THE BEAST HUNT

Challenge n°1

You are the proud owner of 5 x 5 cases garden, covoted by the « I » shaped little beast.

To avoid that such beasts hang out in your garden, you have traps at your disposal: a beast cannot stand in a case occupied by a trap.

How to make sure that no animal can come into your garden by using as few traps as possible? And for the 6x6 garden (on the back of the previous one)?
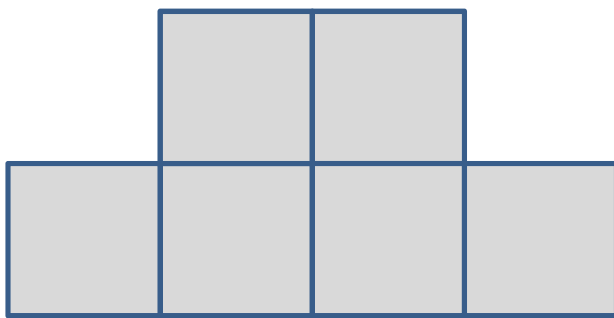
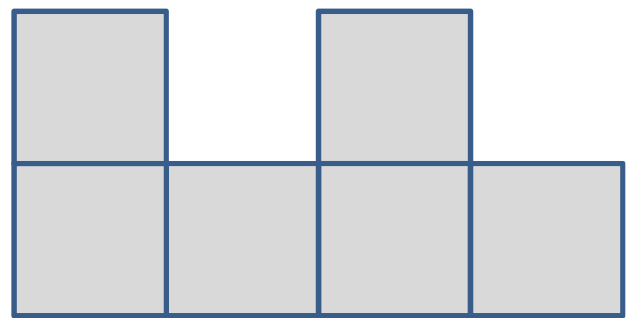## Challenge n°2

Same questions with « L » shaped beast.

Challenge n°1

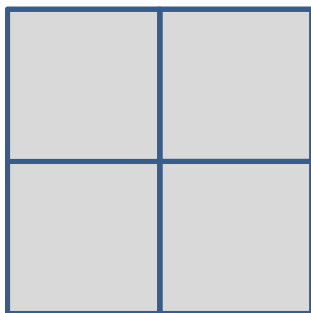Stack as **few** cubes as possible in order to obtain the two following views.
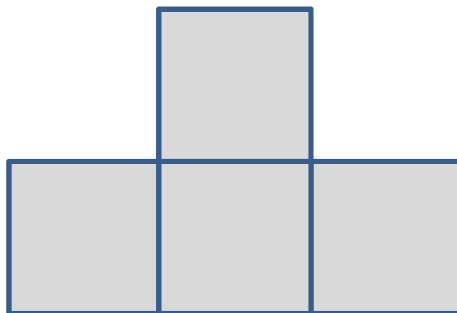
Face view

Profil view

Challenge n°2

Same question with the two following views:

Face view

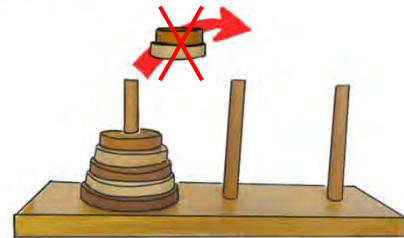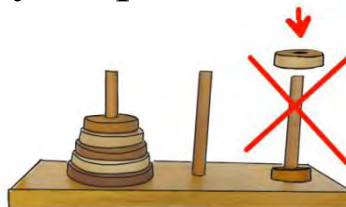Profile view

TOWER OF HANOÏ

Start | End

Challenge n°1

Move all the disks from the leftmost peg to the rightmost peg, so that the disks will be stacked again from the largest to the smallest. Do it, adhering to the following rules:

1 Move only one disk at a time.

2 No larger disk may be placed on top of a smaller disk.

Challenge n°2

What is the minimal number of moves required to solve the puzzle with 1, 2, 3… n disks?

