Print ‘n’ Play Collection
Of the 12 Visual Puzzles

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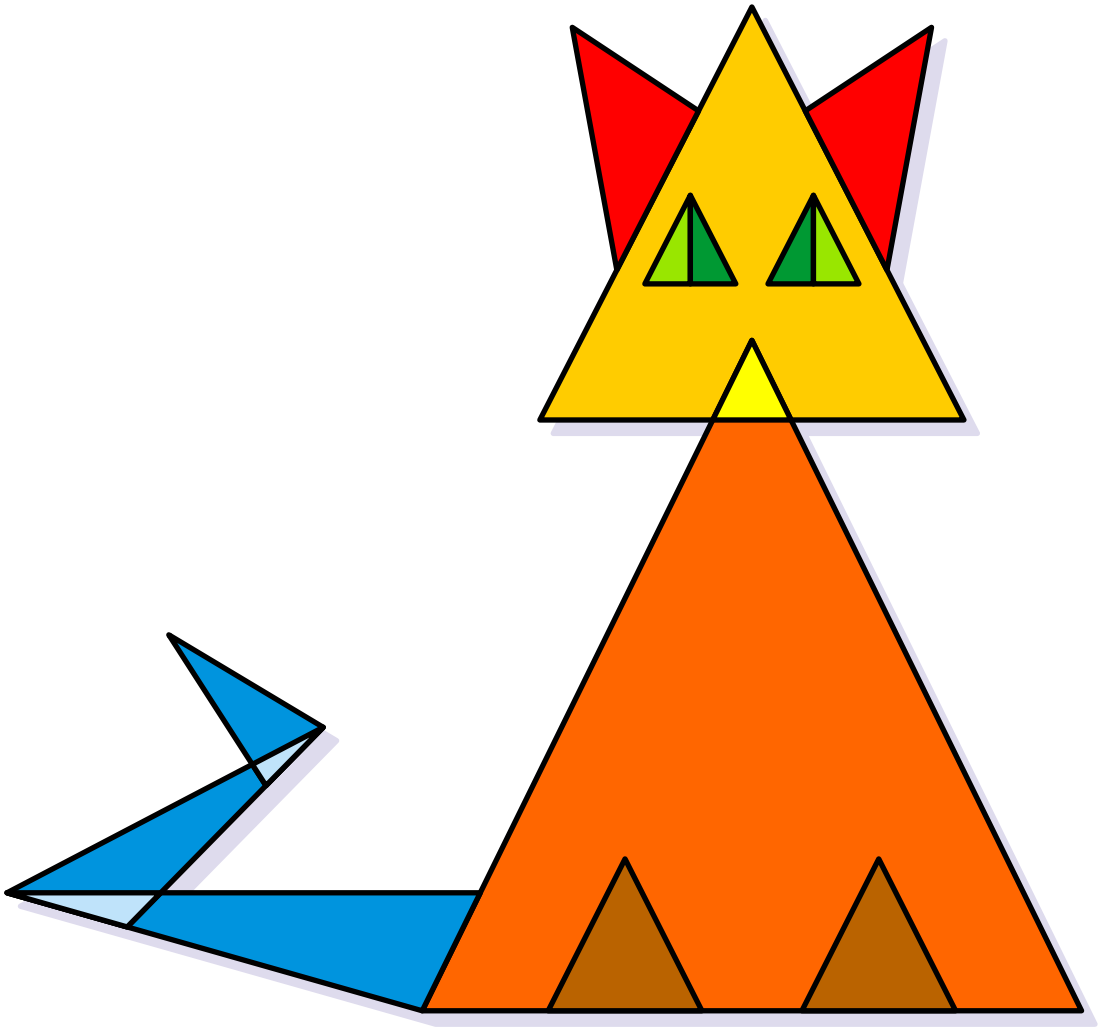
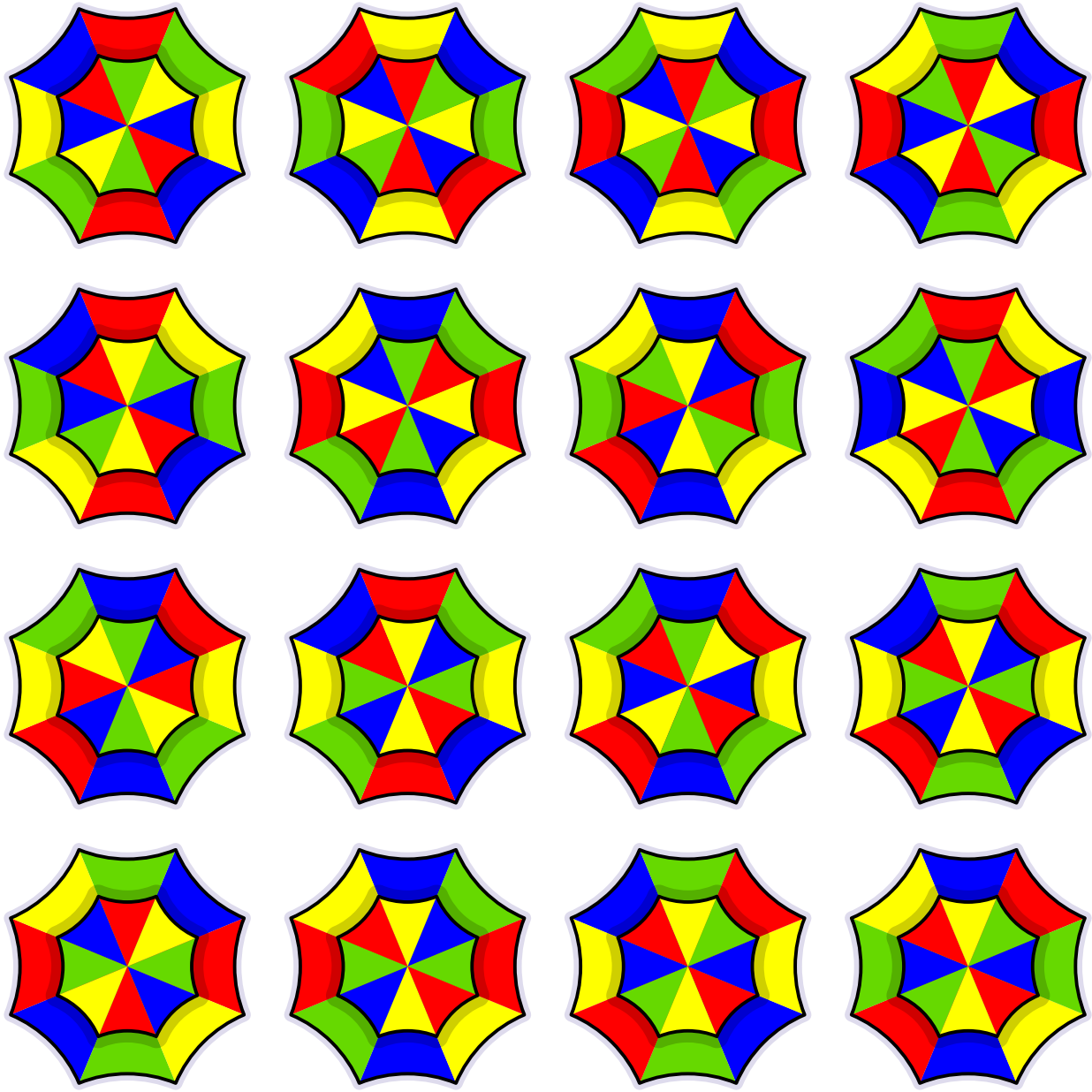
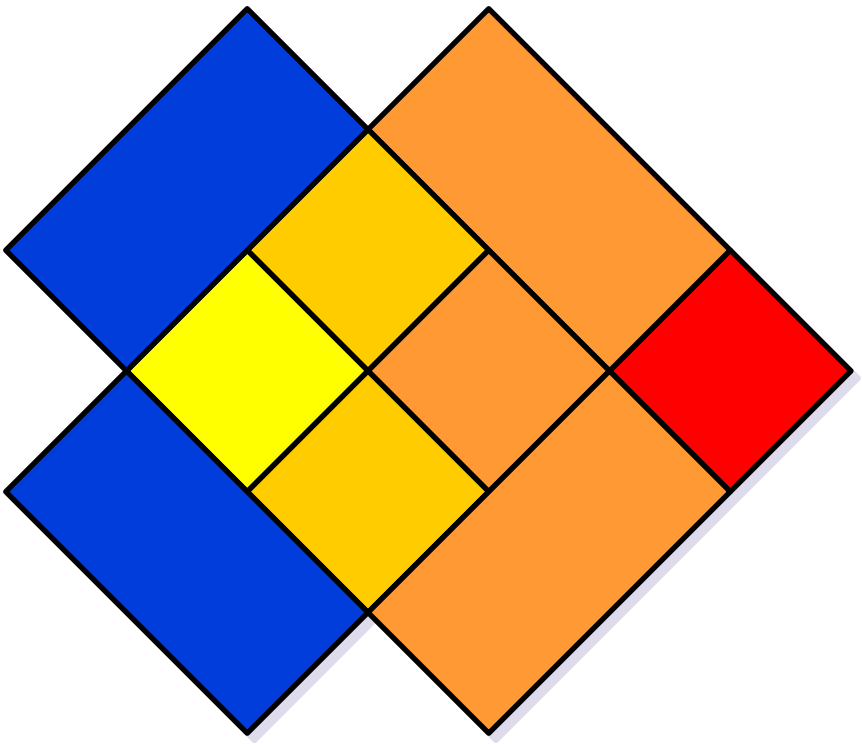


