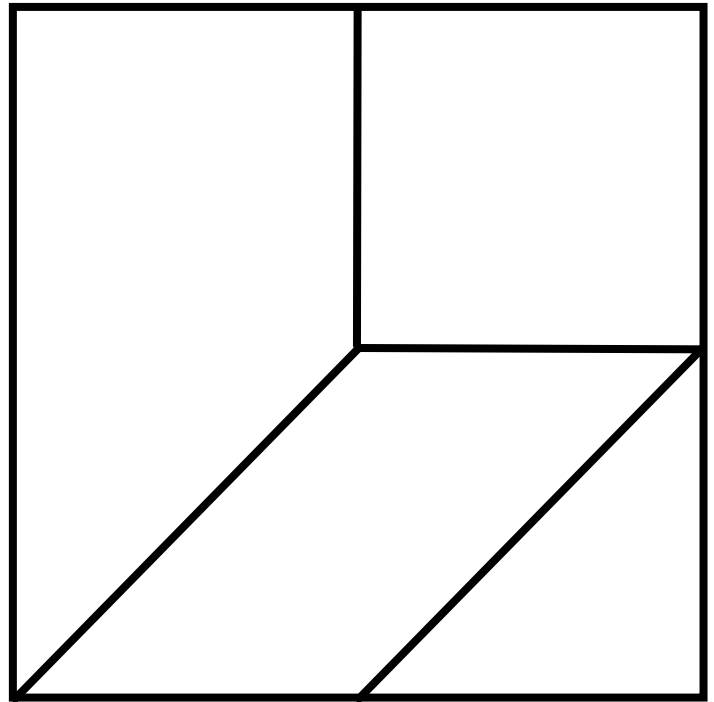
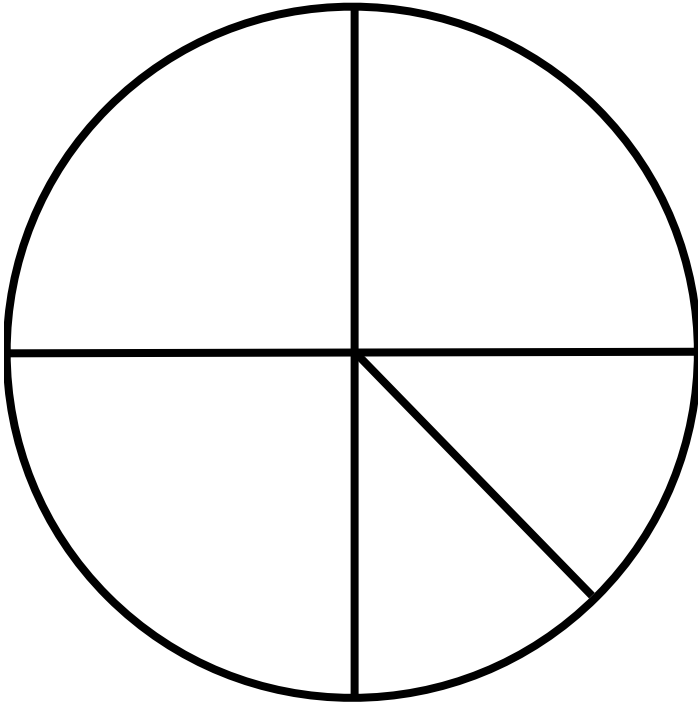
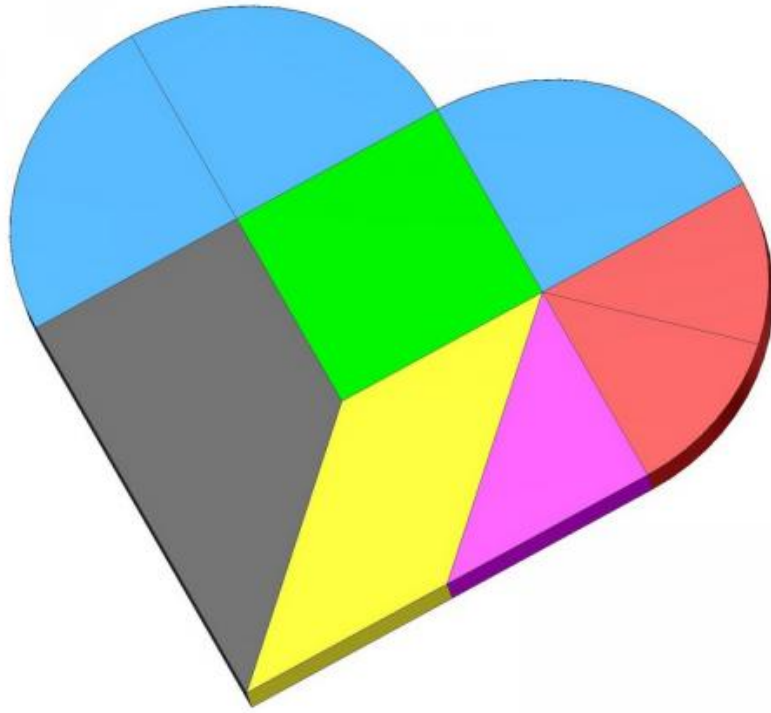


