Print 'n' Play Collection

Of the 12 Puzzles with Numbers

NUMBERS 12

Puzzles.COM

NUMBERS 12 Puzzles

A Simple Cryptarithm

by Henry E. Dudeney


```
      * *
×       *
---------
      * *
+     * *
---------
      * *
```

This cryptarithm is built in such a way that first you multiply two numbers and then add to the result one extra number to get the final result. Every asterisk in this cryptarithm means some digit from 1 through 9, and every digit is used exactly once. 0 isn't used.

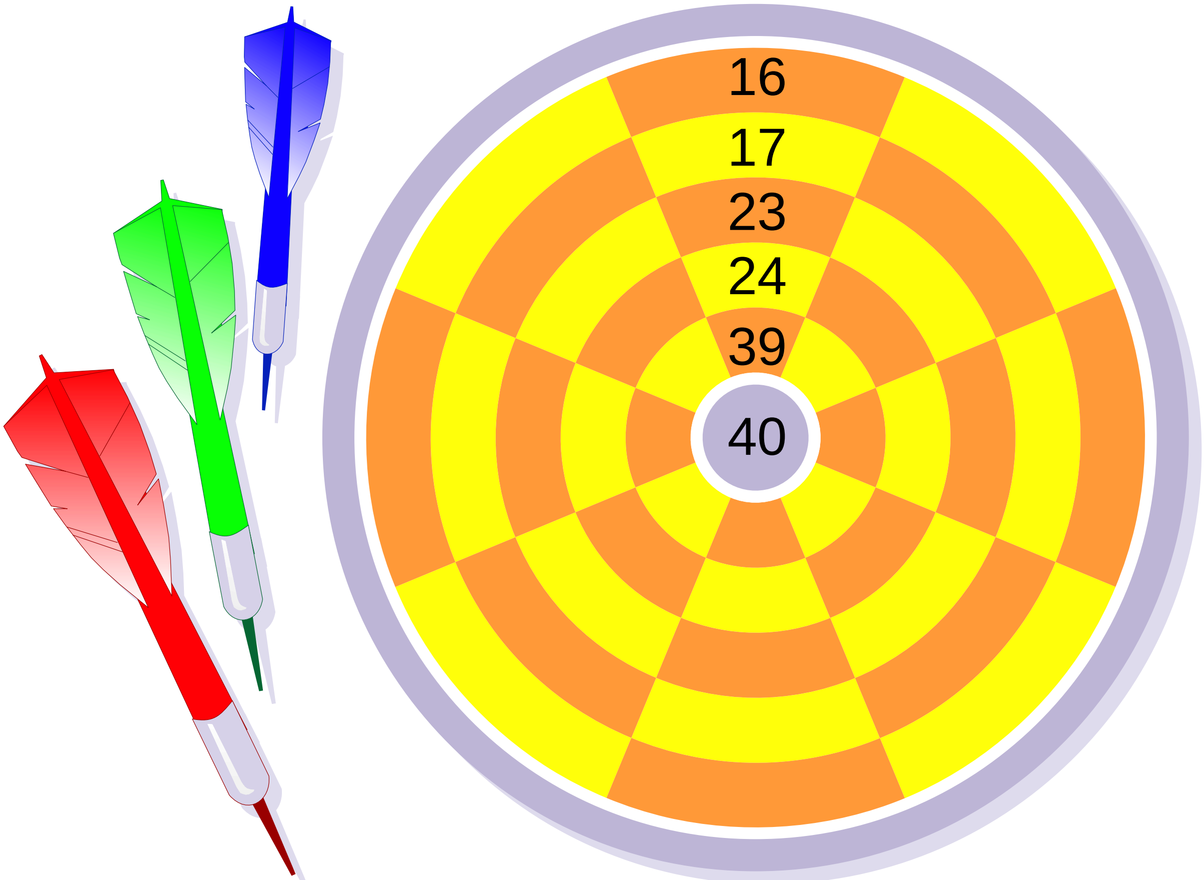
The object is to replace all the asterisks with digits from 1 through 9 so that the whole calculation is correct. The solution is unique.

Cube Dates

after Martin Gardner

On the unusual desk calendar shown in the illustration a day is indicated simply by arranging the two cubes so that their front faces give the date. The face of each cube bears a single digit, 0 through 9, and one can arrange the cubes so that their front faces indicate any date 01, 02, 03... to 31.

Can you determine the four digits that cannot be seen on the left (blue) cube and the three on the right (red) cube?



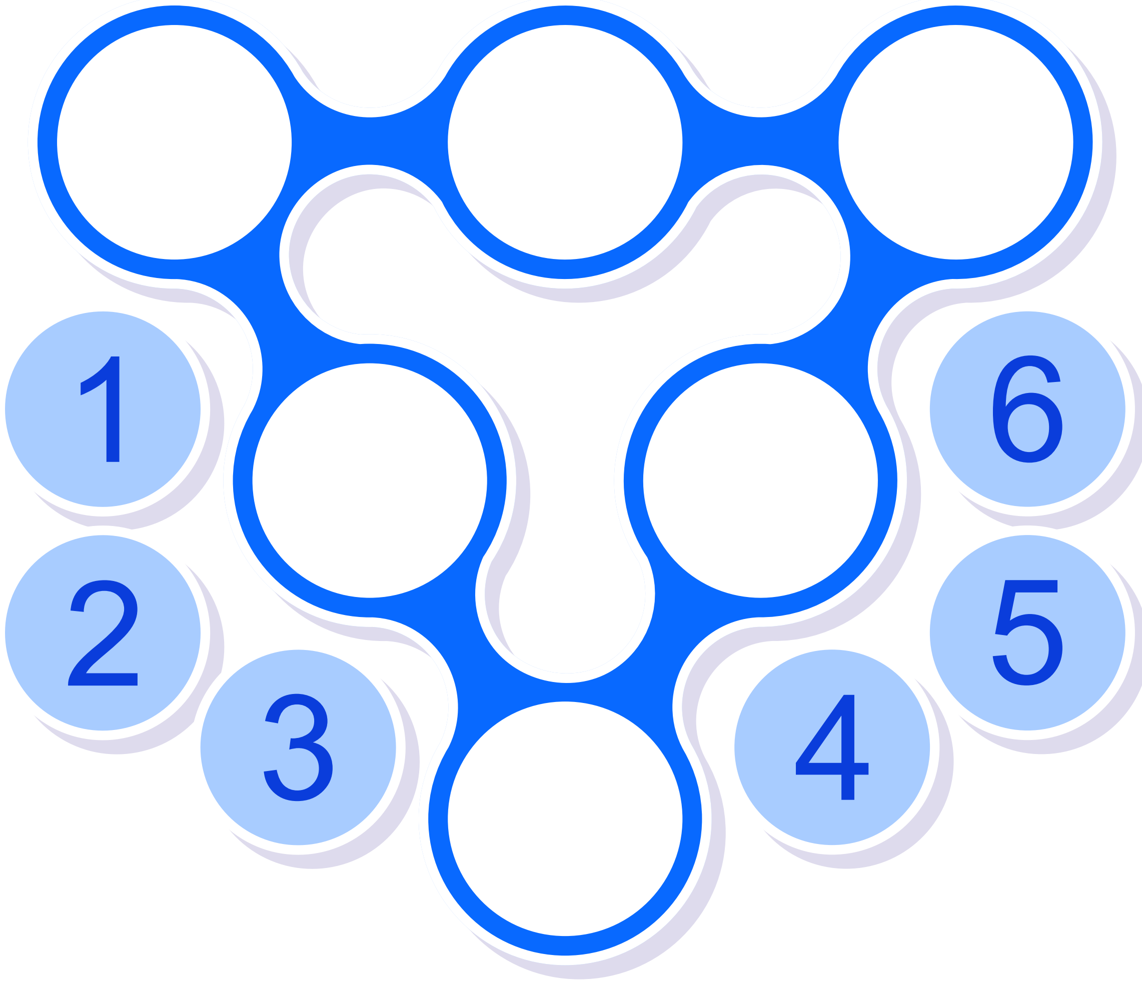
Can you find a pattern how to toss some number of darts in order to score exactly 100? You may use as many darts as you like. Hint: Try first for a score of 50.