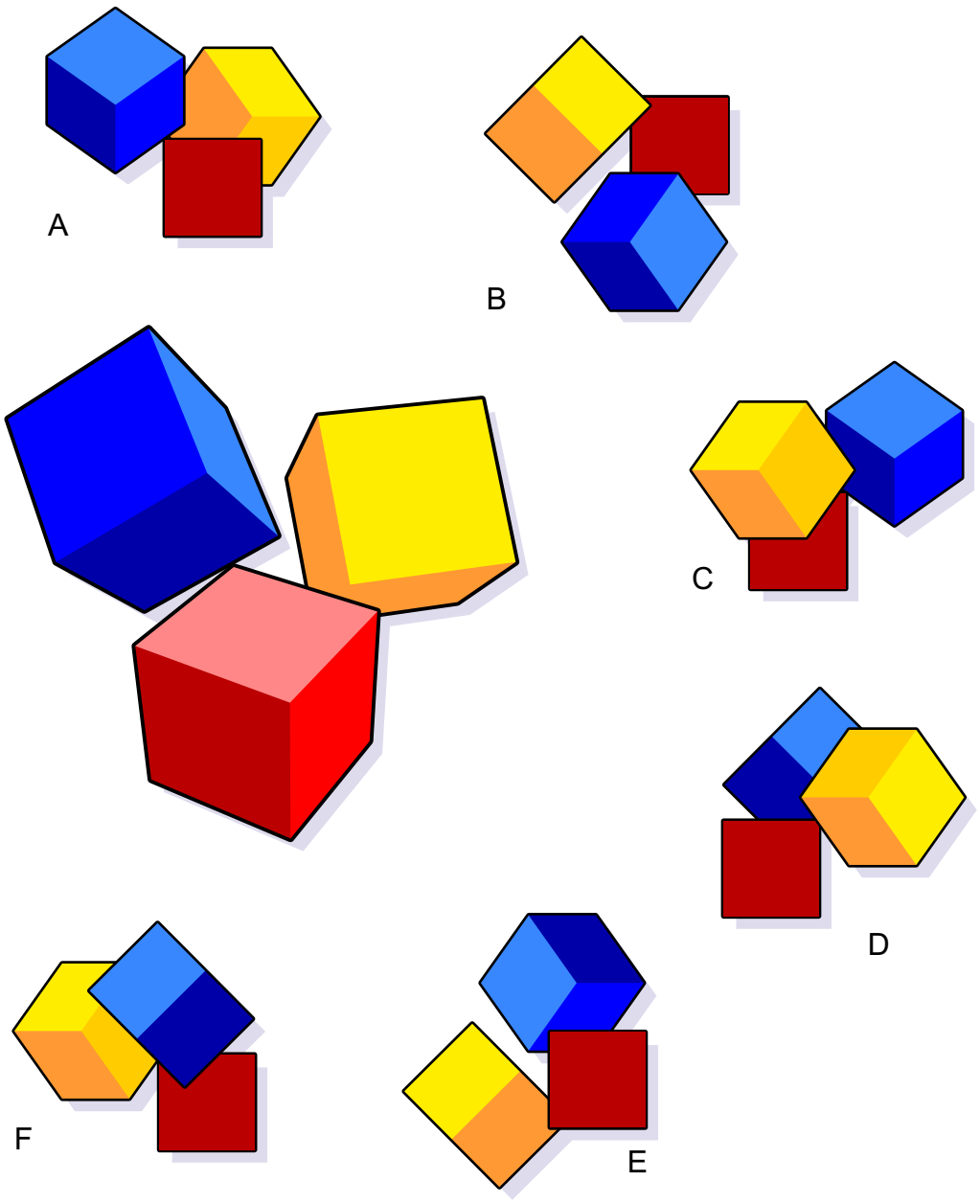
How many different triangles can you count in the picture of the cat?



Can you find two identical umbrellas among those sixteen shown in the illustration? The umbrellas can be rotated but not mirrored.

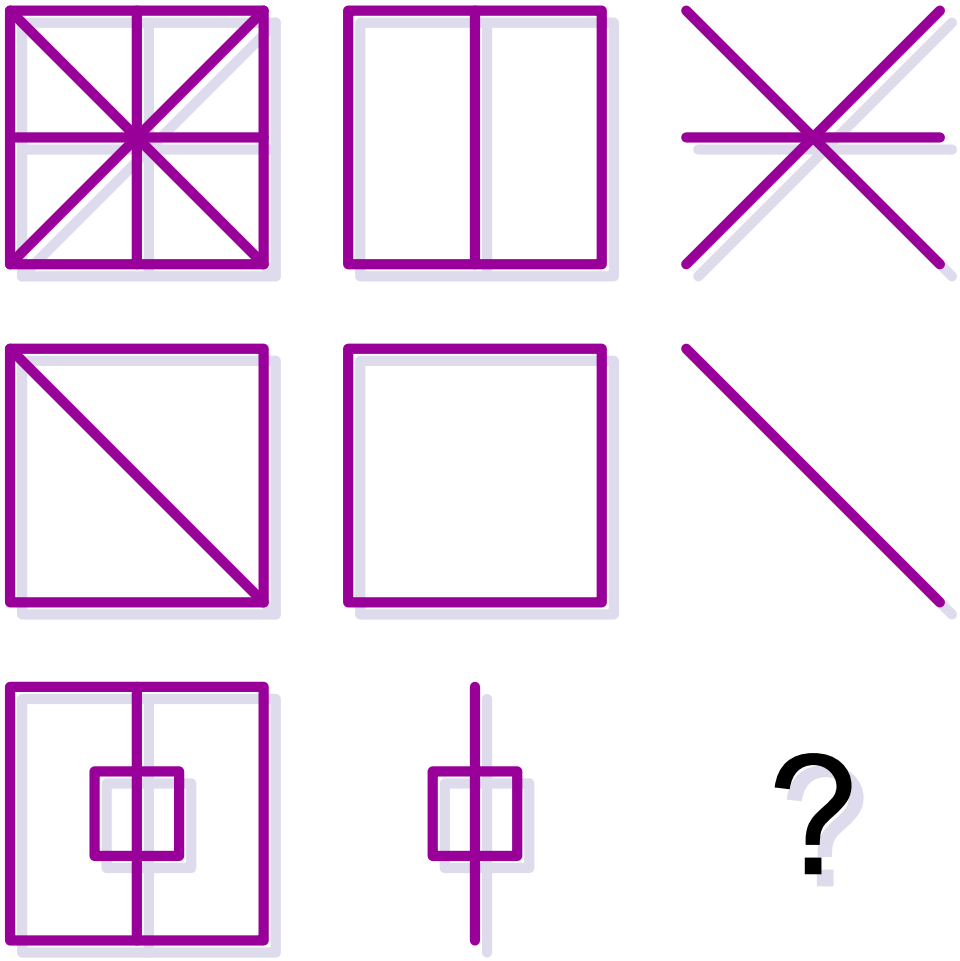


How many different squares can be found in the shape shown in the illustration?



