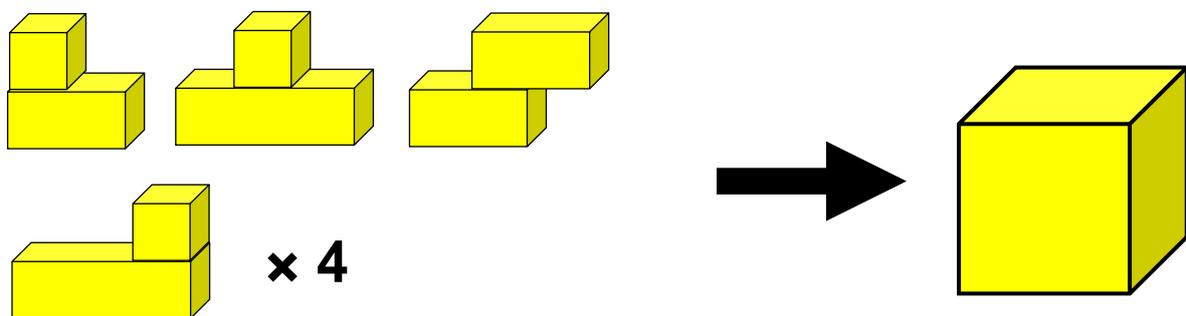
Que faire ?



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3-6

LE CUBE EN KIT



D'après Jeux 3 - Brochure APMEP
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3-7

MATHEMATIQUES NON VERBALES

Corrigés et commentaires Cycle 2

ACTIVITES NUMERIQUES

QUATRE ADDITIONS 1-11

Le 4 ne peut être que le résultat d'une addition

$1 + 3 = 4$

$2 + 2 = 4$

$1 + 3 = 4$

$1 + 2 = 3$

NOMBRES DANS UN CARRE 1-2

6	1	7	14
3	5	8	16
9	4	2	15
18	10	17	

7	3	2	12
4	6	8	18
5	1	9	15
16	10	19	

LE DOUBLE 1-3

Une seule solution :

$$\begin{array}{r} 327 \\ \times 2 \\ \hline 654 \end{array}$$

TOURNICOMPTINE 1-4

5	<input type="text" value="+2"/>	<input type="text" value="+4"/>	9
3	<input type="text" value="-6"/>		
4	<input type="text" value="-6"/>	<input type="text" value="+1"/>	5
1	<input type="text" value="x2"/>		

8	<input type="text" value="-2"/>	<input type="text" value="-5"/>	10
10	<input type="text" value="+7"/>		
5	<input type="text" value="-7"/>	<input type="text" value="+1"/>	6
12	<input type="text" value="x2"/>		

DES ADDITIONS 1-5

$$\begin{array}{r} 2 + 9 = 11 \\ + \quad + \\ 4 + 1 = 5 \\ = \quad = \\ 6 \quad 10 \end{array}$$

$$\begin{array}{r} 2 + 13 = 15 \\ + \quad + \\ 16 + 11 = 27 \\ = \quad = \\ 18 \quad 24 \end{array}$$

$$\begin{array}{r} 8 + 3 = 11 \\ + \quad + \\ 15 + 18 = 33 \\ = \quad = \\ 23 \quad 21 \end{array}$$

DES SOUSTRATIONS 1-6

$$\begin{array}{r} 10 - 4 = 6 \\ - \quad - \\ 7 + 2 = 5 \\ = \quad = \\ 3 \quad 2 \end{array}$$

$$\begin{array}{r} 16 - 6 = 10 \\ - \quad - \\ 9 - 3 = 6 \\ = \quad = \\ 7 \quad 3 \end{array}$$

$$\begin{array}{r} 22 - 8 = 14 \\ - \quad - \\ 19 - 6 = 13 \\ = \quad = \\ 3 \quad 2 \end{array}$$

DES MULTIPLICATIONS 1-7

$$\begin{array}{r} 6 \times 2 = 12 \\ \times \quad \times \\ 4 \times 5 = 20 \\ = \quad = \\ 24 \quad 10 \end{array}$$

$$\begin{array}{r} 4 \times 6 = 24 \\ \times \quad \times \\ 8 \times 3 = 24 \\ = \quad = \\ 32 \quad 18 \end{array}$$

$$\begin{array}{r} 7 \times 2 = 14 \\ \times \quad \times \\ 5 \times 9 = 45 \\ = \quad = \\ 35 \quad 18 \end{array}$$

TROIS OPERATIONS 1-8

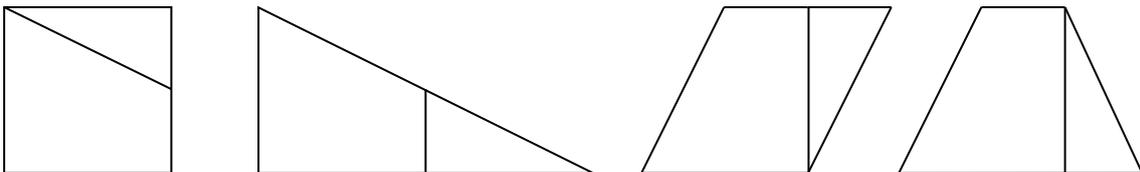
Il faut commencer par la multiplication où les possibilités sont peu nombreuses