Divisible By 7

after Sam Loyd

Three numbers (6, 3 and 1) are drawn on the sides of three cubes - a number per cube, just as shown in the illustration.

Can you arrange the three cubes in a line so that to create a 3-digit number divisible by 7? Each cube must be employed.



Place all the numbers from 1 to 6 in the circles along the sides of the triangle (one number per circle), so that three numbers on each side add up to the same total - a magic sum.

There are four different magic sums that could be reached for this puzzle. All these sums are from 9-12 number range. Can you find all of them?

```
    O N E
    O N E
    O N E
+   O N E
---------
    T E N
```

The same letters in this calculation mean the same digit.

Can you replace all the letters with the respective digits in such a way that the calculation is correct?

Note: no beginning letter of a word can be 0.

*This puzzle was inspired to the publication on our site by the message from Priti Ghai.

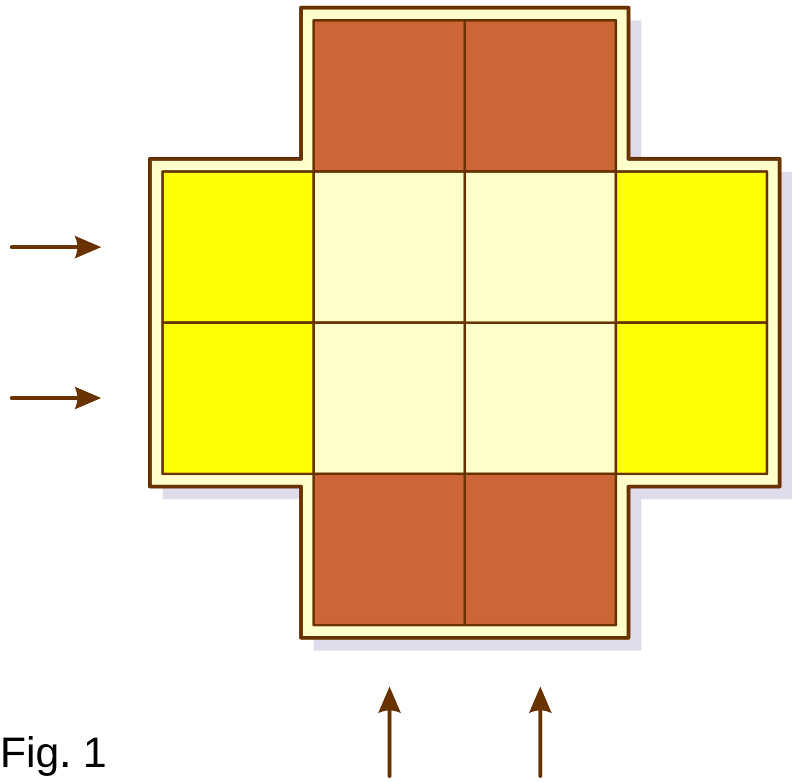


Fig. 1

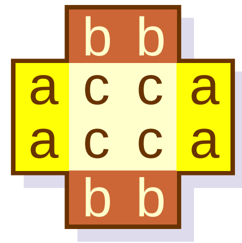


