MOSCOW PUZZLE CUP

8-14 December 2024

INSTRUCTION BOOKLET

1. CONSTRUCTOR	20 pt
2. SPLITTING	19 pt
3. BUTTONS	18 pt
4. DOMINATION	26 pt
5. JUSTWORD	24 pt
6. CHRISTMAS TREE GARLAND	27 pt
7. ILLUMINATION	27 pt
8. X-ARROWS	30 pt
9. ROTATING SUDOKU	42 pt
10. WINDOWS ARITHMETIC	42 pt
11. X+	40 pt
12. CROSSROADS	47 pt
13. TOURIST	53 pt
14. CODED SKYSCRAPERS	68 pt
15. CODED MINER	8 pt
16. CODED ARITHMETIC	30 pt
17. BUILDING POLYOMINOES	60 pt
18. MASYU WITH PAINTING	13 pt
19. MASTERMIND	10 pt
20. EASY AS TIC-TAC-TOE	62 pt
TOTAL	666 pt

TIME 111 minutes

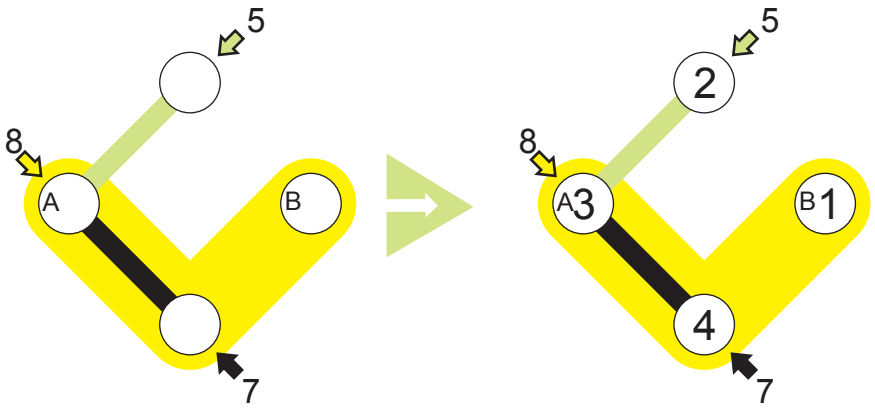
BONUS 6 points per each saved minute if all the puzzles are solved correctly

Puzzles by Riad Khanmagomedov

Thanks to Olga Shut and Prasanna Seshadri

1. CONSTRUCTOR — 20 pt

Write different numbers from 1 to 12 (4 in the example) into the circles. The number near the colored arrow shows the sum of all the numbers in the circles along the line of the same color.

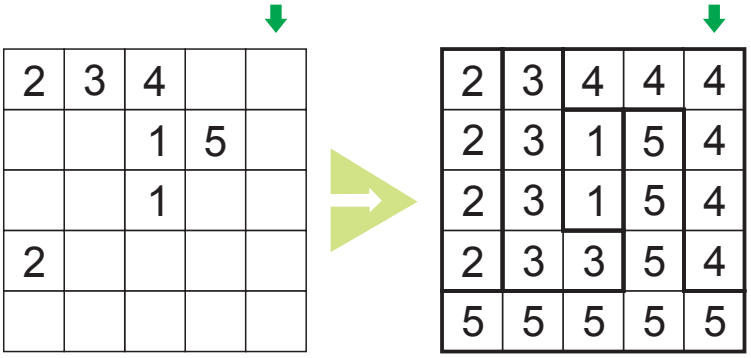


Answer: Enter the numbers in cells A, B.

Example Answer: 31.

2. SPLITTING — 19 pt

Divide the grid along the lines into regions. All identical numbers must be in the same region. For the greater of any two numbers, the area of the corresponding region is larger. There are no regions without numbers.