On voit rapidement que $2 \times 4 = 8$ ne permet pas de continuer

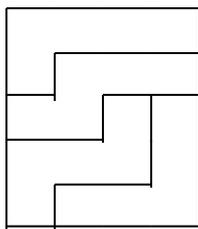
Il y a plusieurs solutions, par exemple $5 + 4 = 9$, $8 - 1 = 7$, $2 \times 3 = 6$

ACTIVITES DANS LE PLAN

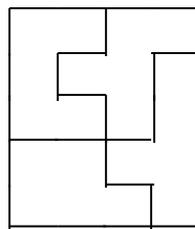
AVEC DEUX PIECES 2-1



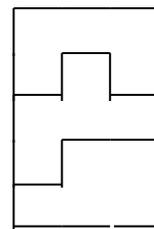
DES PIECES ET DES RECTANGLES 2-2 à 2-5



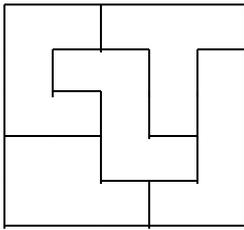
Rouge



Bleu



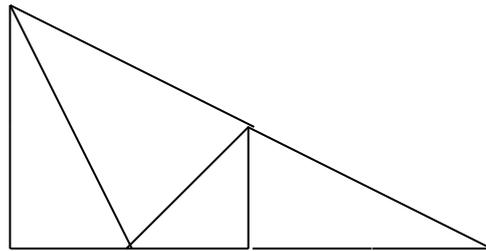
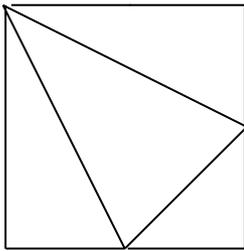
Rose



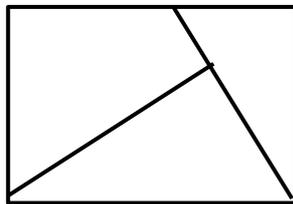
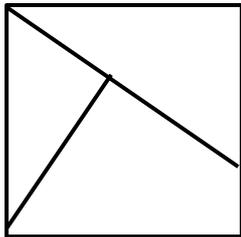
Vert

On peut donner la position d'une ou deux pièces aux élèves qui ont des difficultés.

AVEC QUATRE PIECES 2-6



CARRE ET RECTANGLE 2-7



DES DISQUES DANS UN CARRE 2-8

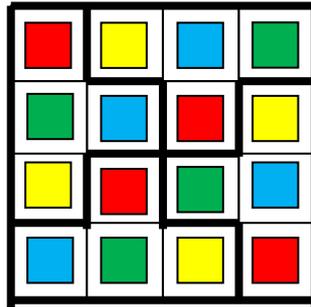
Il existe bien sûr de nombreuses solutions

B	J	V	R
R	V	J	B
J	B	R	V
V	R	B	J

TROIS COULEURS ET TROIS HAUTEURS 2-9

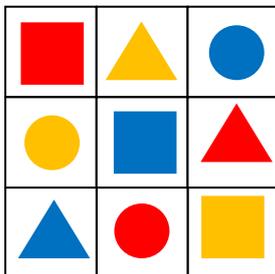
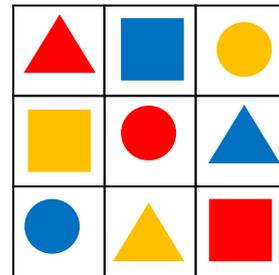
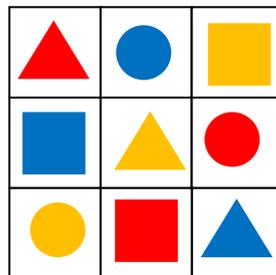
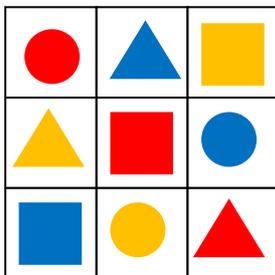
1R	2B	3J
2J	3R	1B
3B	1J	2R

LES QUATRE COULEURS 2-10



La couleur rouge qui se trouve en haut à gauche se retrouve sur la seconde ligne en troisième position car il ne peut pas être ailleurs dans la région.