Heart Dissection

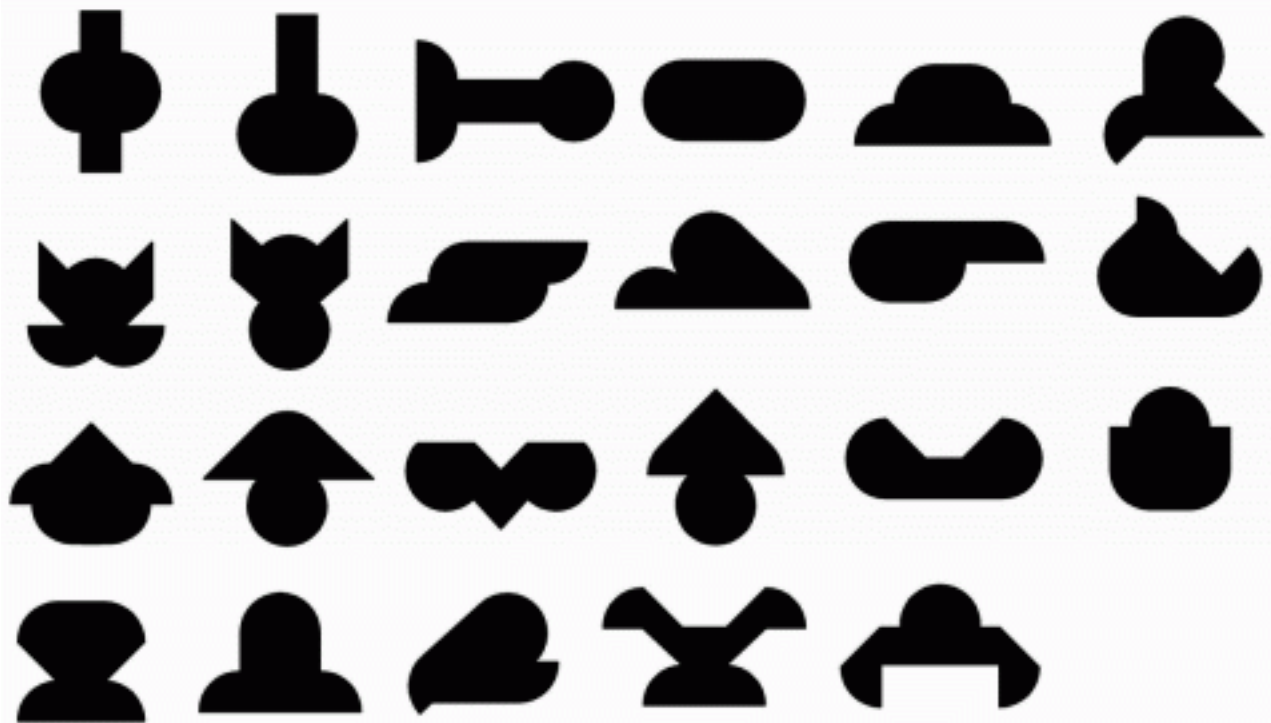
Cut out the 5 pieces in the circle and the 4 pieces in the square.