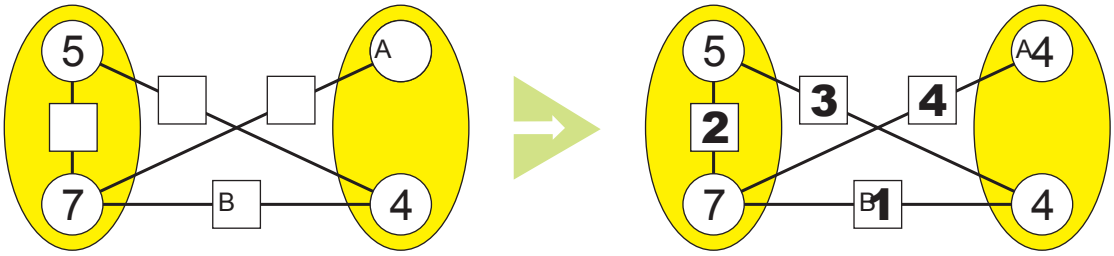


Answer: Enter the content of the marked column from top to bottom. Enter only the unit's place for two-digit numbers.

Example Answer: 44445.

3. BUTTONS — 18 pt

Place a different digit from 1 to 9 in each square. A number in a circle is equal to the sum of all the digits on the threads coming directly from this circle.



Answer: Enter the numbers in cells A, B, C (A, B in the example).

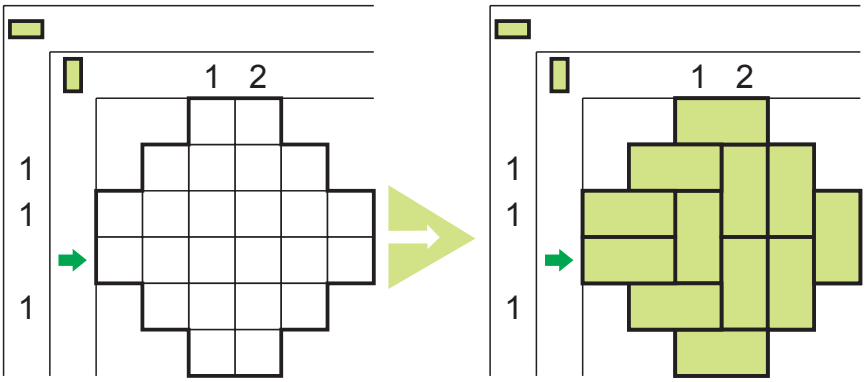
Example Answer: 41.

4. DOMINATION 26 pt

Divide the white area along the lines into 1 x 2 dominoes. The number of horizontal and vertical dominoes in some rows and columns is indicated outside the grid.

Answer: Enter the content of marked row from left to right, using H for horizontal and V for vertical dominoes. Ignore black cells.

Example Answer: VHHHH.

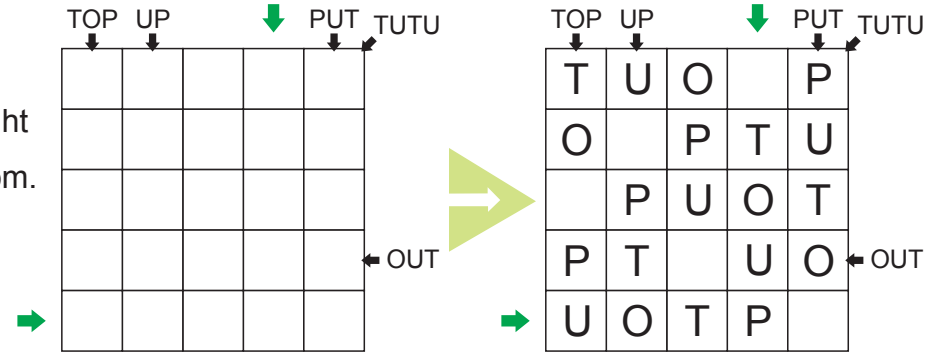


5. JUSTWORD 24 pt

Fill the grid with the letters S, P, R, I, N, T (P, O, U, T in the example) so that they appear once in each row and column. One cell in any row and column will remain empty. Write the given words in the corresponding directions. There may be an empty cell between the letters of these words, but not other letters.

Answer: Enter the content of marked row from left to right and column from top to bottom. Use "-" for an empty cell.

Example Answer: UOTP-, -TOUP.