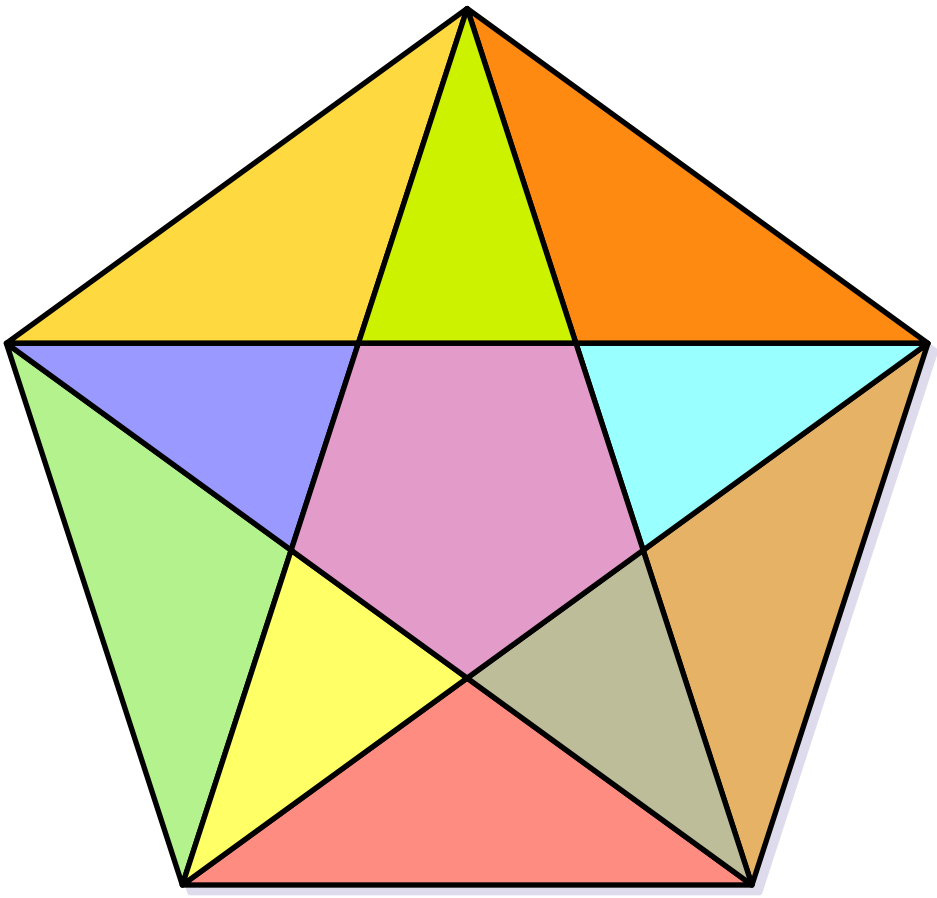
Six different snapshots are scattered around the composition of three cubes - as shown in the illustration.

All snapshots except one are taken from the three cubes. Can you figure out the snapshot from among A-F which doesn't belong to the set?

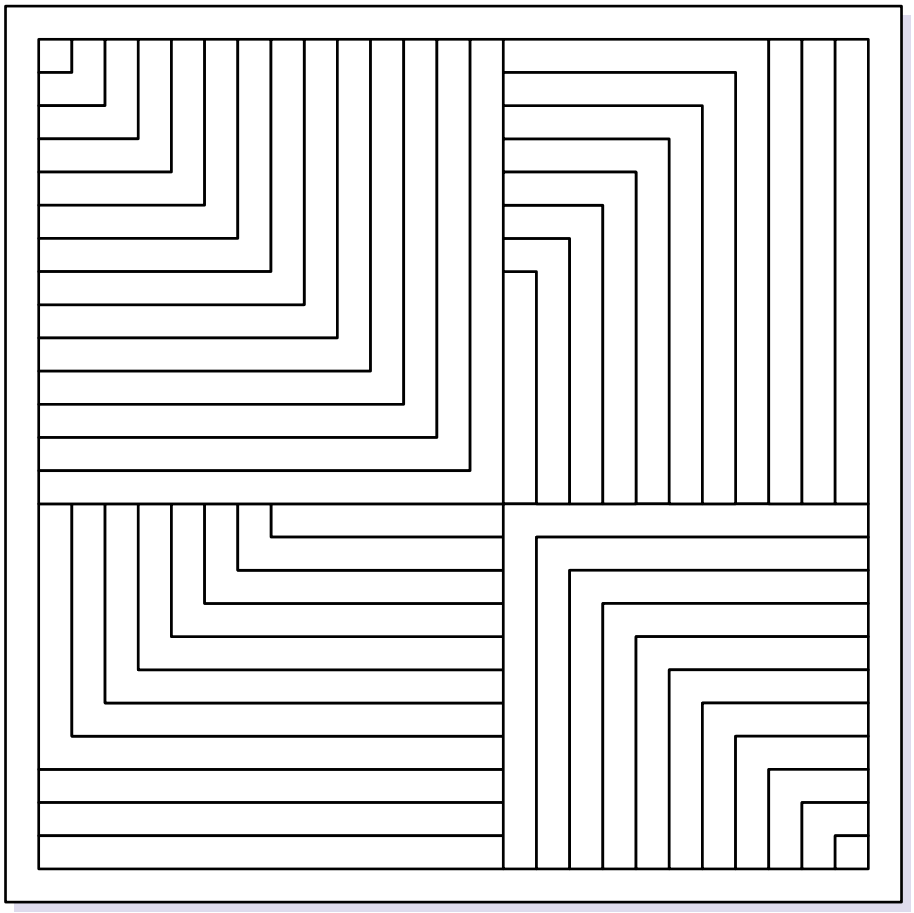


In each row the third pattern is obtained from the first two by applying a rule. What is the rule, and what pattern goes at the end of the third row instead of the question mark?

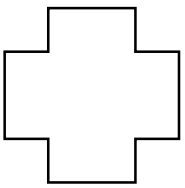
What month is indicated by the strange symbols in the illustration?

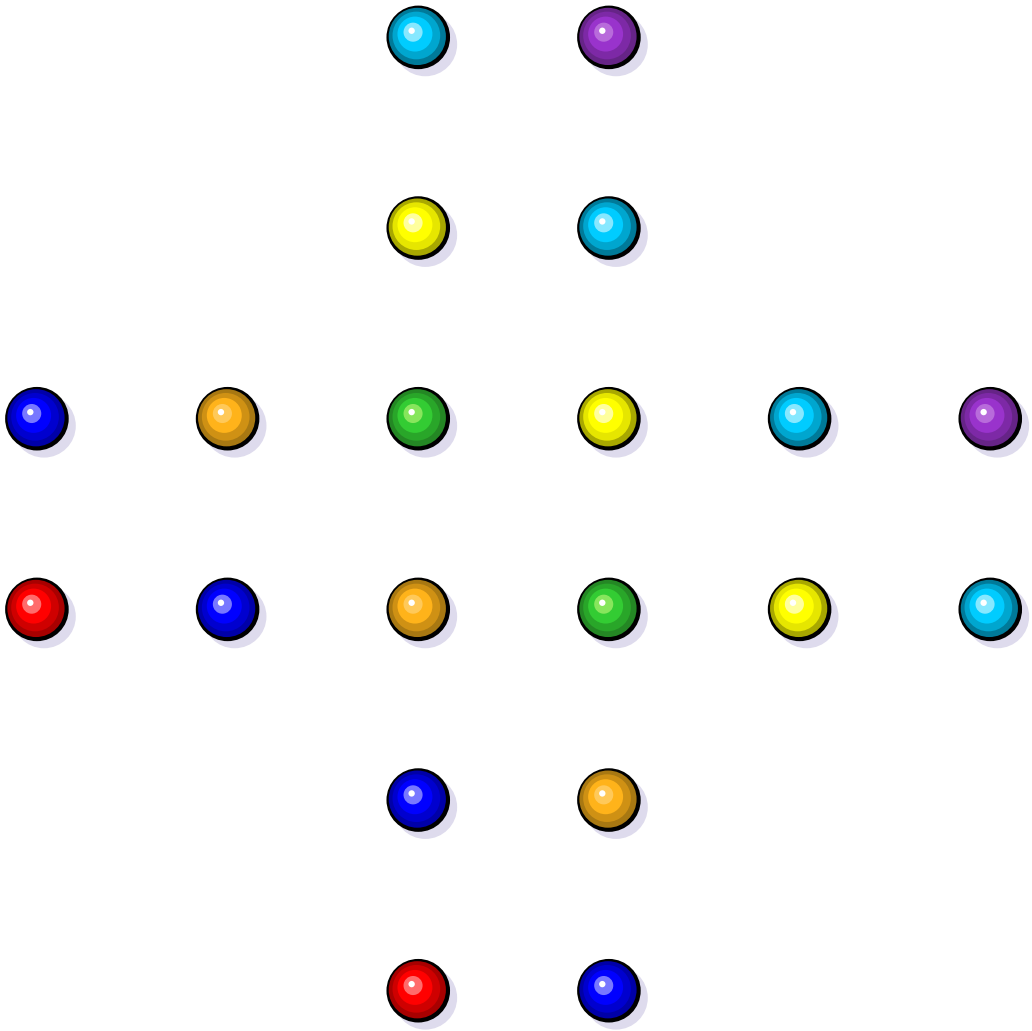


Draw the figure shown in the illustration; it's a pentagon with each its vertex connected with every other. The question is how many different triangles are hidden in this figure?