Fig. 2

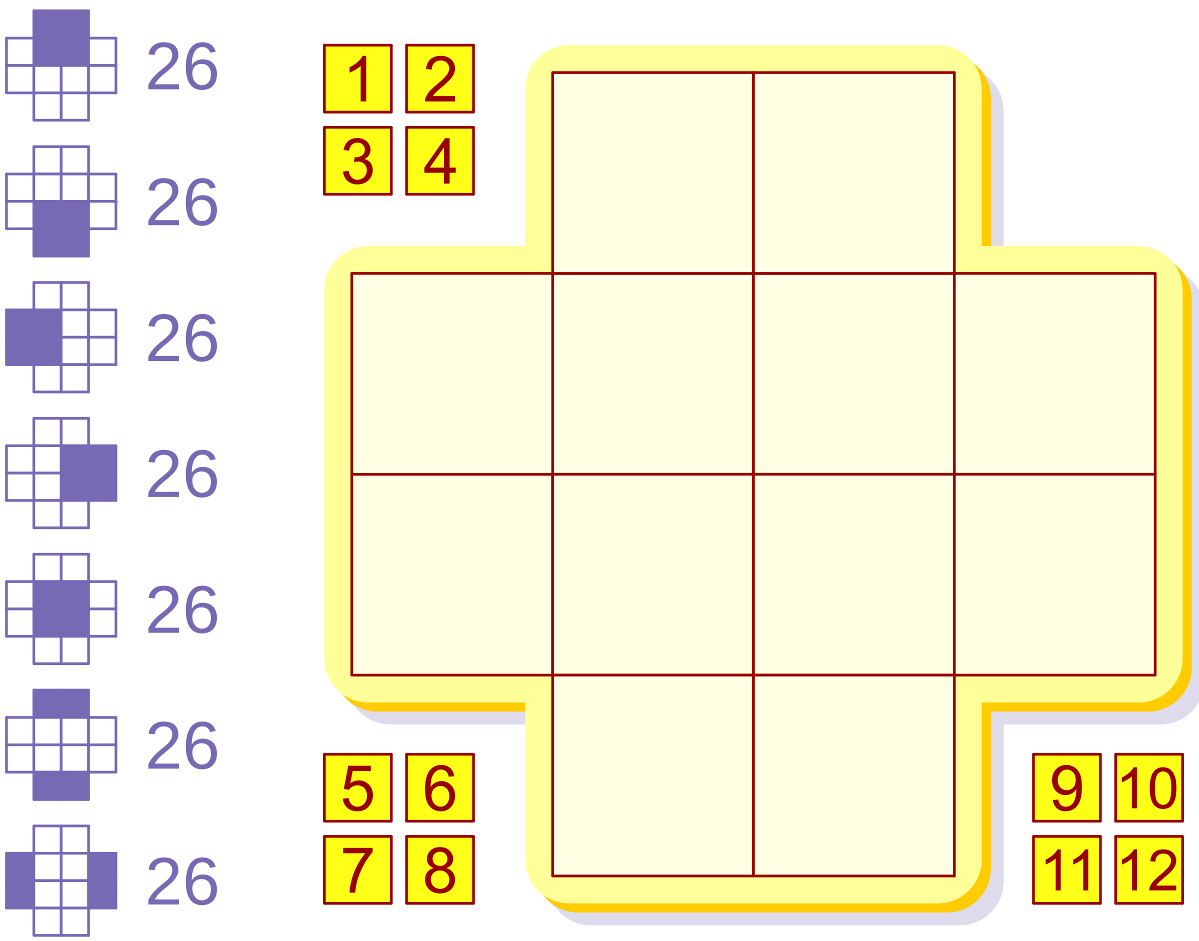
The object of the puzzle is to place in the cross shown in Figure 1 the numbers 1 through 12 - exactly one number per cell - so that to make the magic sum of 26 in seven areas of the cross containing four cells each:

– in two horizontal and two vertical rows as pointed by respective arrows in the left illustration;

-- in the three groups of squares - marked a-a-a-a, b-b-b-b, and c-c-c-c, respective - all as shown in Figure 2.

The 26 Puzzle Re_Solution*

based on a puzzle by Professor Louis Hoffman



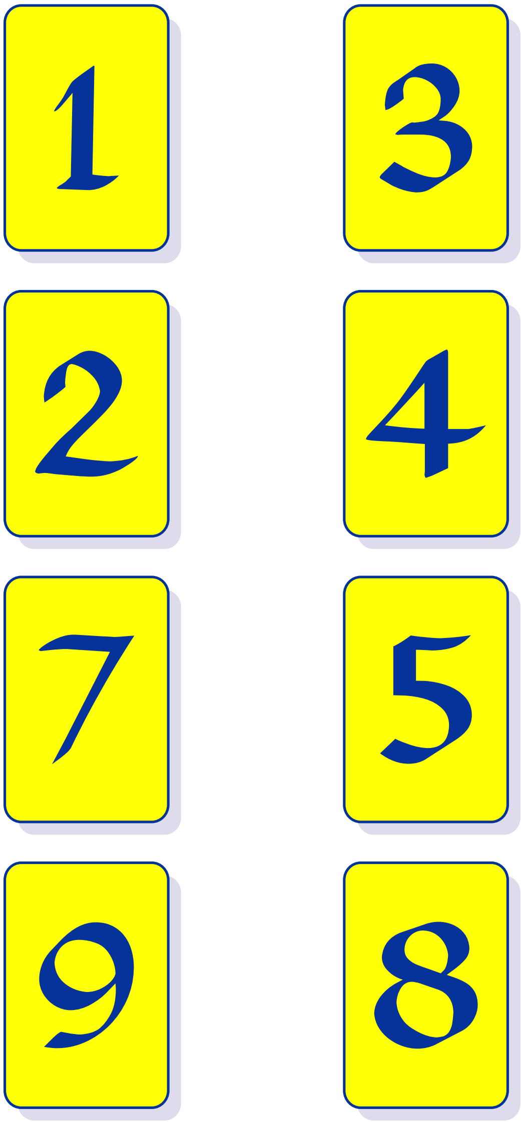
The object of the puzzle is to place in the big cross on the left the numbers 1 through 12 - exactly one number per cell - so that to make the magic sum of 26 in seven areas of the cross shown on the far left. Every of such areas consists of four squares.

The puzzle is sequel to The "Twenty-Six" Puzzle which is in our PuzzlePLAYGROUND sector as well.

*This puzzle is based on a solution to The "Twenty-Six" Puzzle sent to us by Prasad A.