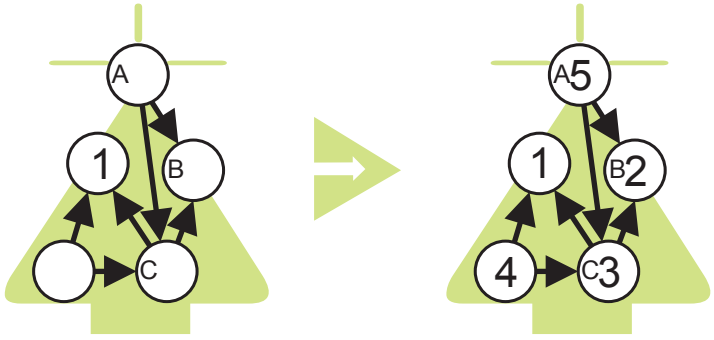


6. CHRISTMAS TREE GARLAND 27 pt

Place different numbers from 1 to 15 in circles. The number in the circle is equal to the sum of all the numbers indicated by the arrows coming from this circle.

Answer: Enter the numbers in cells A, B, C.

Example Answer: 523.



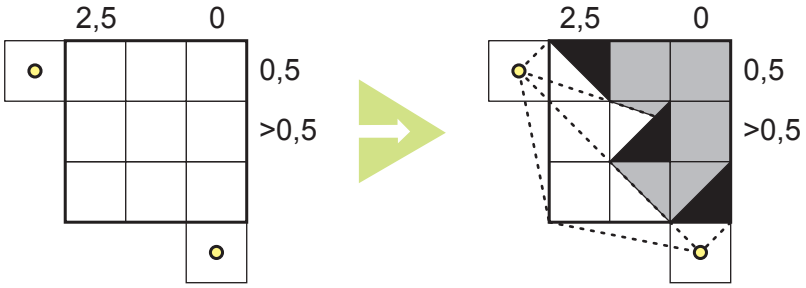
7. ILLUMINATION 27 pt

Lights are given in the centers or corners of cells outside the grid. Draw black triangular flaps by splitting 1 x 1 squares in half diagonally so that there is exactly one flap in each row and each column. Black triangles cannot touch each other even at the corners. The numbers outside the grid show the sum of the areas of the illuminated (white) interior sections in the corresponding row or column.

Types of flaps

Answer: Write the types of flaps row by row from top to bottom.

Example Answer: DBB.

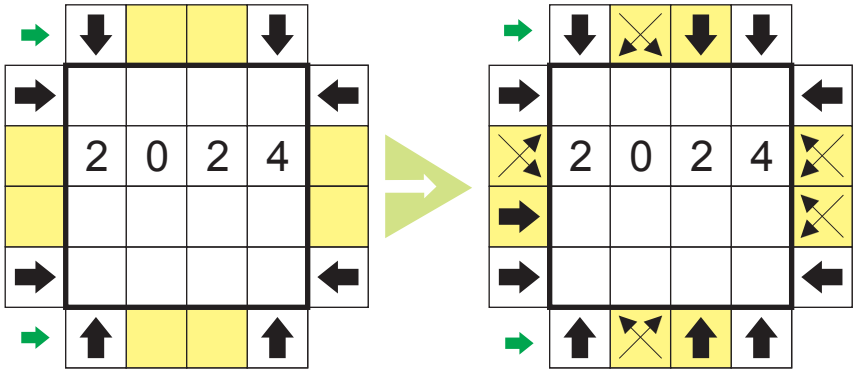


8. X-ARROWS 30 pt

Draw a horizontal, vertical or 2 diagonal arrows into each yellow cell. All arrows should point inside the grid and each digit inside the grid shows the number of arrows pointing to the cell with that digit.

Answer: Enter the content of marked rows from left to right, using V for vertical and X for diagonal arrows. Ignore given arrows.

Example Answer: DV, DV.