These 9 pieces can be used to make a heart



Use these 9 pieces to make as many of the following shapes as you can



Dissection Puzzles

A dissection puzzle, also called a transformation puzzle is a tiling puzzle where a set of pieces can be assembled in different ways to produce two or more distinct geometric shapes. Creators of new dissection puzzles emphasize using a minimum number of pieces, or creating novel situations, such as ensuring that every piece connects to another with a hinge.

In the 10th century, Arabic mathematicians used geometric dissections in their commentaries on Euclid's Elements. In the 18th century, Chinese scholar Tai Chen described an elegant dissection for approximating the value of π .

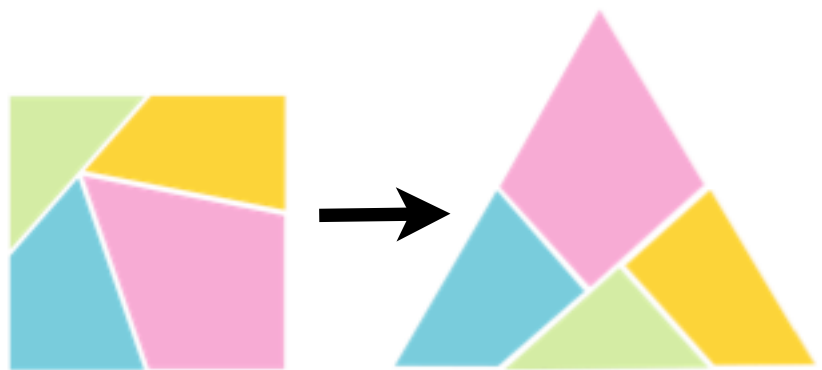
The puzzles saw a major increase in general popularity in the late 19th century when newspapers and magazines began running dissection puzzles. Puzzle creators Sam Loyd in the United States and Henry Dudeney in the United Kingdom were among the most published. Since then, dissection puzzles have been used for entertainment and math education, and the creation of complex dissection puzzles is considered an exercise of geometric principles by mathematicians and math students.

Types of dissection puzzle

Some types of dissection puzzles are intended to create a large number of different geometric shapes. The tangram is a popular dissection puzzle of this type. The seven pieces can be configured into one of a few home shapes, such as the large square and rectangle that the pieces are often stored in, to any number of smaller squares, triangles, parallelograms or esoteric shapes and figures. Some geometric forms are easy to create, while others present an extreme challenge. This variability has ensured the puzzle's popularity.



A tangram set of 5 shapes that can be used to create many other shapes



The dissection of a square that can be used to form an equilateral Triangle

Other dissections are intended to move between a pair of geometric shapes, such as a square to a triangle, or a square to a five-pointed star. One famous dissection puzzle of this description is the haberdasher's problem, proposed in 1907 by Henry Dudeney. The puzzle is a dissection of a square to an equilateral Triangle, in only four pieces. It is one of the simplest regular polygon to square dissections known, and is now a classic example. It is not known whether a dissection of an equilateral triangle to a square is possible with three pieces.