THE EULERIEN GRAPHS

1/ Choose a wooden board, and pass the string on the drawn side by choosing a small hole as the entry point.

2/ Try to follow the drawing with the string through all lines, never more that once per line.

3/ Try several entry points for each drawing, and several drawings. Do you still succeed? Where do you finish your drawing?

THE 12 PIECES

Challenge n°1

One of the 12 pieces has a different weight from the 11 others. You do not know which one, or **whether it is heavier or lighter**. In **four weightings** find a method to find the unequal piece and determine whether if it is heavier or lighter.

Challenge n°2

What if there are only **three weightings** allowed?

THE TWO CUBES

2x2x1

1x1x1

3 pieces

6 pieces

Challenge n°1

Will you be able to reshape a small cube (of 3 x 3 x 3 size) with these 9 pieces?

Challenge n°2

Will you be able to reshape a BIG cube (of 5 x 5 x 5 size) with theses 18 pieces?

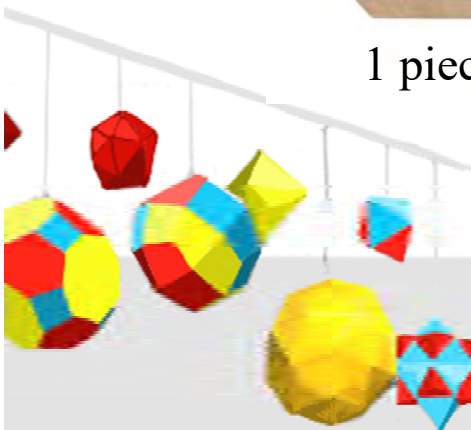**1x2x4**

1x1x3

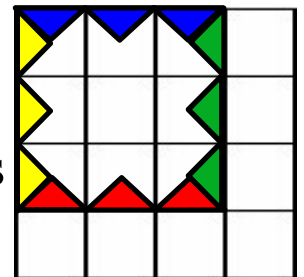**2x2x1**

2x2x2

1 piece

3 pieces

13 pieces

1 piece

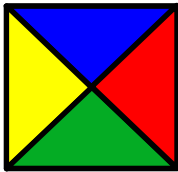# THE COLORED TRIANGLES

Chalenge n°1

Fill the cells board with the colored triangles, in order to form a 3x3 square, following the given rules:

1 Each side must be fill by triangles of the same color. And each side must have a different color of the one used on the others sides.

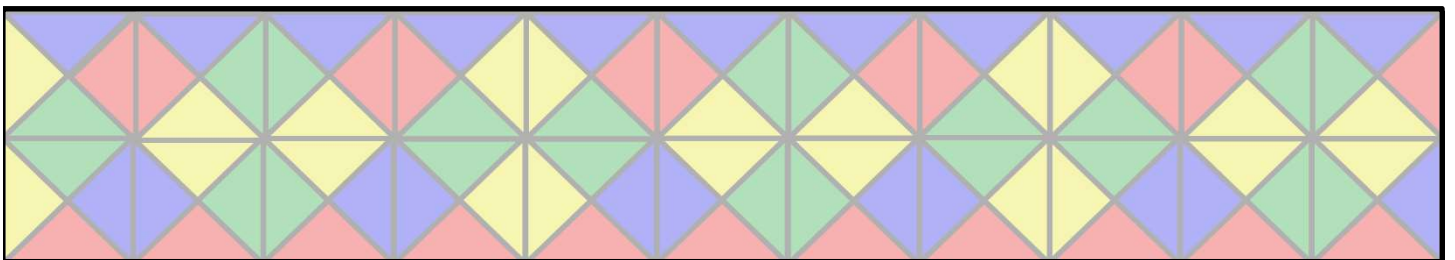**2** The 4 triangles placed in a cell must be of different colors.