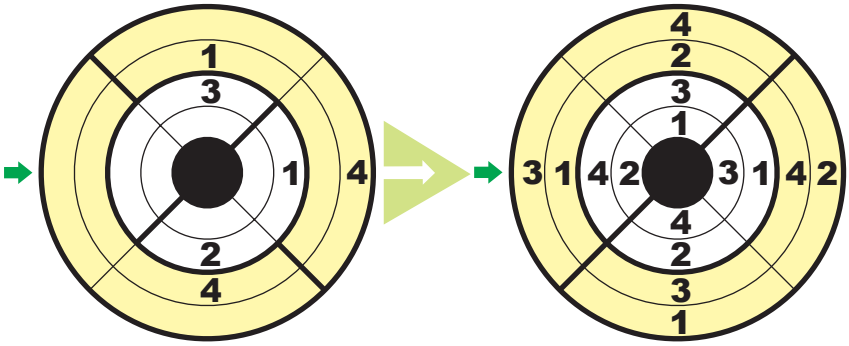


9. ROTATING SUDOKU 42 pt

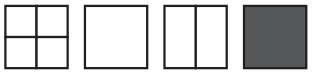
Fill the sudoku grid with digits from 1 to 6 (4 in the example) so that each digit appears once in each ring (innermost to outermost), each 6-cell (4-cell in the example) sector of the target and each part bordered by thick lines. The outermost third of the grid can be rotated clockwise by 60°(90° in the example) or counterclockwise, and the middle third can be rotated clockwise by 60°or counterclockwise. The innermost third cannot be rotated. It is part of solving to figure out whether to rotate each of other thirds.

Answer: Enter 12 digits in the sectors indicated by the arrow.

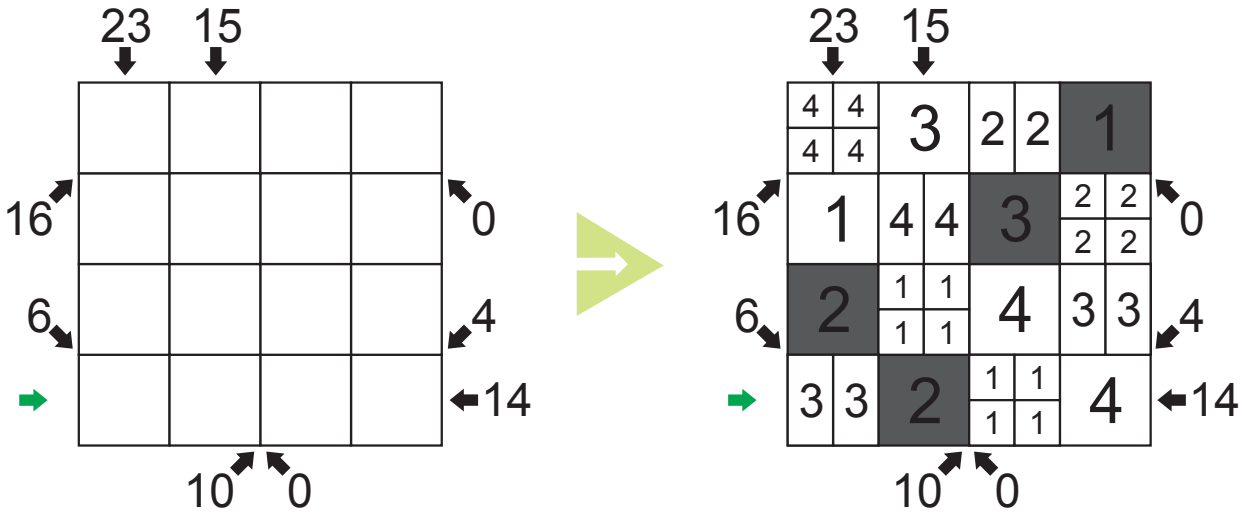
Example Answer: 3142, 3142.



10. WINDOWS ARITHMETIC 42 pt



Place the given 4 window images in each cell so that they do not repeat in rows and columns. Write the digits 1, 2, 3, 4: in the big cells of each row and each column they must be different. Write four identical digits in each quartered cell, and two identical digits in each cloven cell. Numbers outside the grid give the sum of all digits in the corresponding direction, except the digit in the blackened window.

