NOTES

EDITED BY DAVID J. HALLENBECK, DENNIS DETURCK, AND ANITA E. SOLOW

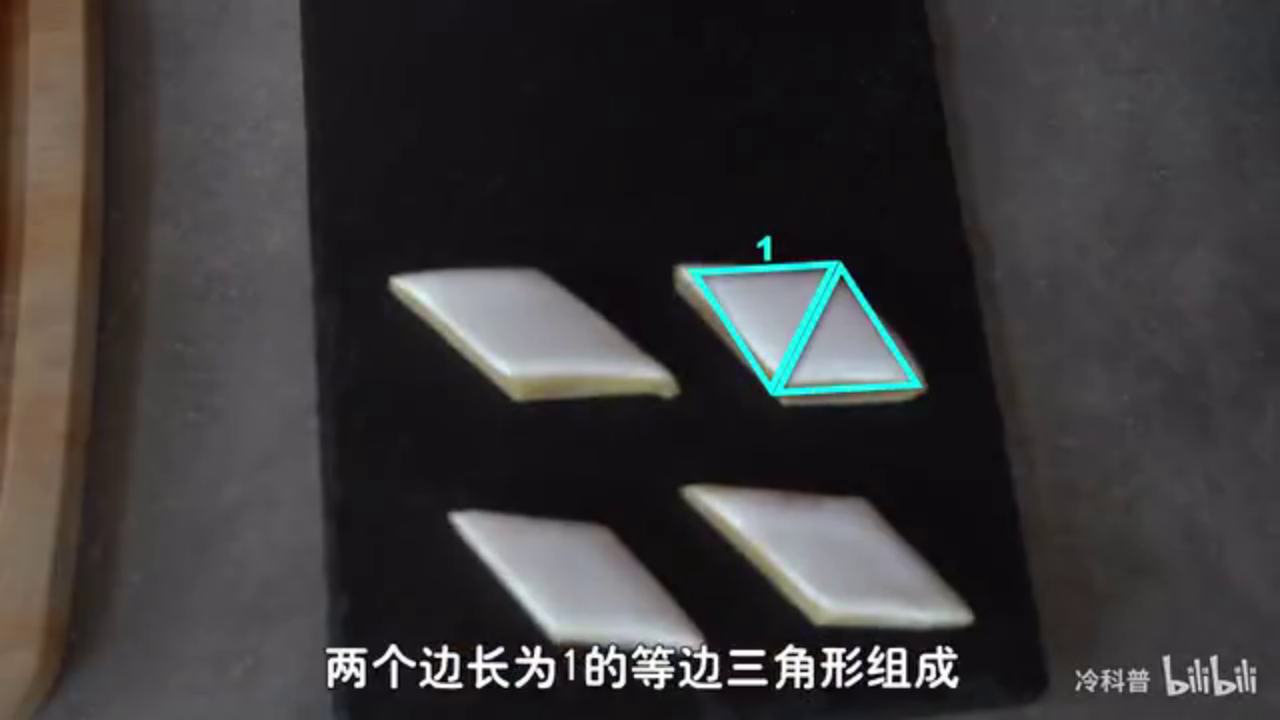
The Problem of the Calissons 可利颂问题

GUY DAVID
École Polytechnique, Centre de Mathématiques, 91128, Palaiseau Cedex, France

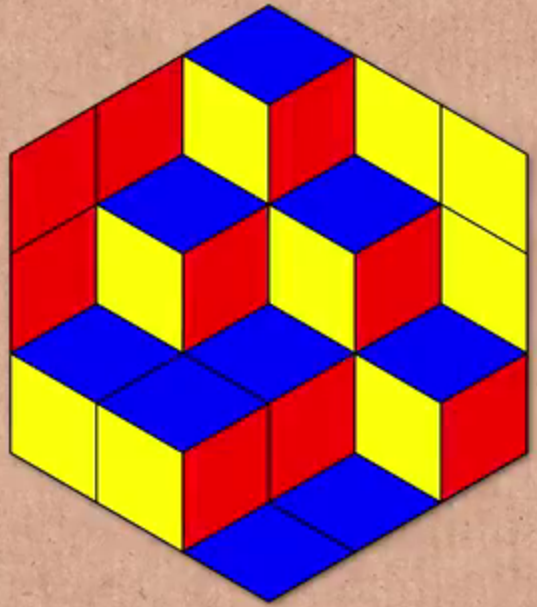
CARLOS TOMEI
Departamento de Matemática, PUC/RJ, R. Marquês de São Vicente, 225, Rio de Janeiro, Brasil

A *calisson* is a French sweet that looks like two equilateral triangles meeting along an edge. Calissons could come in a box shaped like a regular hexagon, and their packing would suggest an interesting combinatorial problem. Suppose a box with side of length n is filled with sweets of sides of length 1. The long diagonal of each calisson in the box is parallel to one of three different lines, as in the picture.