The Eight Cards

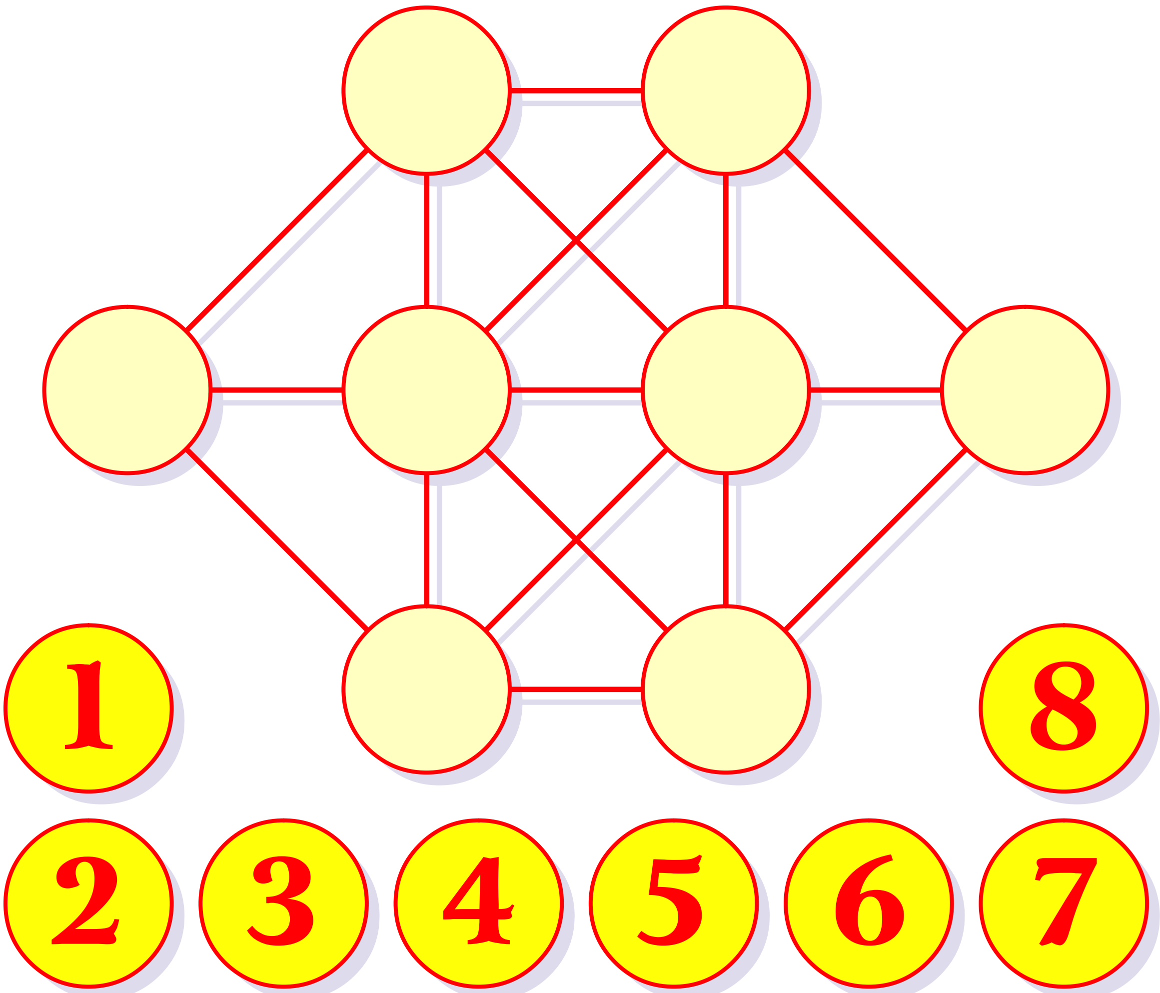
by Henry E. Dudeney



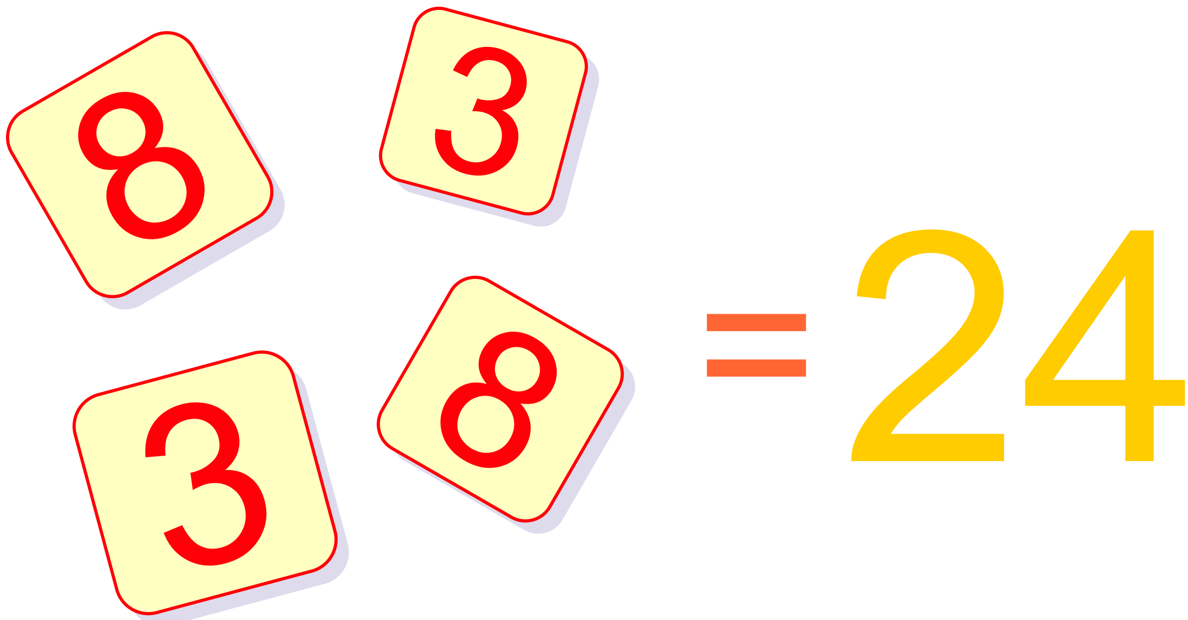
The eight numbered cards are placed in the two columns as shown in the illustration.

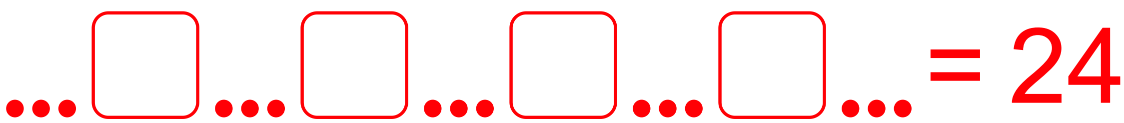
It can be seen that the numbers in the left and right columns add up different totals - 19 and 20, respectively.

The object of the puzzle is to rearrange these cards moving as few as possible so that each of the two columns gives the same total. How to reach it?