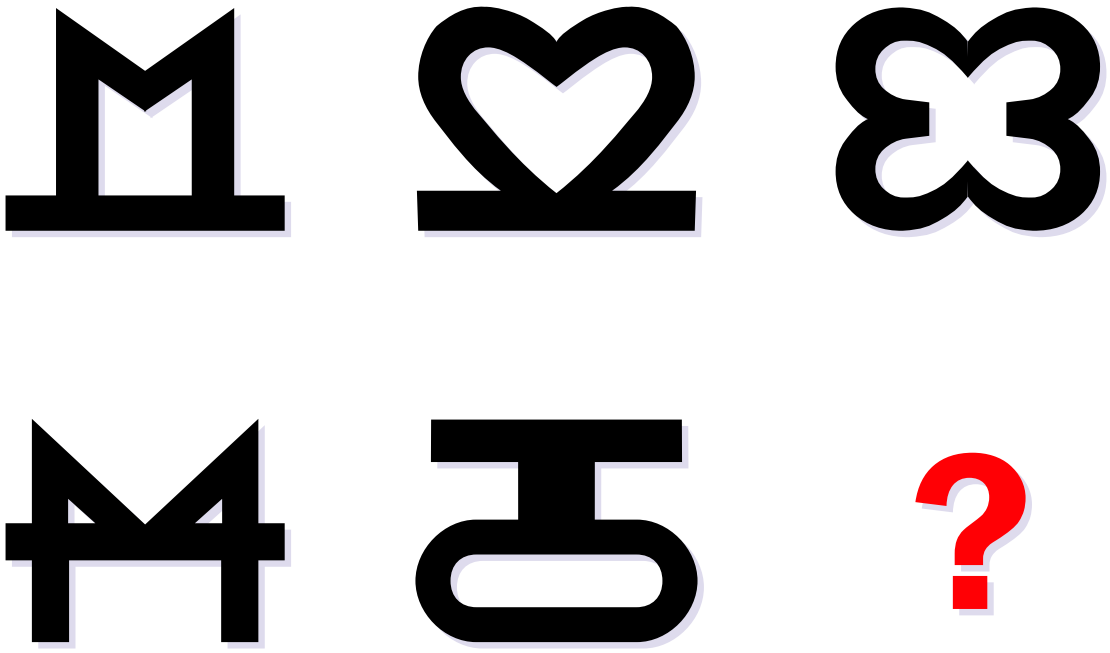
The object of the puzzle is to trace in the big figure above a shape geometrically similar to the smaller one shown on the right.



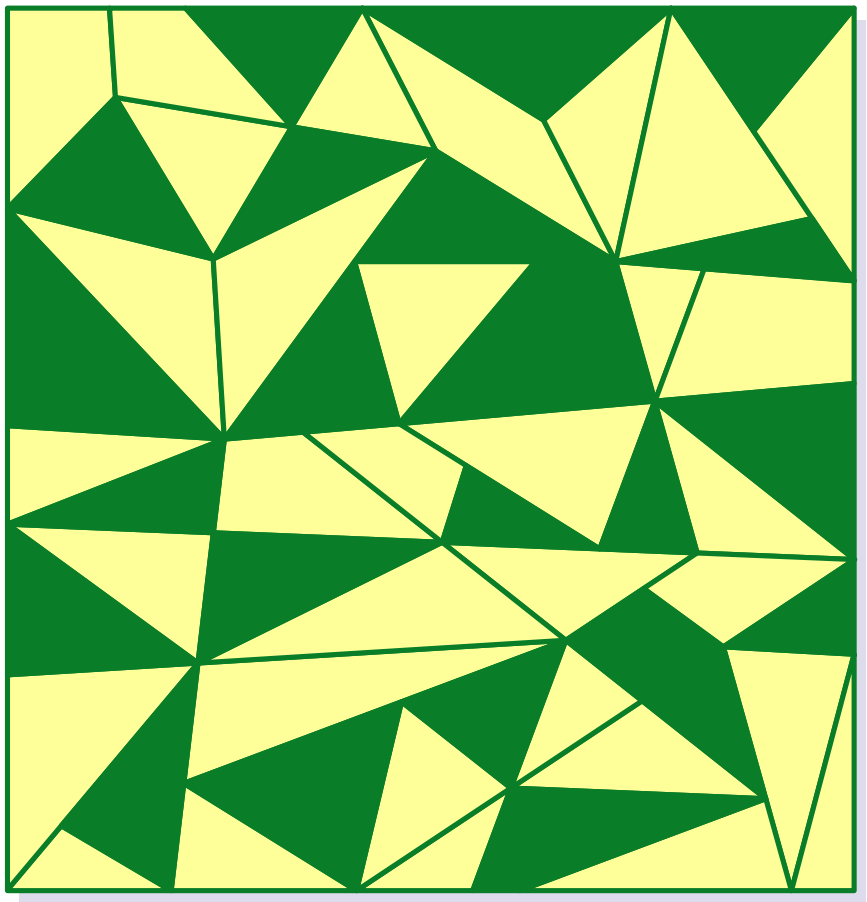


Puzzle 1. Count how many perfect squares of all possible sizes are hidden in the cross of dots on the left. A square is counting if any four dots are placed exactly in its respective corners.

Puzzle 2. It is more difficult than previous one. You have to remove exactly 6 dots so that any four dots from those remaining would not lie in the corners of a square. So you'll get the "no-squares" position for which there are no four dots that form a perfect square.



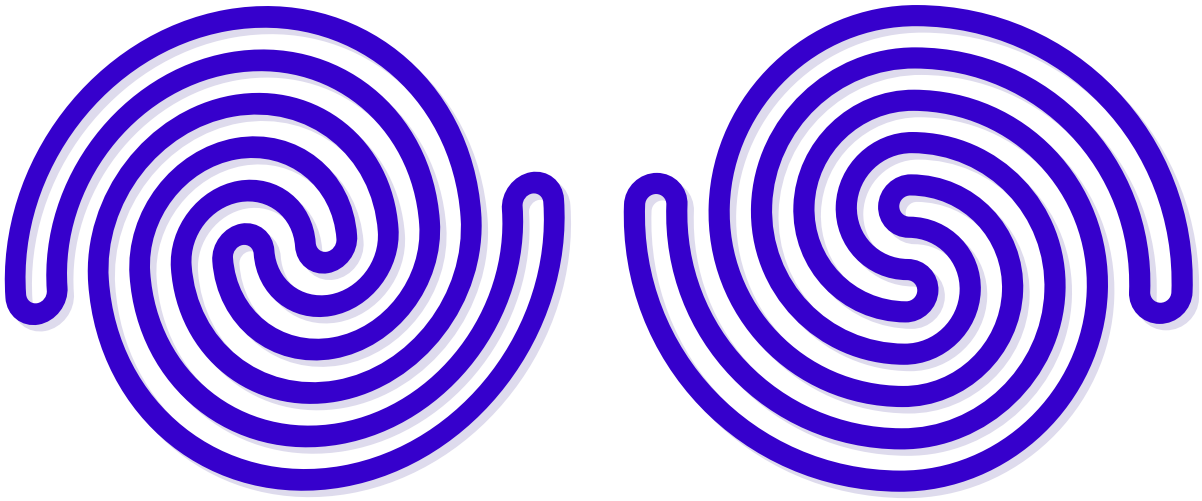
What symbol has to come next in the sequence of the five symbols in the illustration? Can you sketch this sixth figure?



There is a perfect star in the illustration above. Can you discover where this star is hidden?

The Two Spirals

by Martin Gardner



One of the two spirals in the illustration consists of a single piece of rope that has its ends joined. The other spiral consists of two separate pieces of rope, each with joined ends. Can you identify which is which using only your eyes?