FIGURES COLOREES 2-11

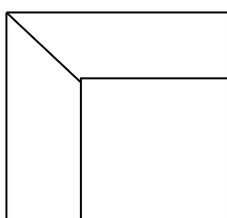


ACTIVITES DANS L'ESPACE

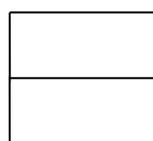
LA PYRAMIDE INCA 3-1

Défi 1

Première couche



Deuxième couche

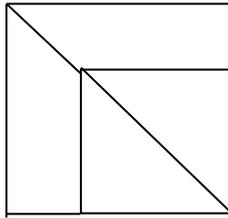


Troisième couche



Défi 2

Première couche



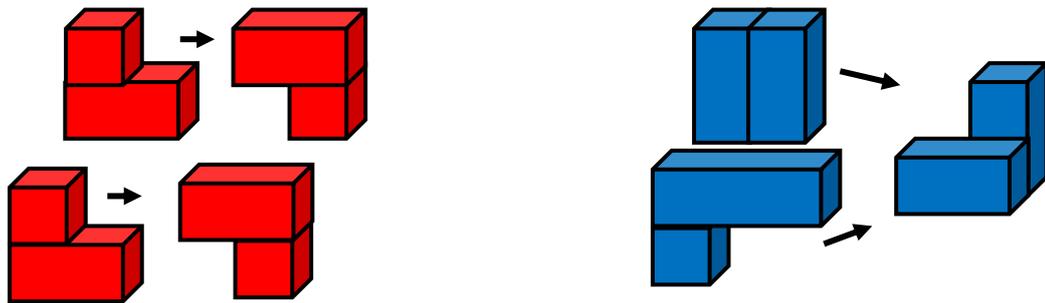
Deuxième couche



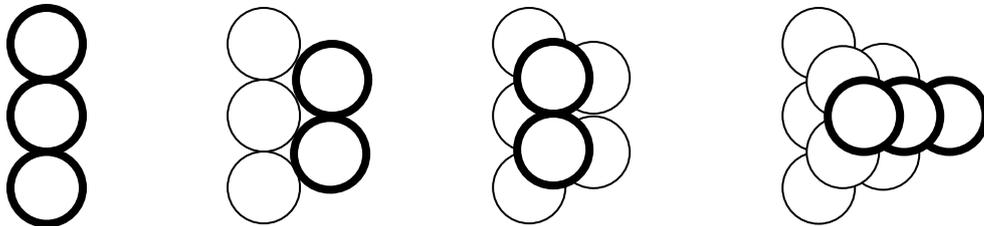
Troisième couche



LE PAVE ROUGE ET LE PAVE BLEU 3-2

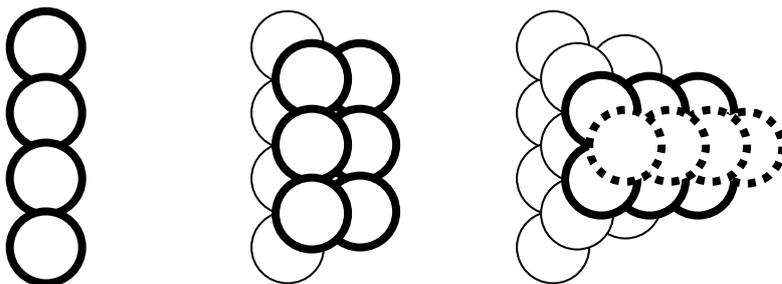


LE TAS D'ORANGES 3-3



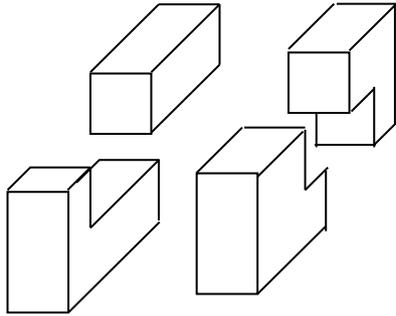
On peut essayer de faire trouver que les alignements où les billes sont les plus nombreuses sont sur des arêtes opposées (sans utiliser ces mots) de la pyramide (en faisant observer le dessin de la consigne)

TIRER A BOULETS ROUGES 3-4

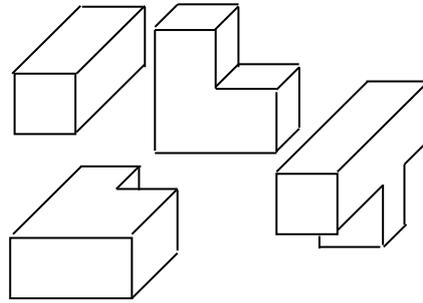


LE PAVE DE TOUTES LES COULEURS 3-5

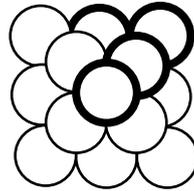
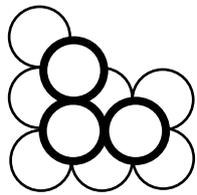
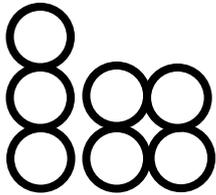
Défi 1



Défi 2



LA PYRAMIDE VERTE 3-6



LE CUBE EN KIT 3-7

Une solution :