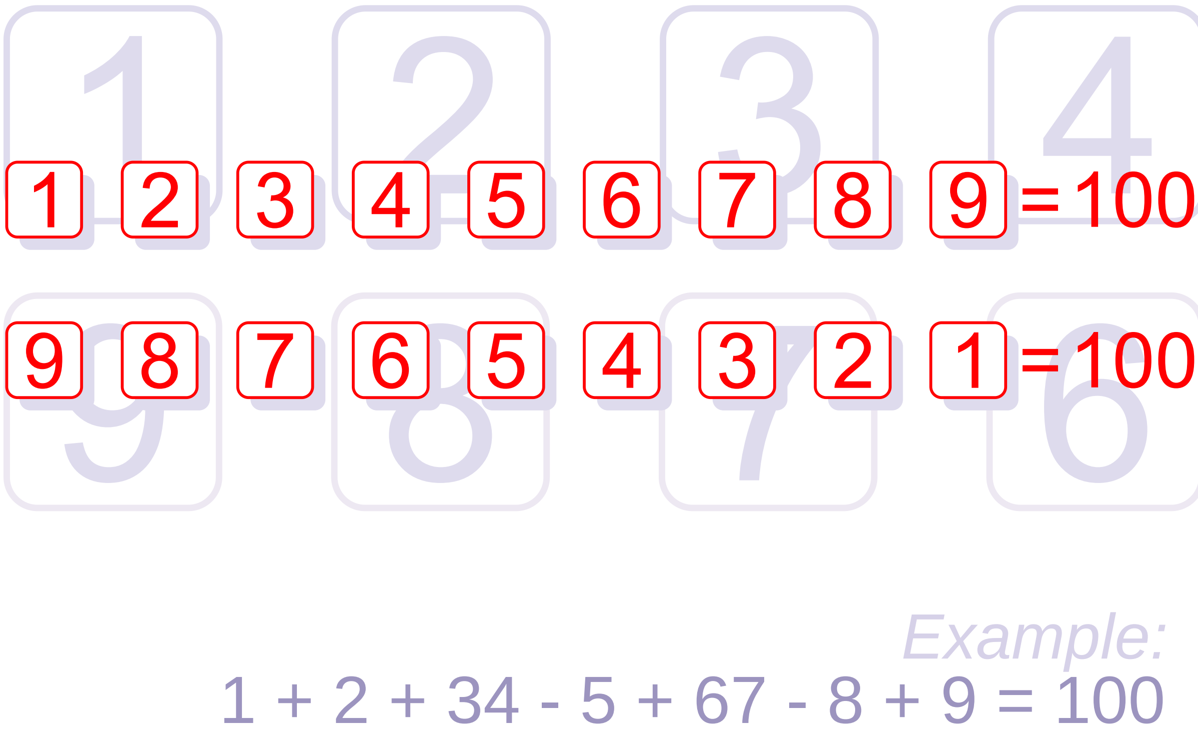
In the grid shown above place eight digits from 1 through 8 - one digit per circle - in such a way that numbers that differ only by 1 (1 and 2, 2 and 3, 3 an 4, etc.) will not be placed in circles directly connected by a straight line.





The object of this puzzle is using the four numbers 3,3,8, and 8 as shown in the illustration and the usual arithmetic operations (plus, minus, multiply and divide) make exactly 24. Of course, you can use brackets, but no tricks like powers, cube roots, or putting 8 and 3 to make 83 are allowed. Just pure maths.

*This puzzle was inspired to the publication on our site by a message from Kim C.



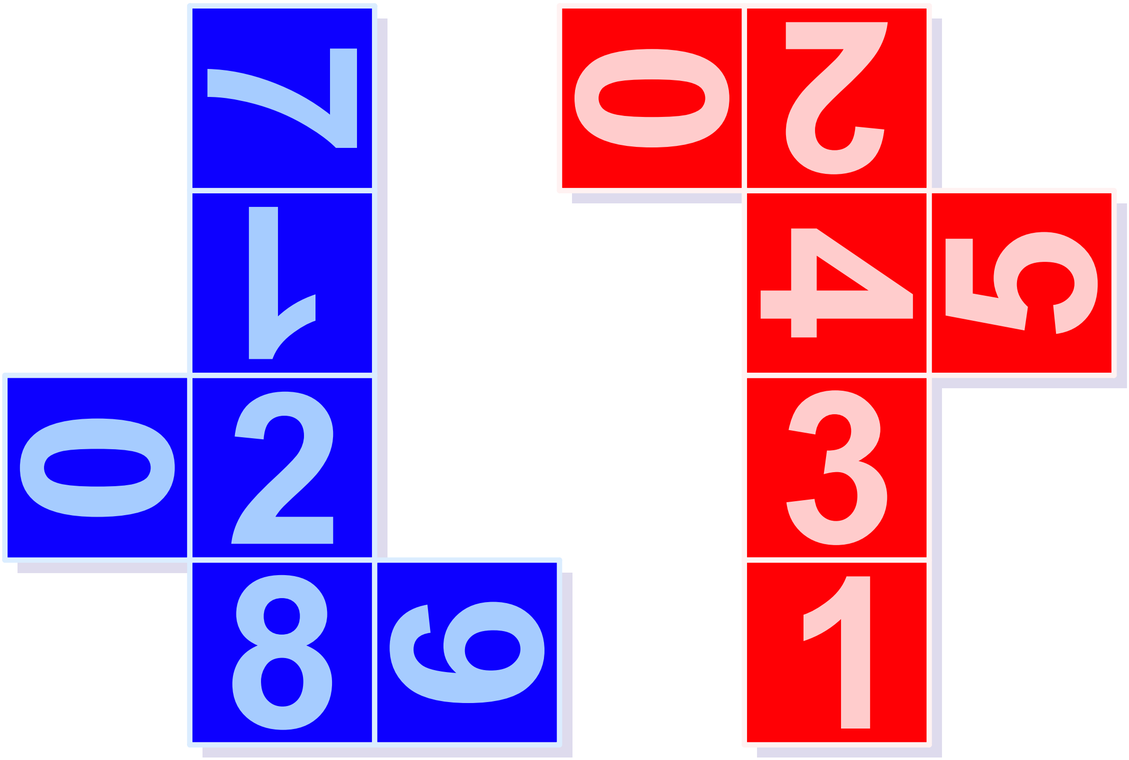
The nine digits 1 through 9 are written out in a row in ascending order as shown in the upper row of the illustration. The object is to insert between the digits, without changing their positions in the row, several arithmetical signs so that to get exactly a hundred as the result. From the four arithmetical signs you can use only plus (+) and minus (-). The solution with six signs is shown as an example in the lower right corner of the illustration. But can you find a solution where three signs are used only?