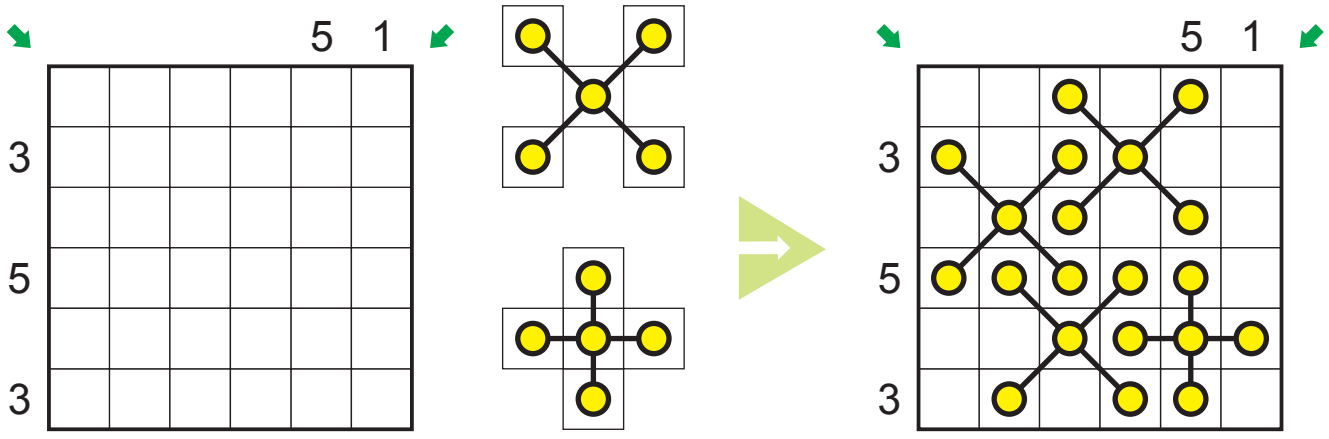


Answer: Enter the content of big cells of marked row from left to right.

Example Answer: 3214.

11. X+ 40 pt

Place several figures of the given types in the grid without overlapping each other. The digits outside the grid indicate the number of circles in the corresponding rows and columns.

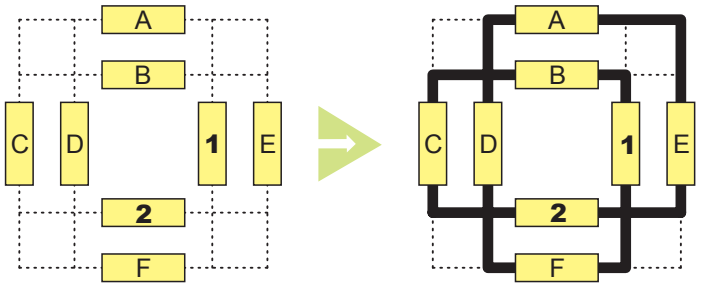


Answer: Enter the content of marked diagonals from top to bottom. Use C for each circle and "-" for an empty cell.

Example Answer: --CCC-, ---C--.

12. CROSSROADS 47 pt

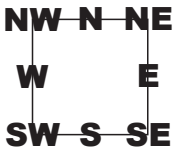
Draw a loop along the dotted lines, passing straight through all the yellow stripes once. The loop must make 1 turn between each pair of stripes. The digit on the strip shows the number of all points of intersection of the loop on the same horizontal or vertical line with this strip. Ignore the letters while solving.