3 In between two neighboring cells, the triangles facing each other must be of the same color.

Challenge n°2

Can you build, following the same rules, a rectangle of 3 cells by 4? And an other of 4 cells by 4 ?
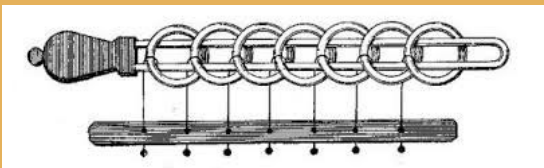
THE PENCIL BOX

fully locked position

fully unlocked position

Do you know how to move from the fully locked position to the fully unlocked position, and vice versa?

Warning ! There are only two positions allowed for each "button": the "hump" at the top or the "hump" at the left. Otherwise, you risk blocking the whole!

This game is an easy-to-use version of the famous "baguenaudier" , also called "Chinese rings".

RELEASE THE RING!

Challenge n°1

Can you release the ring without cutting the string ?
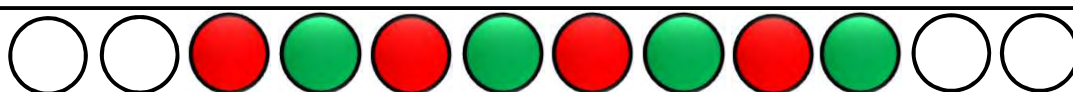

trapped

released

Challenge n°2

Show that you did not succeed only by chance : reset the puzzle before leaving !
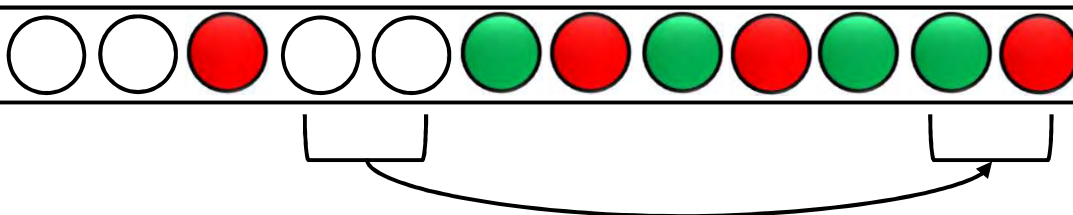
A PAWN GAME

Challenge n°1

Take 4 green pawns and 4 red pawns and place them side by side alternating colors.
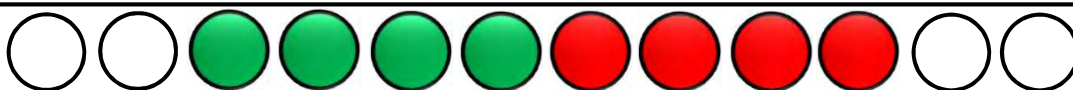

Initial setting

The only movement allowed is to move two pawns side by side wihtout changing their order or seperate them.

Can you, with a minimum number of movements, make sure to have the 4 greens and the 4 red grouped ?

Final setting

Challenge n°2

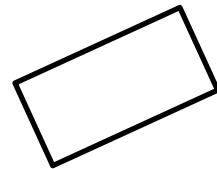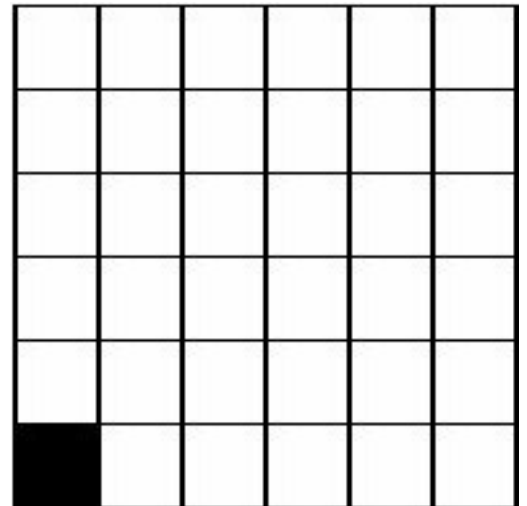The same challenge, using this time, 5 red and 5 greens pawns.