No less interesting and harder is the "reverse" puzzle when the digits are in descending order as shown in the lower row of the illustration. The same rules as to the previous puzzle are applied, except that this time the four signs (again + and - only) have to be used. Can you find this solution as well?

Solutions

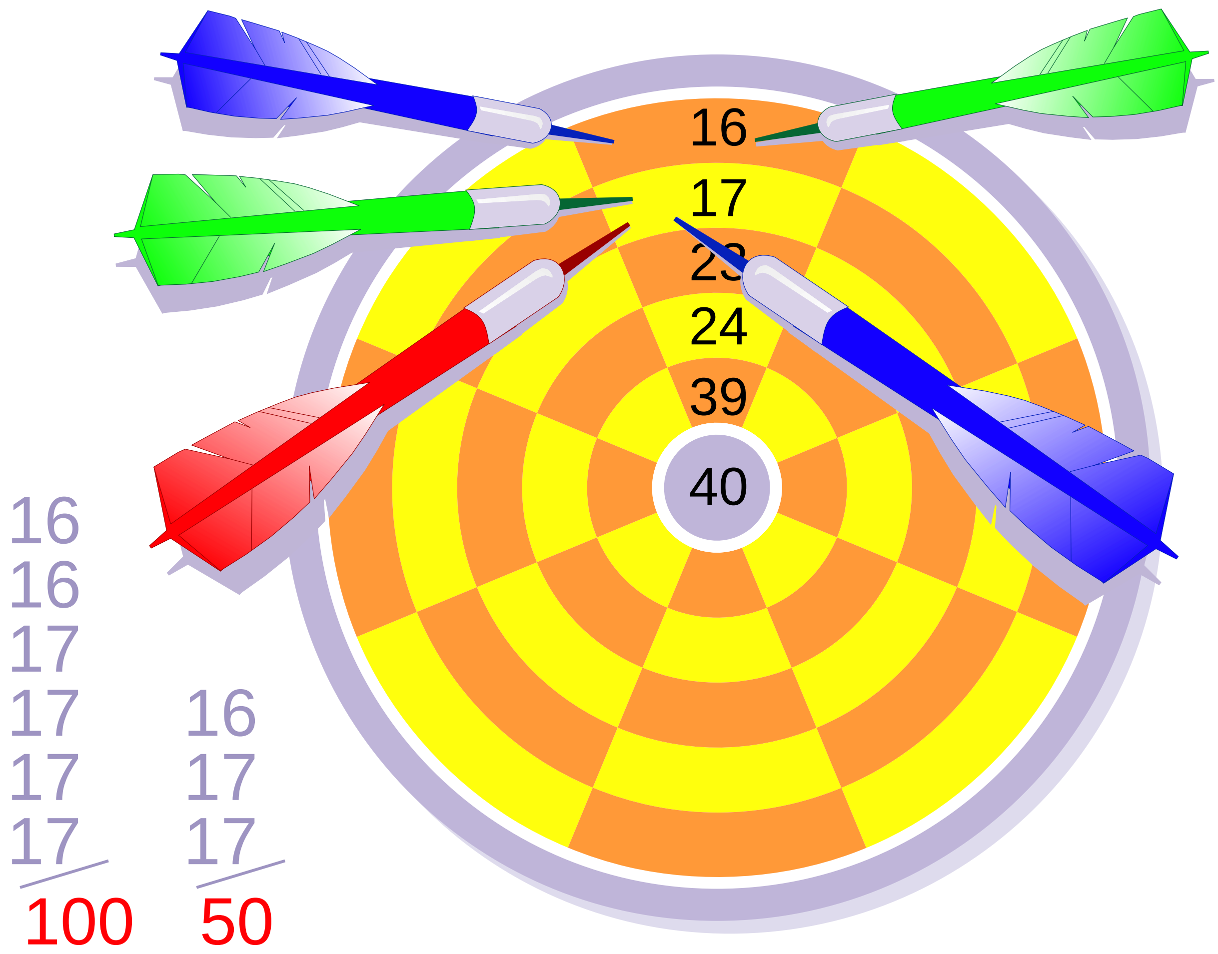
$$
\begin{array}{r}
17 \\
\times \quad 4 \\
\hline
68 \\
+ \quad 25 \\
\hline
93
\end{array}
$$

The unique solution to this cryptarithm is shown in the illustration.



Each cube must bear a 0, 1, and 2. This leaves only six faces for the remaining seven digits, but fortunately the same face can be used for 6 and 9, depending on how the cube is turned. The illustration shows 3, 4, 5 on the right (red) cube, and therefore its hidden faces must be 0, 1, and 2. On the left (blue) cube one can see 1 and 2, and so its hidden faces must be 0, 6 (or 9), 7, and 8.

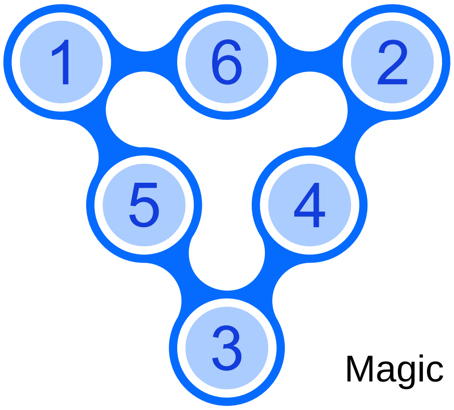
John S. Singleton from England had patented the two-cube calendar in 1957/8 (British patent number 831572), but allowed the patent to lapse in 1965.



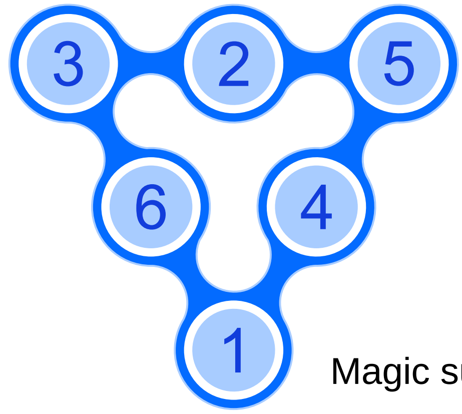
The only way to score 50 is to target the 17 ring twice and the 16 ring once. And the only way to score 100 is to score the 50 twice, i.e. to toss four darts on 17 and two on 16. This makes six darts in total.