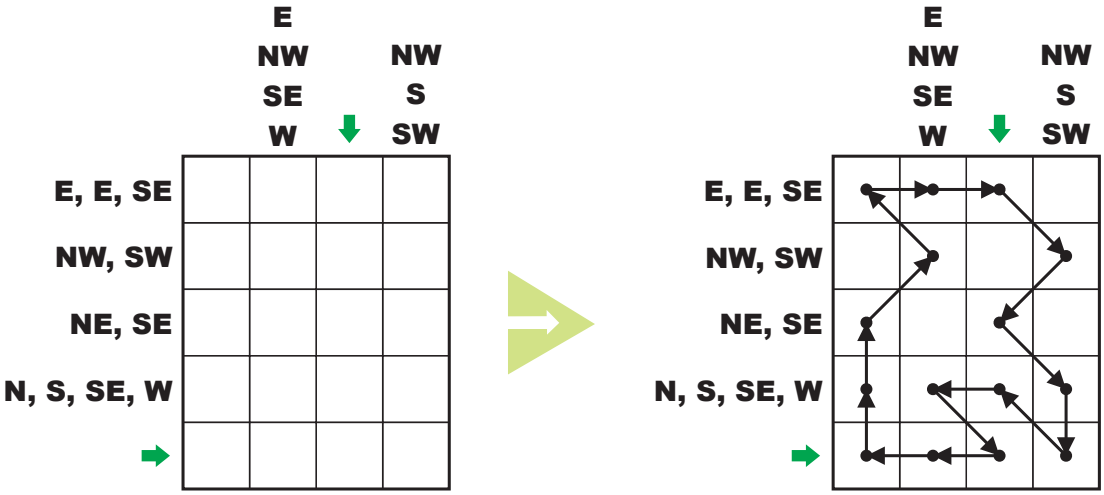
Answer: Enter a sequence of letters along the loop, moving from A to the right.
Example Answer: AECBFD.

13. TOURIST 53 pt

Draw a loop passing through the centers of some white cells. The loop does not touch itself and does not intersect. The loop can turn in 8 directions: N, NE, E, SE, S, SW, W, NW.



The directions of all the segments that start at the cell centers of the corresponding rows and columns are given outside the grid in alphabetical order. The direction of the loop is to be determined while solving.

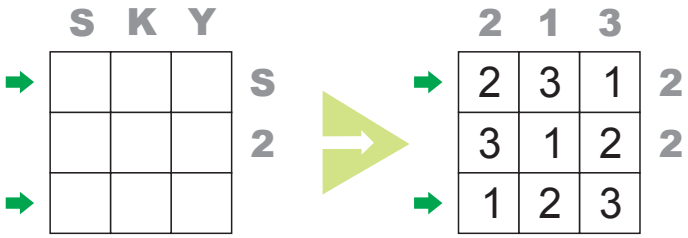


Answer: Moving from left to right, write the directions of the segments starting from the cell centers of the marked row. Moving from top to bottom, write the directions of the segments starting from the cell centers of the marked column. Use "-" for empty cell.
Example Answer: NWWNW, SE-SEWW.

14. CODED SKYSCRAPERS — 68 pt

The letters represent a different digits from 1 to 7. Set the matches and fill the grid with digits from 1 to 7 (3 in the example) so that each digit occurs exactly once in every row and column. Consider each number inside the grid to be the height of a building. The digits in cells outside the grid indicate how many buildings can be seen when looking in the corresponding direction. A building is visible from outside the grid if and only if all buildings between it and the viewing point are lower in height.

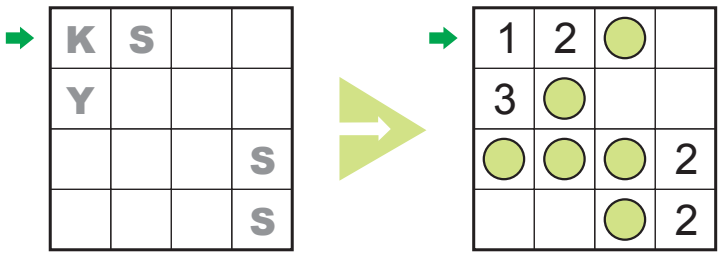
Answer: Enter the content of marked rows from left to right.
Example Answer: 231, 123.



15. CODED MINER — 8 pt

Using the matches found in puzzle 14, replace all letters with digits. Each digit show how many mines are located in the horizontally, vertically and diagonally adjacent empty cells. Locate the minimum possible number of mines, one mine per cell. Mines cannot occupy cells with digits.