VISUAL 12

Solutions

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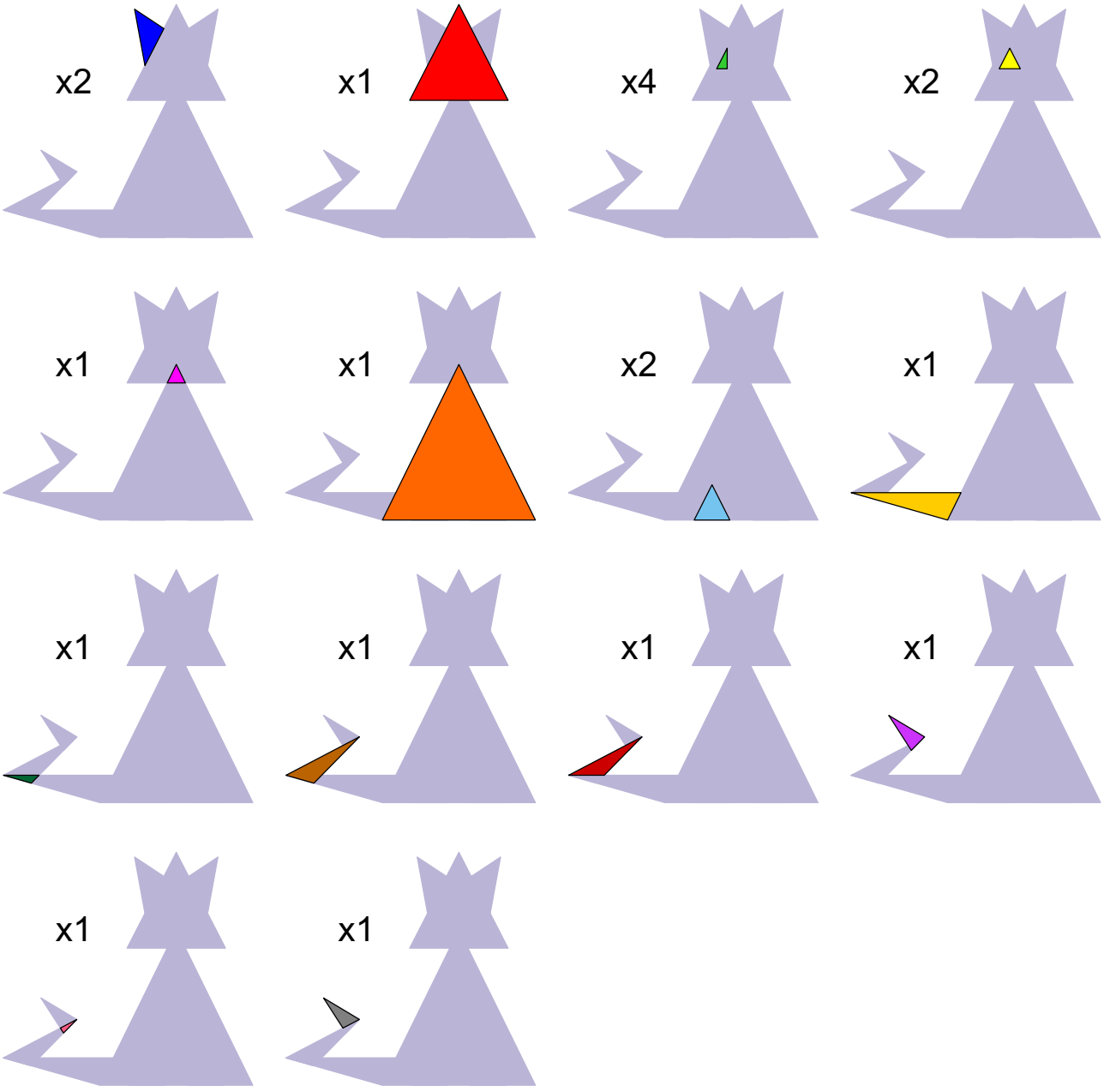
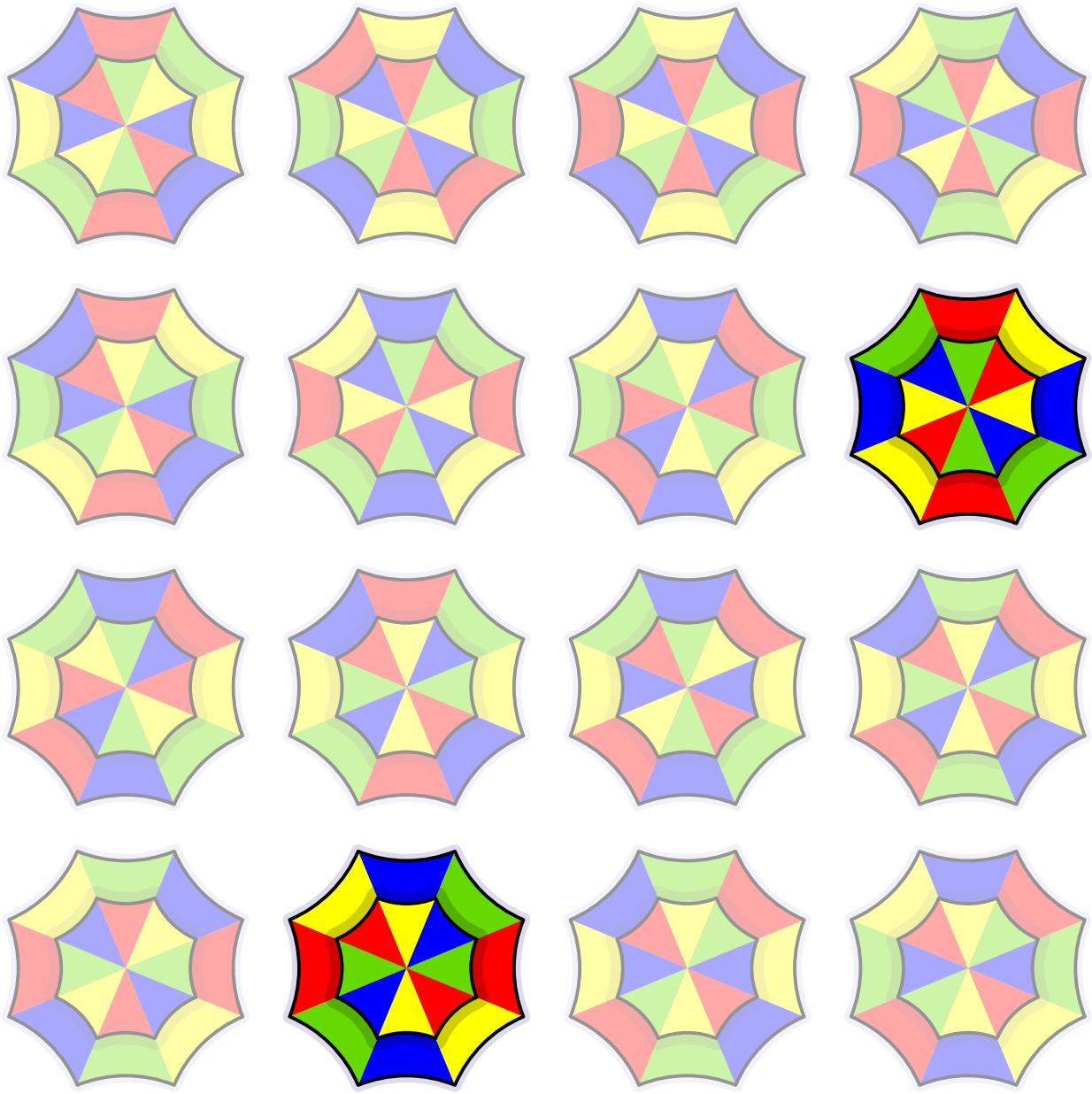
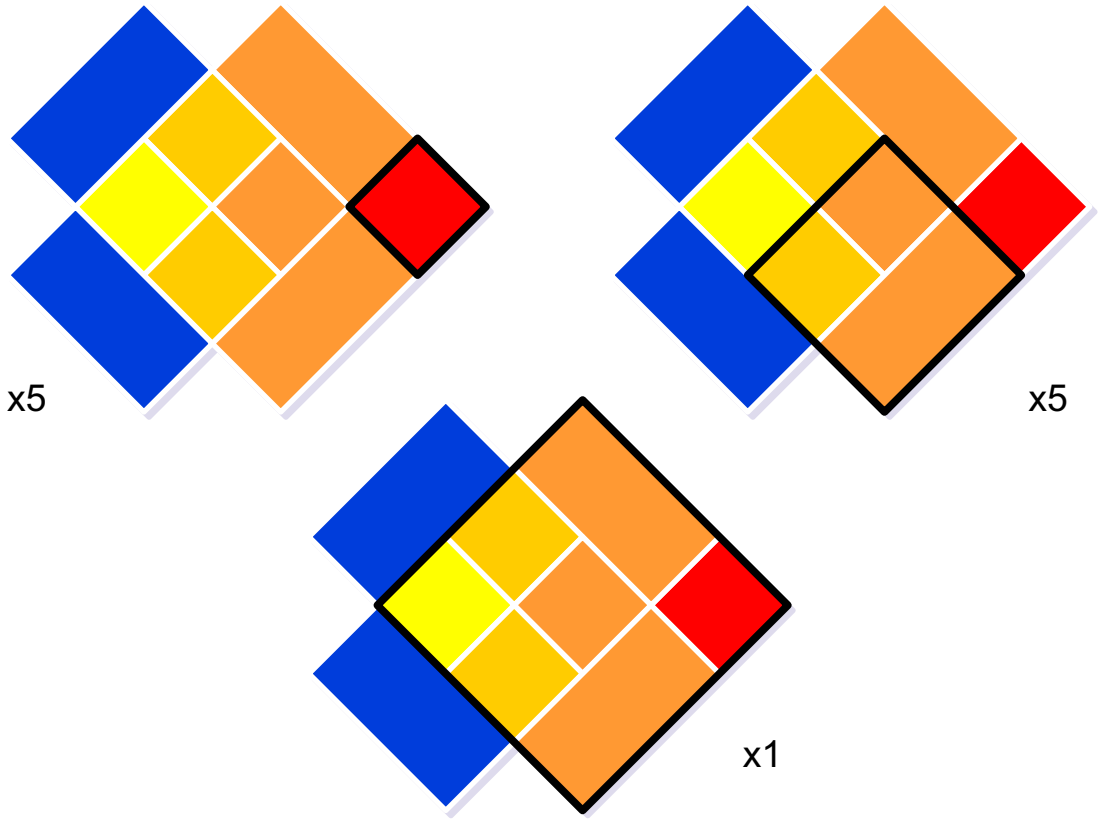