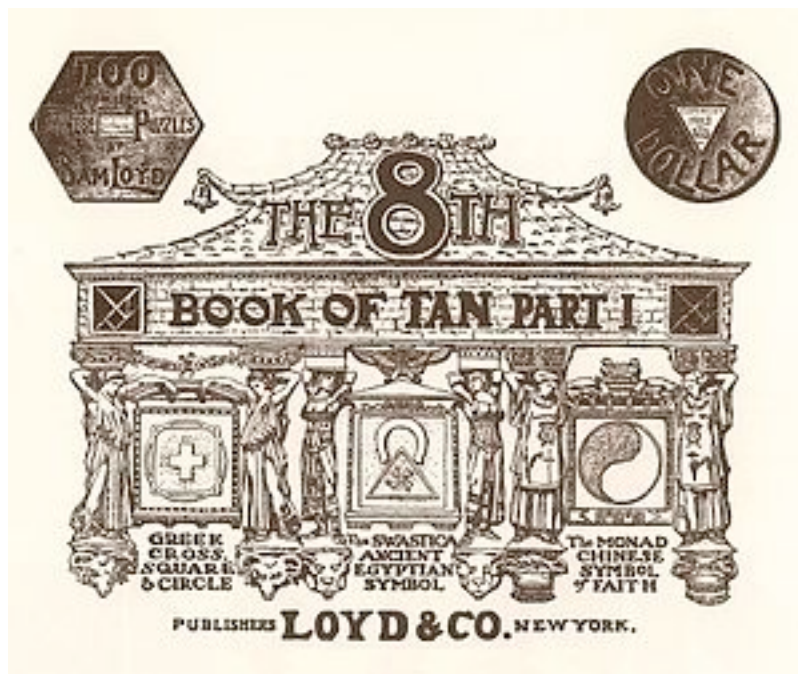
Tangrams

A tangram puzzle, with its pieces in the rectangular configuration.



The tangram had already been around in China for a long time when it was first brought to America by Captain Donaldson, on his ship, Trader, in 1815. When it docked in Canton, the captain was given a pair of Tangram books from 1815. They were then brought with the ship to Philadelphia, where it docked in 1816.

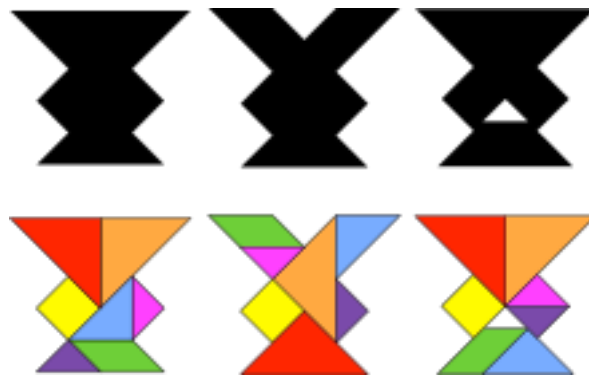
The first Tangram book to be published in America was based on the pair brought by Donaldson. The puzzle was originally popularized by *The Eighth Book Of Tan*, a fictitious history of Tangram, by Sam Loyd. His book claimed that the game was invented 4,000 years prior by a god named Tan. The book included 700 shapes, some of which are impossible to solve.



Cover art from *The 8th Book of Tan*, by [Sam Loyd](#).

The book was a spoof of the puzzle's history that began the Tangram Craze in the Western World

The Magic Dice Cup tangram puzzle. from Sam Loyd's book *The Eighth Book of Tan* (1903). Each of these cups was composed using the same seven geometric shapes. But the first cup is whole, and the others contain vacancies of different sizes. Notice that the one on the left is slightly shorter than the other two. The one in the middle is ever-so-slightly wider than the one on the right, and the one on the left is narrower still



The puzzle eventually reached England, where it became very fashionable indeed. The craze quickly spread to other European countries. This was mostly due to a pair of British Tangram books, *The Fashionable Chinese Puzzle*, and the accompanying solution book, *Key*. Soon, tangram sets were being exported in great number from China, made of various materials, from glass, to wood, to tortoise shell.

Many of these unusual and exquisite tangram sets made their way to Denmark. Danish interest in tangrams skyrocketed around 1818, when two books on the puzzle were published, to much enthusiasm. The first of these was *About the Chinese Game* which was a non-fictional work about the history and popularity of tangrams. The second *The new Chinese Puzzle Game*, consisted of 339 puzzles copied from *The Eighth Book of Tan*, as well as one original. One contributing factor in the popularity of the game in Europe was that although the Catholic Church forbade many forms of recreation on the sabbath, they made no objection to puzzle games such as the tangram.

Tangrams were first introduced to the German public around 1891. The sets were made out of stone or false earthenware and marketed under the name "The Anchor Puzzle".¹ More internationally, the First World War saw a great resurgence of interest in Tangrams, on the home front and trenches of both sides. During this time, it occasionally went under the name of *The Sphinx*, an alternative title for the "Anchor Puzzle" sets.