The trick behind this puzzle is to use the cube with number 6 as a cube with number 9 instead. Thus the resulting number is 931 - as shown in the illustration.

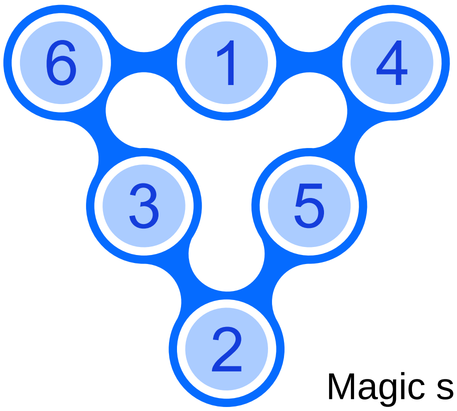
Magic Triangle 3X
(Solution)



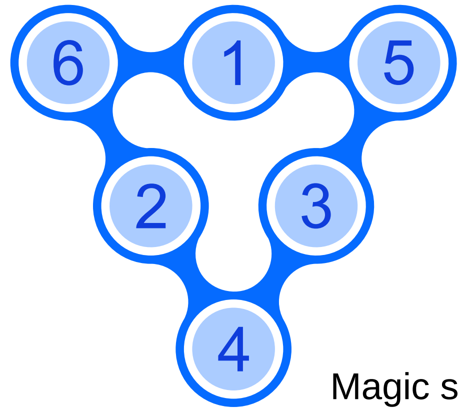
Magic sum 9



Magic sum 10



Magic sum 11

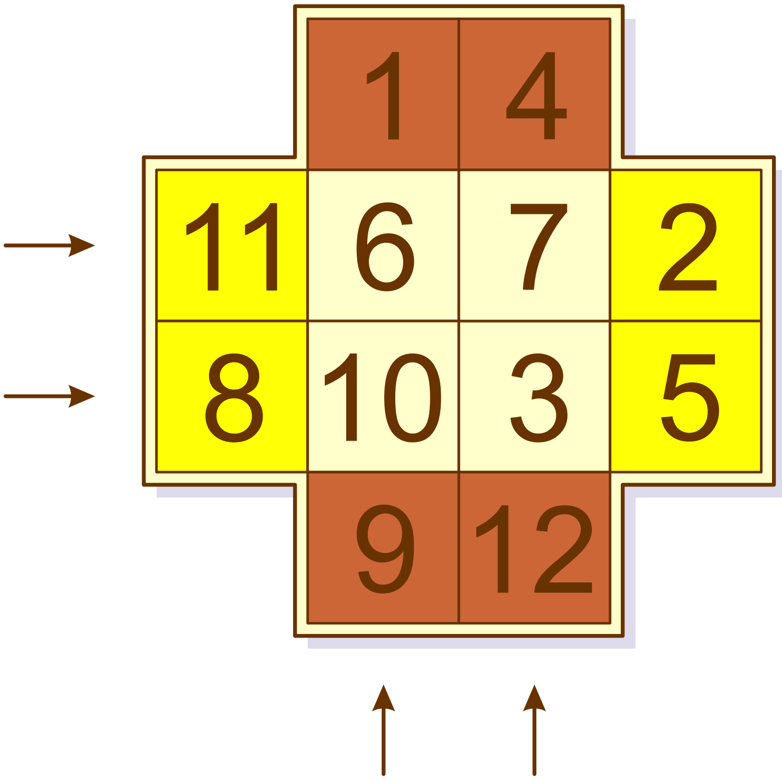


Magic sum 12

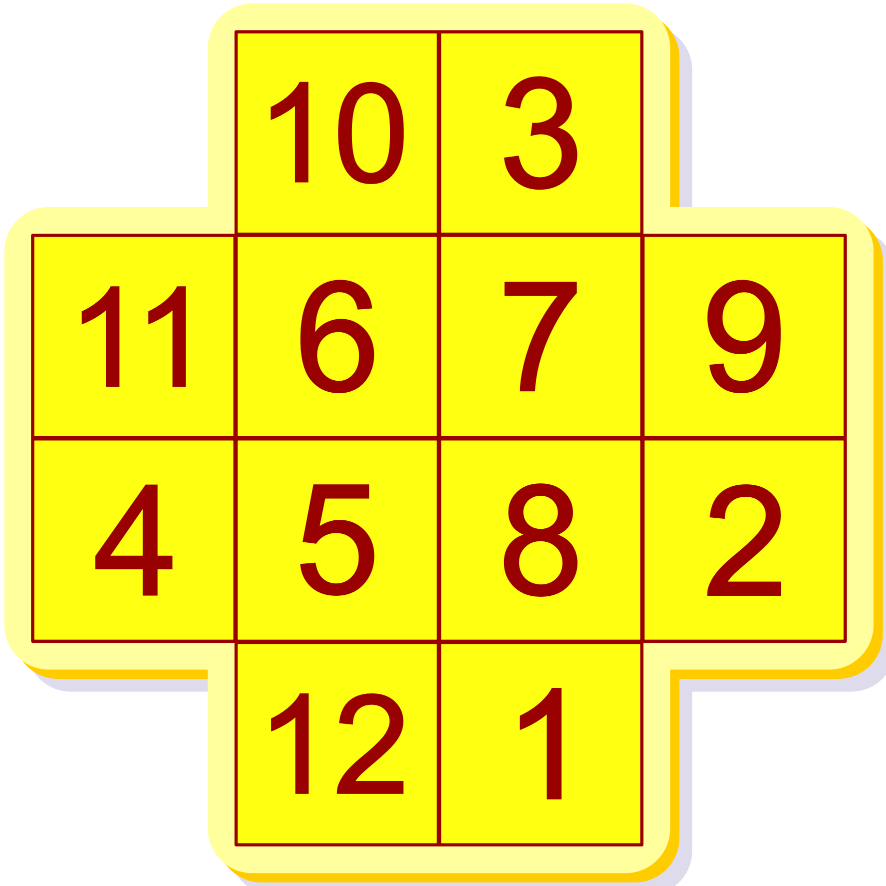
The solutions to 9, 10, 11 and 12 magic sums are shown in the illustration.

$$
\begin{array}{r}
1\;8\;2 \\
1\;8\;2 \\
1\;8\;2 \\
+\quad 1\;8\;2 \\
\hline
7\;2\;8
\end{array}
$$

The solution to this calculation is shown in the illustration.