There are 20 triangles hidden in the cat - as is shown in the diagram.

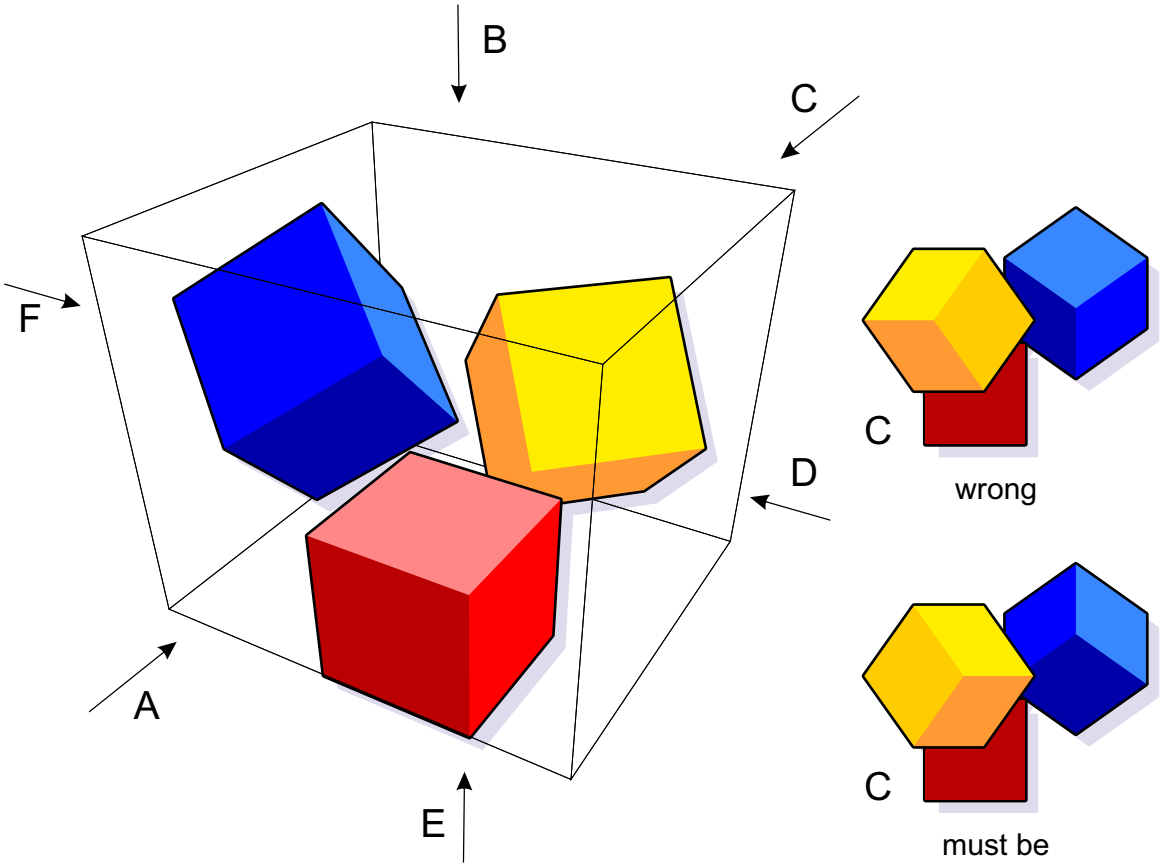
Colored Umbrellas
(Solution)



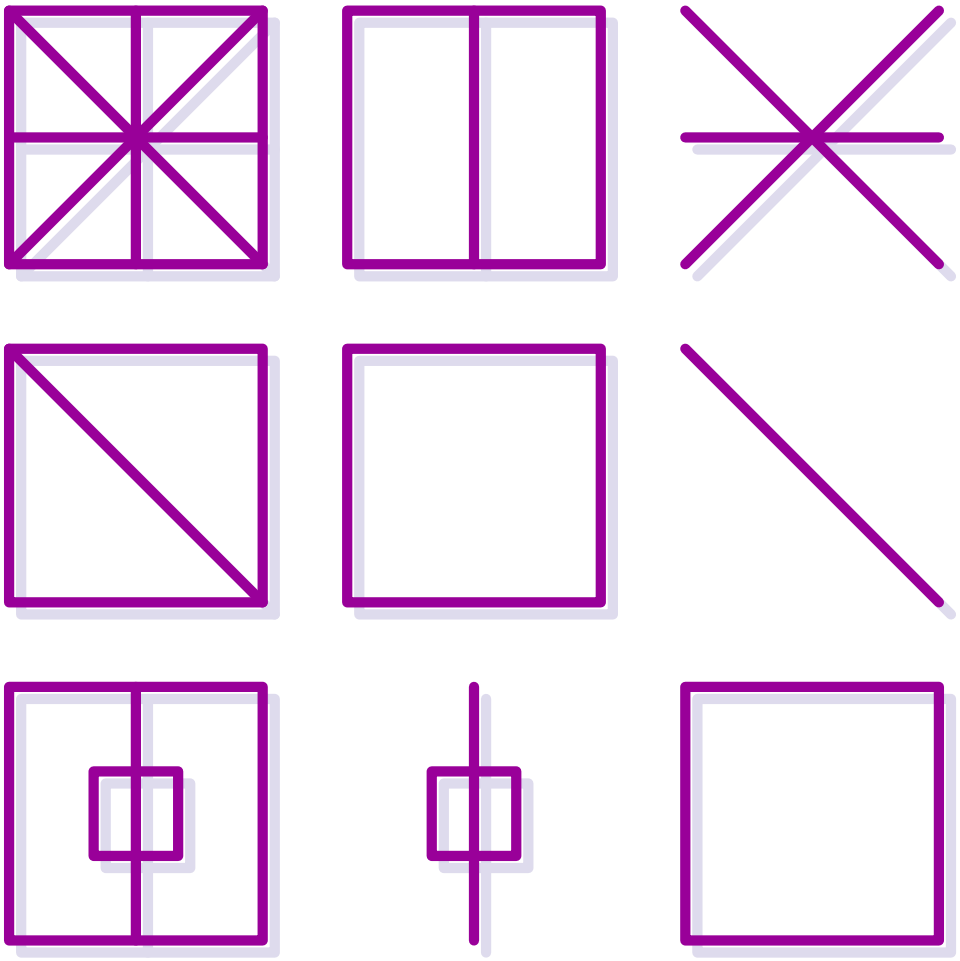
The solution is shown in the illustration.



There are 11 squares of three different sizes hidden in the shape - as shown in the illustration.