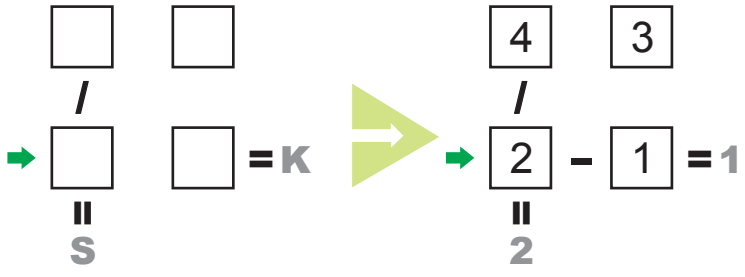
Answer: Enter the content of marked row from left to right. Use X for cell with mine and "-" for an empty cell. Ignore black cells.
Example Answer: --X-.



16. CODED ARITHMETIC — 30 pt

Using the matches found in puzzle 14, replace all letters with digits. Enter the digits from 1 to 9 (4 in the example) exactly once in the cells, and between them the arithmetic signs (+, -, x, /) so that the correct equalities and inequalities are formed along the horizontals and verticals. The priority of operations is standard: first multiplication and division, then addition and subtraction.

Answer: Enter the content of marked row from left to right (digits, arithmetic signs, result). Use A for Addition, S for Substraction, M for Multiplication, D for Division and E for Equals.
Example Answer: 2S1E1.



17. BUILDING POLYOMINOES (left puzzle) **60 pt**

Divide the grid into polyominoes D, F, I, L, N, O, S, T, U, V, W, Y so that each of them is used at least once. They may be rotated and mirrored. Each cell must belong to some polyomino. Identical figures can touch each other only diagonally. Some boundaries between polyominoes and some letters corresponding to polyominoes are given. In the colored squares, write the letters corresponding to the polyominoes with these squares.

Answer: Enter the alphabetic content of marked row from left to right. For the cell occuped by the polyomino, use the corresponding letter. **Example Answer:** ITSDD.

18. MASYU WITH PAINTING (right puzzle) **16 pt**

Blacken some of the 6 (2 in the example) dotted circles. Draw a single loop using only horizontal and vertical lines between the centres of some white cells such that the loop does not visit any cell more than once. At every cell containing a white circle the loop must pass straight through that circle and make a 90° turn in at least one of the cells adjacent to the circle. At every cell containing a black circle the loop must make a 90° turn and travel straight through both cells adjacent to the circle.

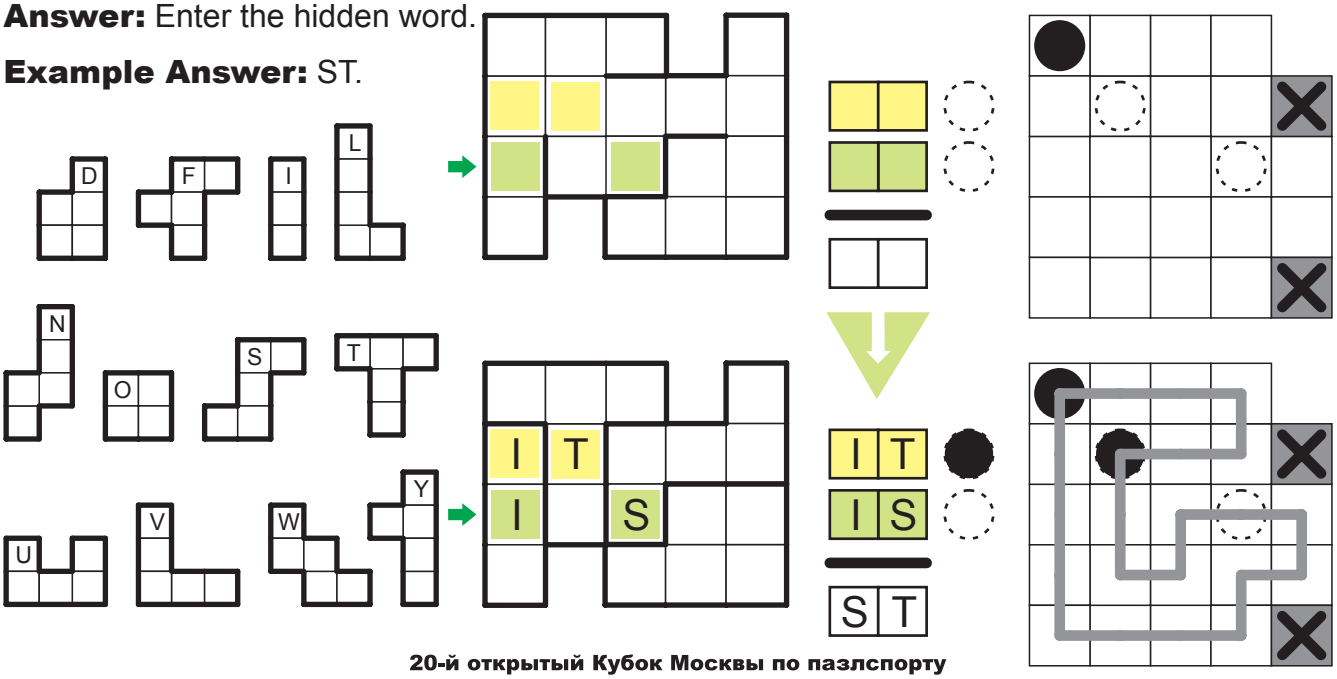
Answer: Enter the number of turns of the loop. **Example Answer:** 12.