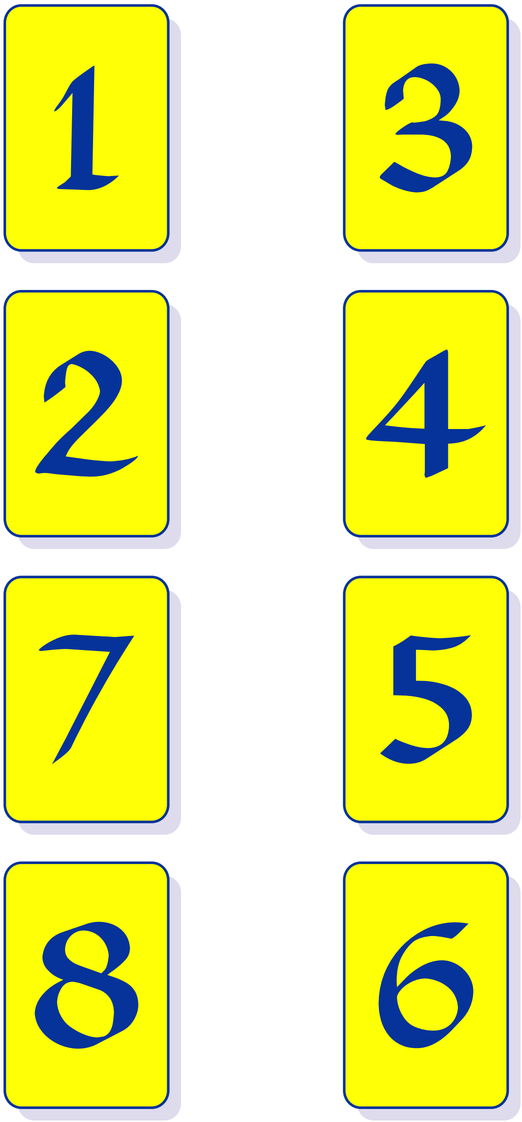


One of the solutions is shown in the illustration.

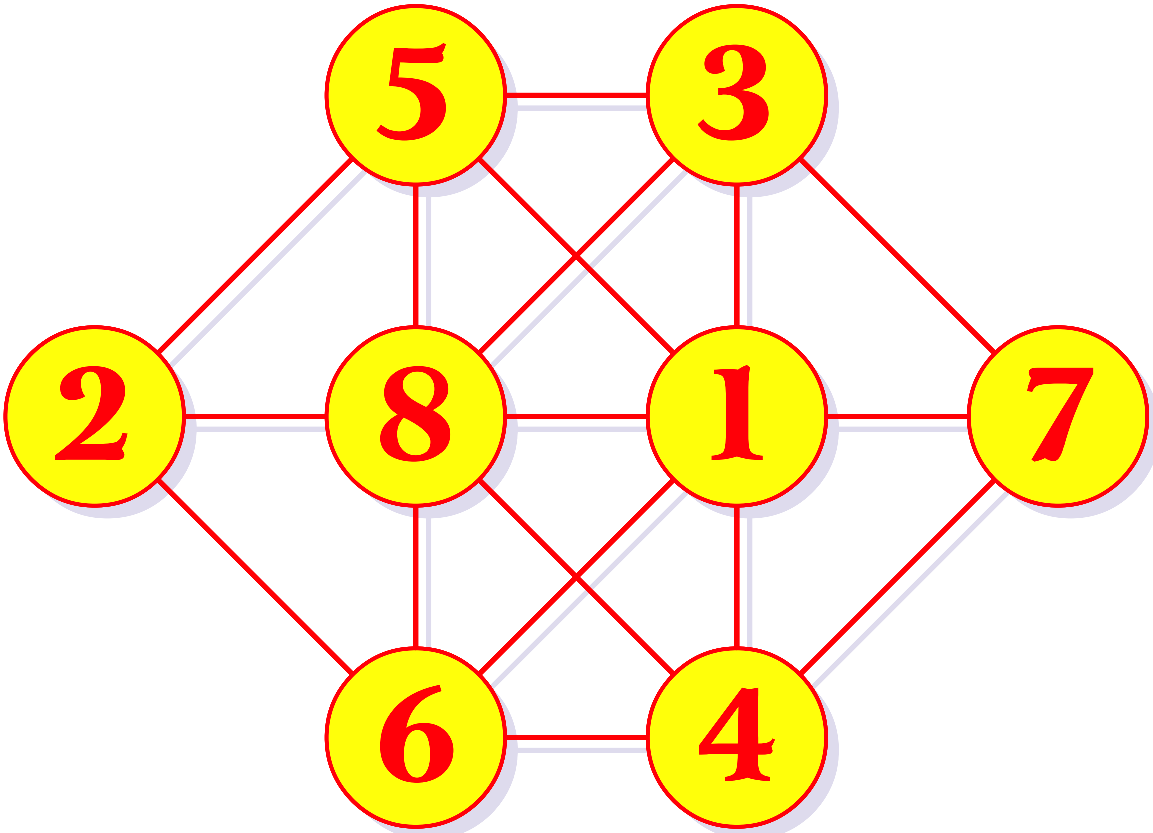


The solution shown in the illustration is one of many solutions to this puzzle. It is the original solution sent in by Prasad A. - the one who inspired us to the publishing of this puzzle.

The Eight Cards
(Solution)



To solve this tricky puzzle just exchange the cards with the 8 and 9, and turn the 9 upside-down (changing it into the 6) as shown in the illustration. After this each column will add up to 18.



The unique solution (except for rotations and reflections) is shown in the illustration.

8 / (3 − 8 / 3) = 24

8/(3-8/3)=24

The solution is shown in the illustration.

The first operation within the brackets gives you exactly 1/3 because 3 could be written as 9/3, and 9/3 minus 8/3 equals exactly 1/3.

The second operation (8/ 1/3) could be written in another way as 8 x 3 (according to mathematical rules) which is exactly 24.

$$123 - 45 - 67 + 89 = 100$$

$$98 - 76 + 54 + 3 + 21 = 100$$

The solutions to both puzzles are shown in the illustration.

The first puzzle was proposed by Henry E. Dudeney many years ago and was a little bit modified by Martin Gardner decades later. We've chosen only that its version where it is required to use the minimum number of signs.

The second puzzle was proposed by Martin Gardner as the logical development to the original one.