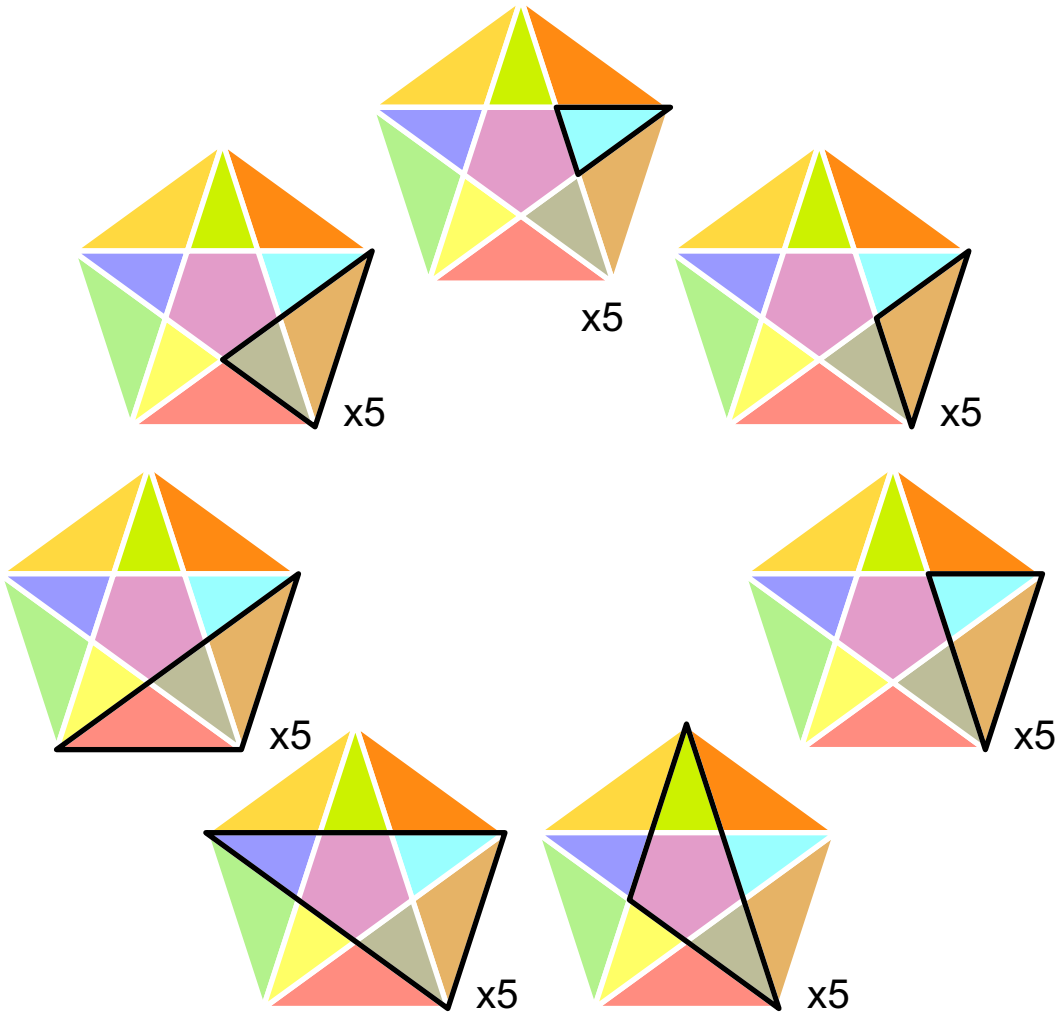
The wrong snapshot is C. The illustration shows what it should be instead.



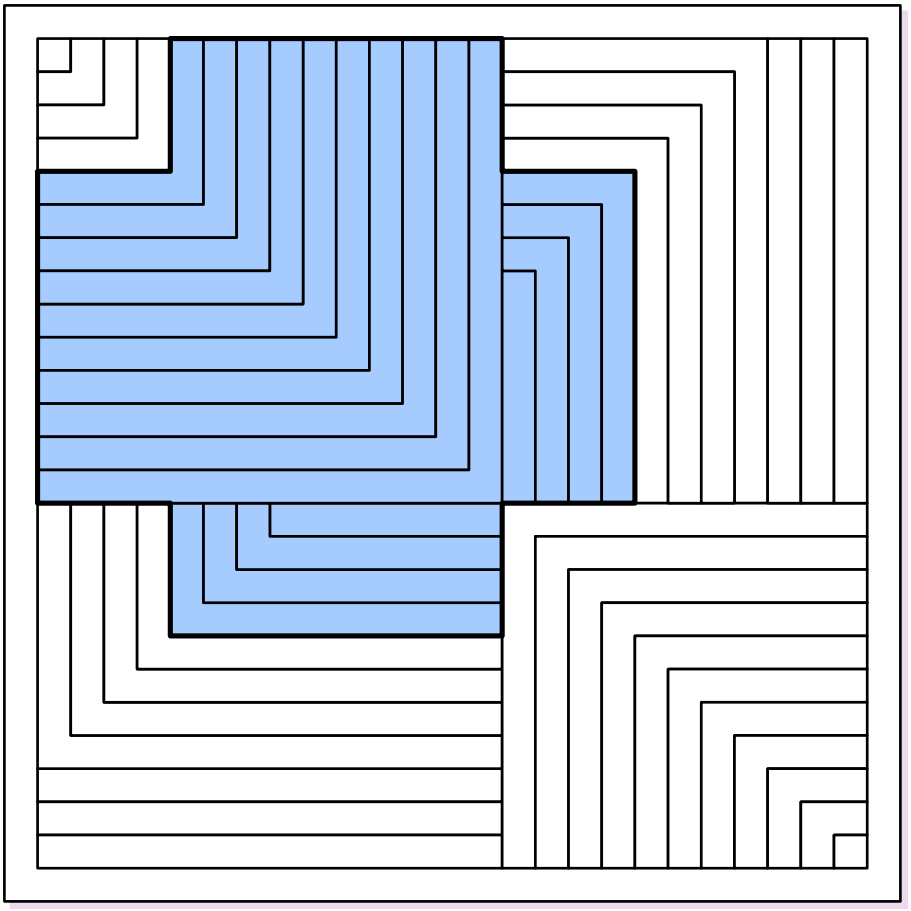
The rule for obtaining the third pattern in each row is to superimpose the first two patterns and eliminate any lines they have in common. Hence the pattern to be placed at the end of the third row is simply a square.

The puzzle is from a special issue of the French magazine Science et Vie (September, 1978).

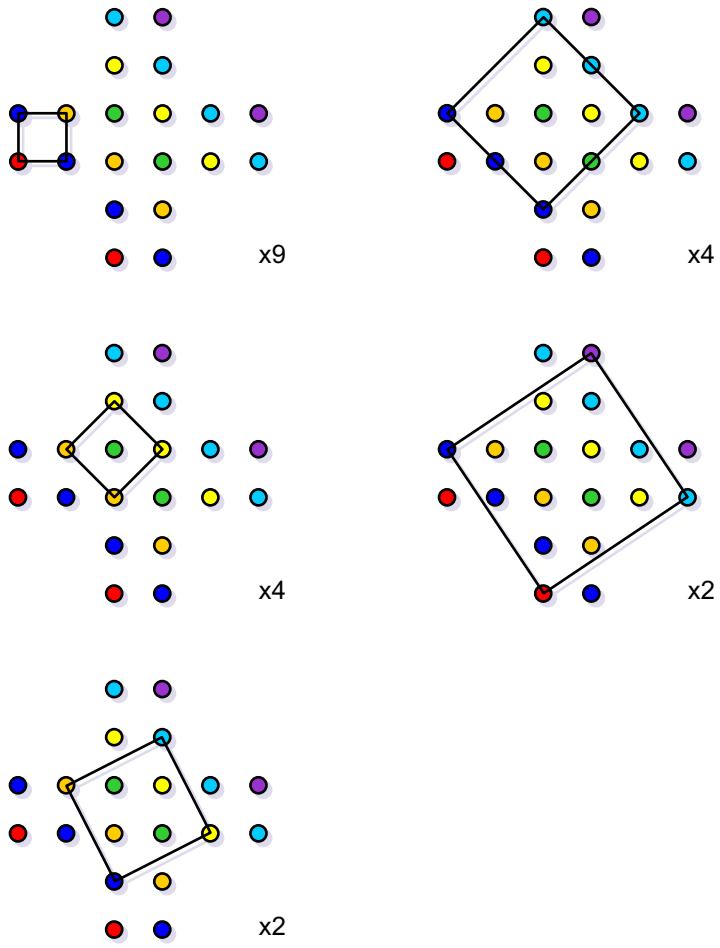
Covering the top halves of each symbol reveals the month JULY.



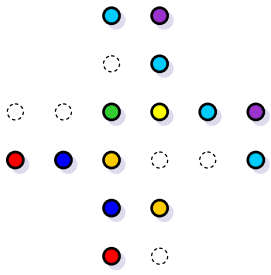
There are seven groups of triangles shown in the diagrams above. Each group consists of exactly five triangles with every triangle rotated 72 degrees around the center of the pentagon; one triangle from every group is highlighted in the respective diagram. So the total number of the triangles in the pentagon is 7x5=35.



The hidden cross is shown in the pattern in the illustration.



Solution to Puzzle 1. The five diagrams above show all the 21 perfect squares which can be found in the cross of 20 dots.



Solution to Puzzle 2. The diagram above shows "no-squares" position with the six dots removed.