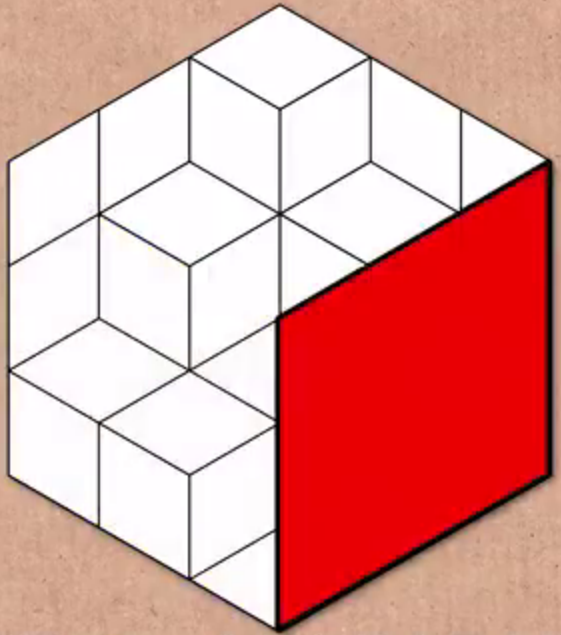
可利颂镶嵌定理



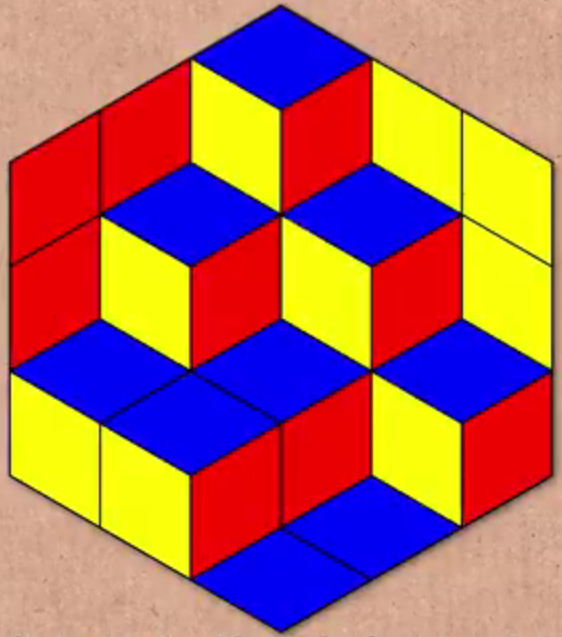
两个边长为1的等边三角形组成



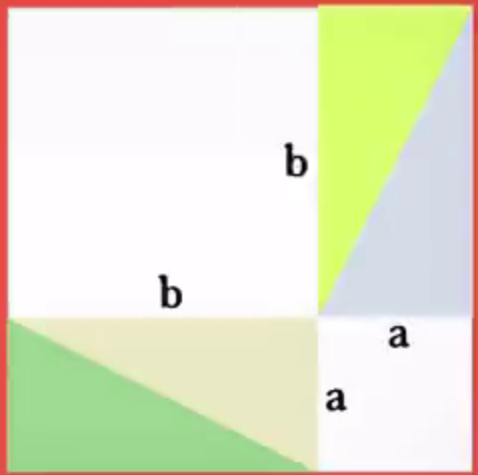
向右倾斜的菱形是红色的



侧视图是一个红色的大正方形



并且 它们都由n的平方个小正方形组成



此时 空出来的位置

参考资料：

The Problem of the Calissons——Guy David and Carlos Tomei

Problem of calissons——Gábor Damásdi

Proof without words——Wikipedia

视频素材：

Pythagorean theorem water demo——00000000130

How many ways are there to prove the Pythagorean theorem? - Betty Fei——TED-Ed

How It's Made: Calissons——Science Channel

Ma recette de calisson d'Aix——Les secrets de Muriel

背景音乐：

みかん箱 - ひやむぎ、そーめん、时々うどん