TILING WITH DOMINOES

Challenge n°1

Place the **red square** ▮ over the 6 x 6 grid on a white box of your choice.

Can you cover the remaining **white boxes** with the 17 transparent rectangles at your disposal?

Challenge n°2

Place the red square **on other boxes**: is it always possible to cover the remaining white boxes?
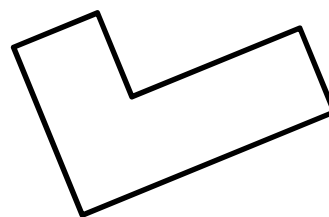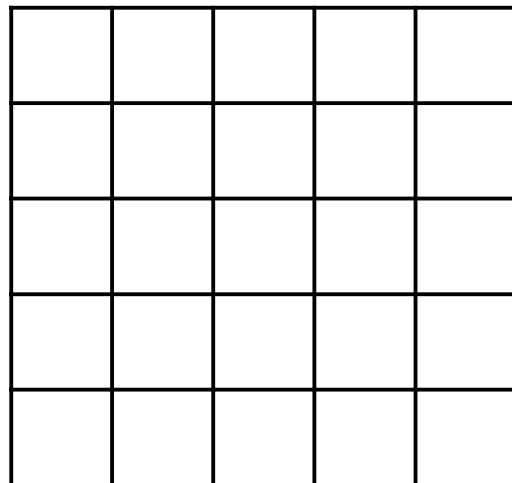
TILING WITH BRAKETS

Challenge n°1

Place the **red square** ■ over the 5 x 5 grid on a white box of your choice.

Can you cover the remaining **white boxes** with the 6 transparent "L" shaped forms at your disposal?
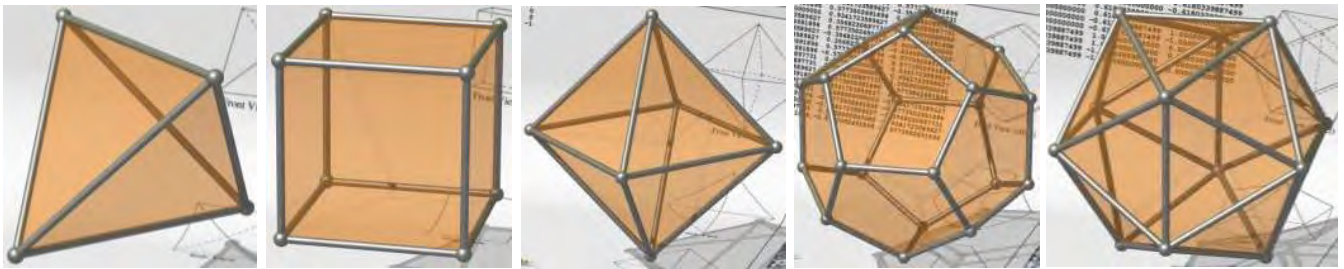
Challenge n°2

Place the red square **on other boxes**: is it always possible to cover the remaining white boxes?

You have at your disposal different volumes blue and red. Assemble them two by two, a red going along with a bleu one, in order to form one of Plato's 5 solids.

The 5 platonic solids are the only polyhedra:
- Whose faces are identical regular polygons.
- Having the same number of faces that meet in each of its vertices.
- Convexes (rounded outwards, without hollows).

THE COLORED CYLINDERS

Challenge n°1

Place the 9 **small** colored cylinders on the 3x3 grid. Caution: two cylinders of the same color or height can't be on the same row or the same column.
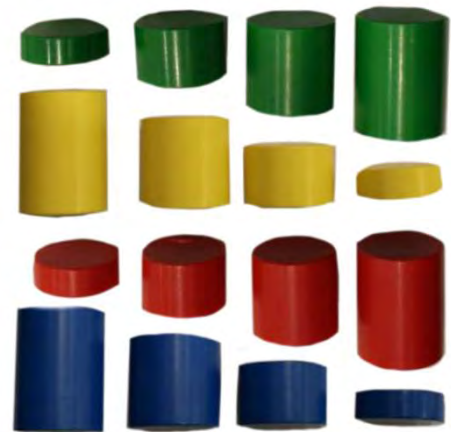
Observe your solution… and that of your neighbors
Are there several solutions ?