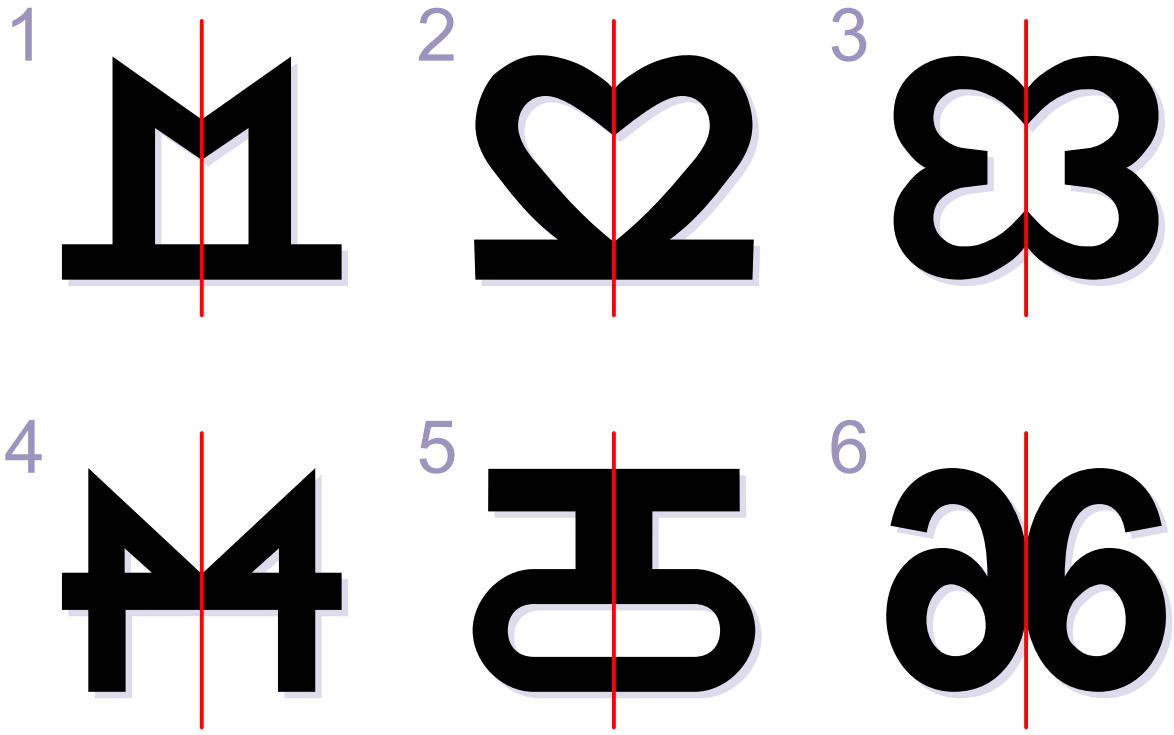
The answer to **Puzzle 1** is 21 perfect squares. They are shown in the five diagram on the top illustration.

There is a nice story behind this ingenious old puzzle. It illustrates a tricky nature of Puzzle 1 very well.

In 1893 professor Louis Hoffmann asked in his famous book *Puzzles Old and New* to arrange twenty counters so that they form thirteen different squares, and in his original solution (he showed a pattern exactly as our big cross of 20 green dots) stated that there are seventeen perfect squares.

Several decades later, Henry E. Dudeney, England's greatest puzzle creator, improved Hoffmann's solution with 17 squares, and did this... twice - first it was a new solution with 19 squares, and then - 21. Both solutions were published in Dudeney's puzzle books.

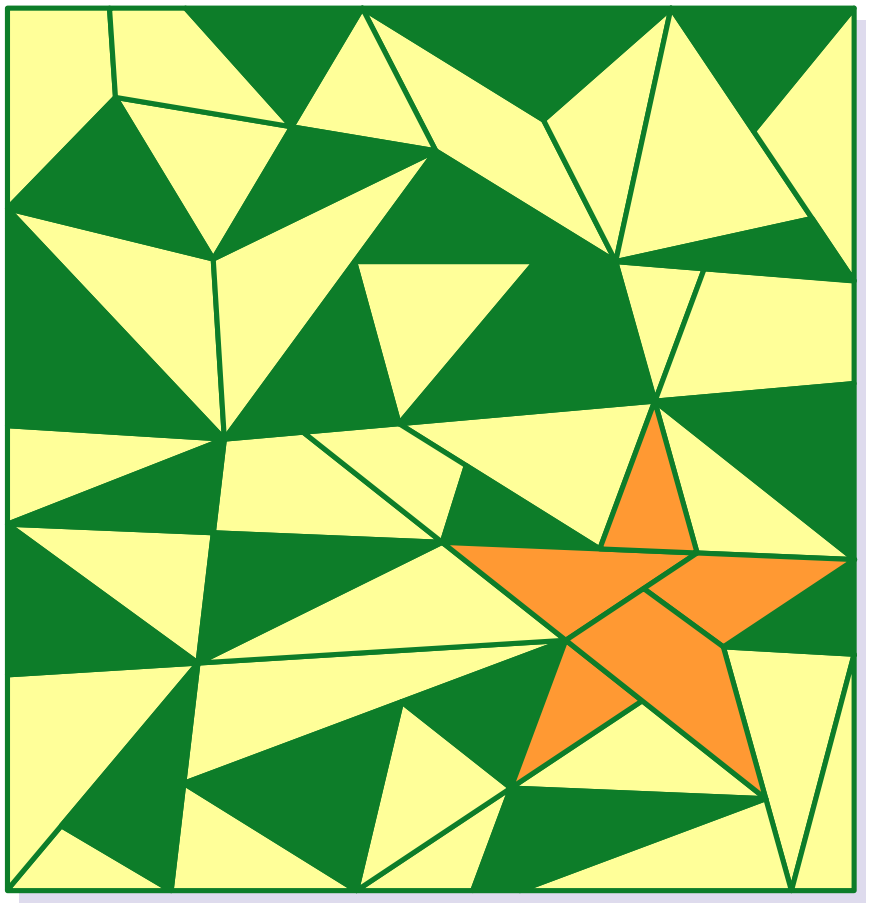
The answer to **Puzzle 2** which we show on the bottom illustration is exactly as that from Hoffmann's book - not a single square remains. Moreover, all your correct solutions fully coincide with this old one!



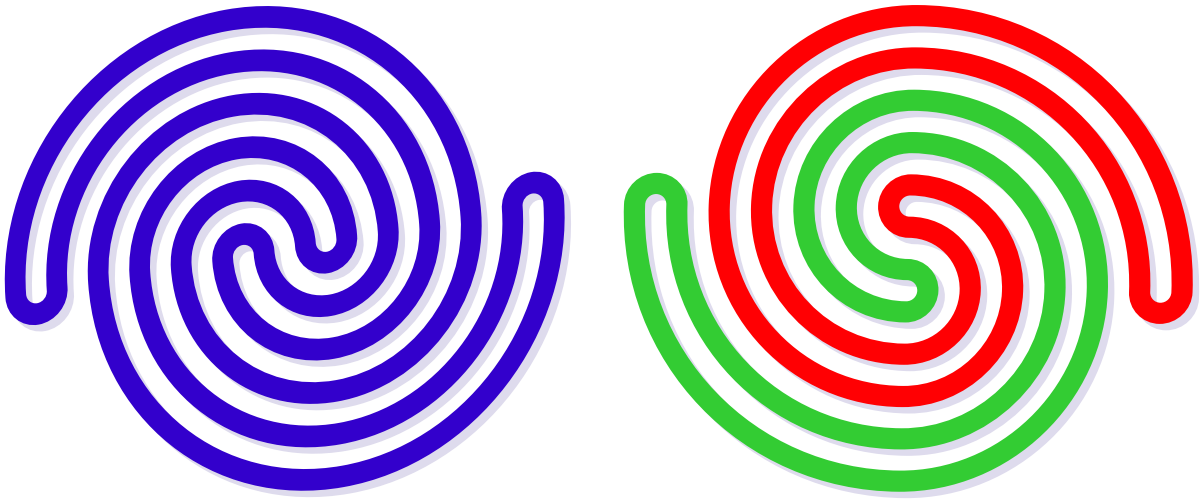
As shown in the illustration each figure in the sequence is formed of one of the numerals 1 through 5 and its mirror reflection joined together as the right and left parts of the figure. The vertical lines of symmetry are shown in red.

Thus the sixth figure has to be the 6 combined with its mirror reflection as shown.

The Lost Star
(Solution)



The lost star is shown in the illustration.



The spiral with the single rope is the left one as shown in the illustration. The right spiral consists of two pieces of rope.