19. MASTERMIND (central puzzle) **10 pt**

Move the words formed in the yellow and green stripes in the polyominoes grid and the circles from the Masyu grid, to form a Mastermind puzzle. Identify the hidden word by comparing it with the given words above. Each black circle indicates that the given word contains a correct letter in a correct position compared to the hidden word. Each white circle indicates that the given word contains a correct letter in a wrong position compared to the hidden word.

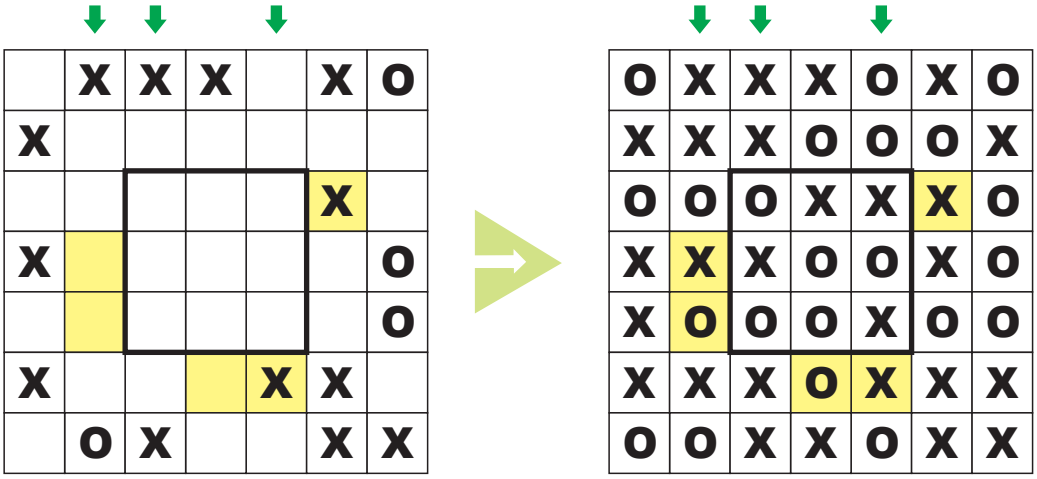
Answer: Enter the hidden word.

Example Answer: ST.



20. EASY AS TIC-TAC-TOE 62 pt

Place either an 'X' or an 'O' into each empty cell such that four consecutive 'X's or 'O's do not appear horizontally, vertically or diagonally. The grid contains squares bordered by thick lines. All 'X's and 'O's in the yellow cells adjacent to the bold border are clues for the Easy as XO puzzle. An 'X' or an 'O' in the yellow cell outside the square denote the first sign found when looking inside the square in the corresponding row or column.



Answer: Enter the content of the marked columns from top to bottom.

Example Answer: XXOXOXO, XXOXOXX, OOXOXXO.