Challenge n°2

Turn the board over and ask yourself the same question on the 4x4 grid, using this time the 16 **BIG** cylinders.

Work out at home!
Replace the cylinders with the faces cards including aces (valet, lady, king and aces) in each of the four colors.
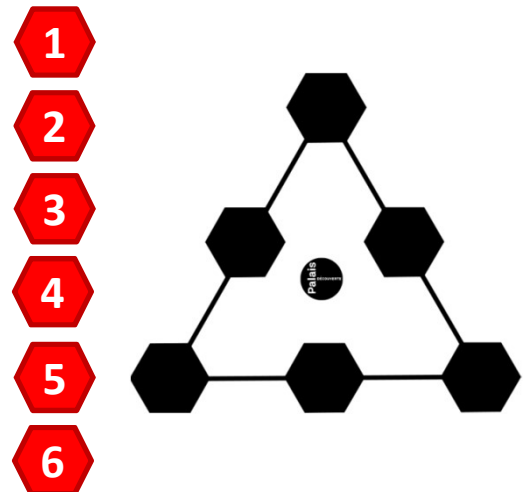
THE MAGIC TRIANGLES

Challenge n°1

Can you arrange the tokens **numbered 1 to 6** on the small triangle, to make the numbers on each side sum to the same amount?
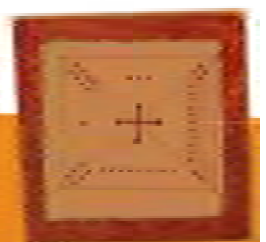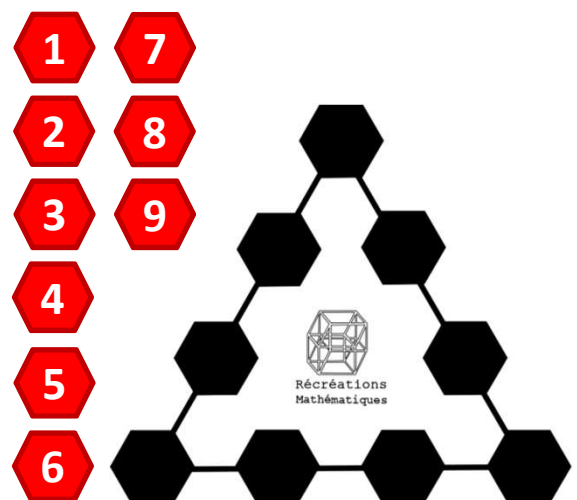
Observe your solution… and that of your neighbors
Are there several solutions ?

Challenge 2

Flip your wooden board and ask yourself the same questions about the big triangle, with the numbered tokens **from 1 to 9**.

THE LAZY FARMER

To check that he has all his chickens, a farmer stands at the end of the 4 complete rows or columns of 3 chicken coops and counts the number of chickens he sees. He is happy when there are **9** in each of his 4 counts.
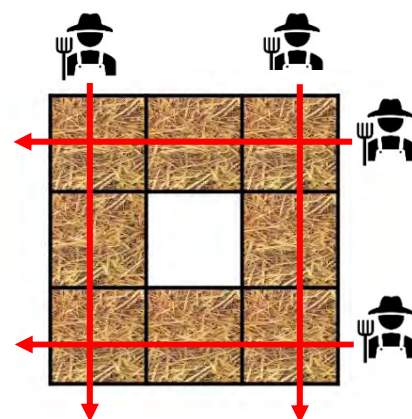
Challenge n°1

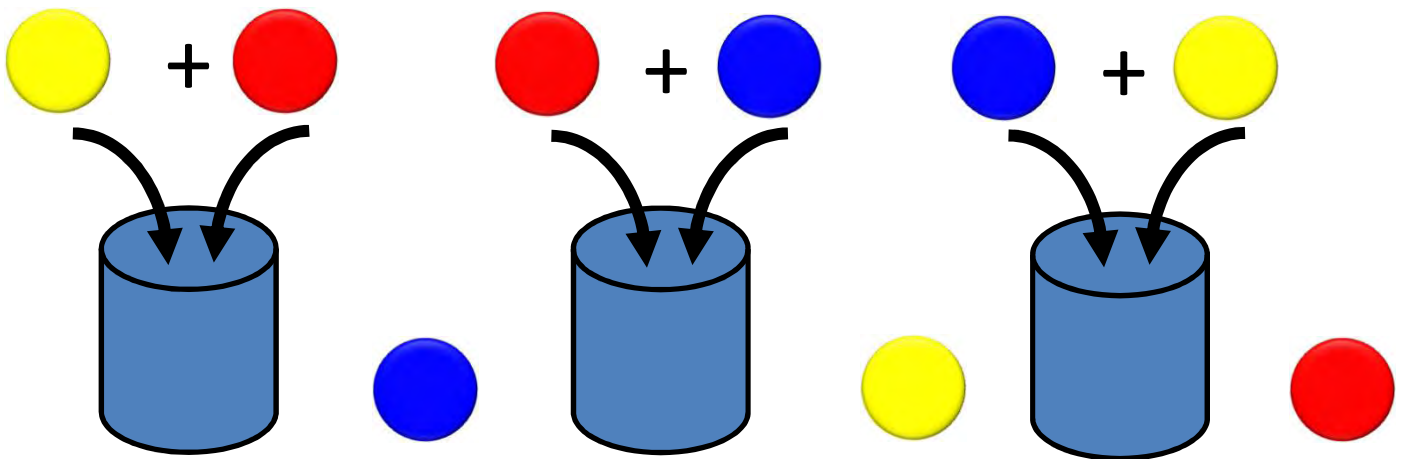Place chickens in the 8 boxes so that the farmer is happy.

Challenge n°2

Is it possible to change the number of chickens and still have the farmer happy ?

You have blue, red and yellow tokens.
Place a number of them in front of you.
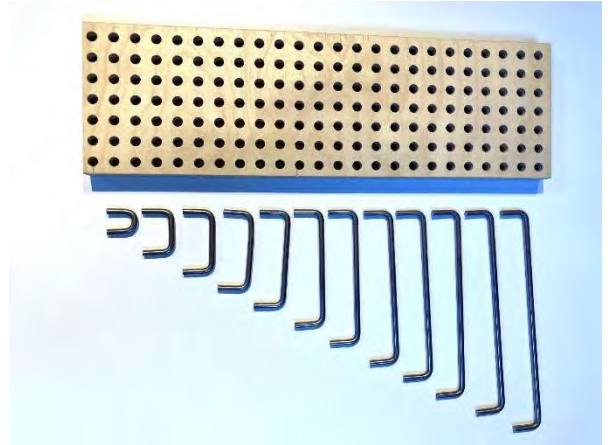They can be exchanged with tokens left in the box as follows:

What interesting questions could we ask ? Try to answer
them !

SKOLEM'S GAME

Challenge n°1

You have a grid with 24 columns, and 12 pieces whose "feet" are 1, 2,…, 11, 12 columns apart.

Two pieces cannot have their foot in the same column.

Can you place all the pieces on the grid lines ?

Challenge n°2

What if you remove the largest piece and delete the last two columns?

THE TARGUI

Challenge n°1

Place 11 blue balls in the boxes. To move a ball, you must make it jump over a neighboring ball in an empty square. The popped ball is then removed from the board.

Can you eliminate the balls one by one **until only one remains**?

Challenge n°2

Start again by replacing a blue ball with a **red** one. This one moves like the blue ones. Can you eliminate the balls one by one so that **only the red one remains**?