

WPF PUZZLE GP 2019 INSTRUCTION BOOKLET

Host Country: Turkey

Aziz Ateş, Hatice Esra Aydemir, Serkan Yürekli, Fatih Kamer Anda, Murat Can Tonta

Special Notes: None.

Points:					
1.	Arithmetic Square (Unk. Res.)	30	14.	Star Battle	52
2.	Akari	6	15.	Balance	23
3.	Akari	11	16.	Balance	20
4.	Akari	31	17.	Skyscrapers (Diagonal)	19
5.	Tapa	15	18.	Skyscrapers (Diagonal)	13
6.	Tapa	24	19.	Hundred	35
7.	Kuromasu	23	20.	Hundred	23
8.	Kuromasu	21	21.	Simultaneous Equations	24
9.	Ripple Effect	22	22.	Tasquare	19
10.	Ripple Effect	34	23.	Tasquare	22
11.	Slitherlink	38	24.	Nuribou	46
12.	Slitherlink	44	25.	Nuribou	43
13.	Star Battle	98	26.	Minesweeper (Double)	16
			TOTAL:		752

1. Arithmetic Square (Unknown Results) [Aziz Ateş] (30 points)

Place the numbers from 1 to 9 into the cells (a different single number in each cell) so that the indicated equations/relations are correct. Evaluate from left-to-right and top-to-bottom (ignore the usual precedence of the operators).

Some numbers have been replaced with question marks; these numbers must be integers (and can be negative or zero).

$$\rightarrow \begin{array}{c} \square + \square + \square > 23 \\ + \quad - \quad + \end{array} \quad \rightarrow \begin{array}{c} 9 + 7 + 8 > 23 \\ + \quad - \quad + \end{array}$$

It is possible for expressions and partial expressions to be negative or non-integral.

$$\rightarrow \begin{array}{c} \square \times \square \div \square = ? \\ \times \quad \times \quad - \end{array} \quad \rightarrow \begin{array}{c} 6 \times 2 \div 4 = ? \\ \times \quad \times \quad - \end{array}$$

Answer: For each designated row, enter the contents of the cells, in order from left to right.

$$\rightarrow \begin{array}{c} \square - \square - \square = ? \\ = \quad = \quad = \end{array} \quad \rightarrow \begin{array}{c} 5 - 3 - 1 = ? \\ = \quad = \quad = \end{array}$$

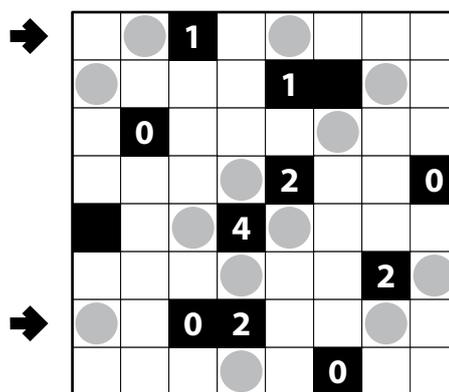
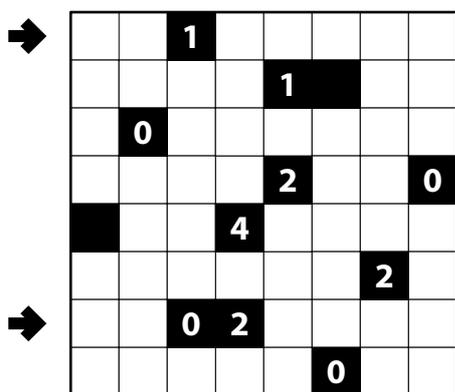
Example Answer: 978, 624, 531

2-4. Akari [Hatice Esra Aydemir] (6, 11, 31 points)

Locate some "light bulbs" in the grid such that every white cell is "lit up". Each bulb occupies a single white cell, and lights up its own cell, as well as white cells in the four orthogonal directions until the light beam encounters a black square or the edge of the grid. A bulb may not illuminate another light bulb. All white cells must be lit up by at least one bulb. A given number in a black cell indicates how many cells orthogonally adjacent to it are occupied by bulbs.

Answer: For each indicated row, enter its contents from left to right. Use 'O' for a cell with a bulb and 'X' for a cell without a bulb. Ignore cell colors and numbers when entering your answer. You may switch the letters, as long as you are consistent.

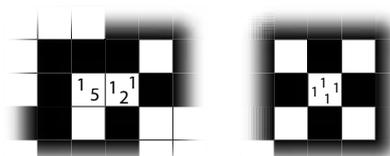
Example Answer: XOXOXOX, OXXXXOX (or OXOXOXO, XOOOOXO)



5-6. Tapa [Serkan Yürekli] (15, 24 points)

Shade some empty cells black; cells with numbers cannot be shaded. All black cells connect along edges to create a single connected region. (It is permissible for the region to touch itself at a corner, but touching at a corner does not connect the region.) No 2x2 group of squares can be entirely shaded black.

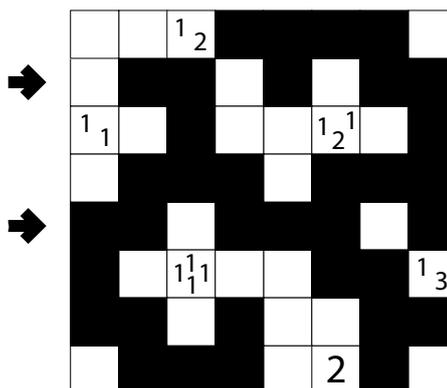
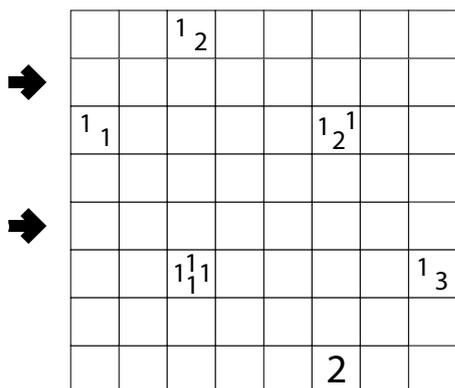
Tapa Clue Examples



Numbers in a cell indicate the lengths of contiguous black cell groups along the "ring" of 8 cells touching that cell (fewer for cells along the outside edge). If there is more than one number in a cell, then there must be at least one white (unshaded) cell between the black cell groups. The numbers are given in *no particular order*. As a special case, if the number given in a cell is a zero (0), it means that none of the cells around that cell may be shaded black.

Answer: For each designated row, enter the length in cells of each of the shaded segments from left to right. Use only the last digit for two-digit numbers; e.g., use '0' for a segment of size 10. If there are no black cells in the row, enter a single digit '0'.

Example Answer: 212, 231



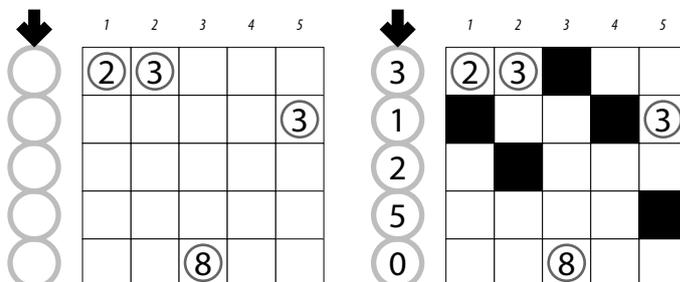
7-8. Kuromasu [Hatice Esra Aydemir] (23, 21 points)

Shade some cells so that all remaining cells are connected orthogonally and no two black cells share an edge. Each numbered cell indicates the total count of unshaded cells connected in line vertically and horizontally to the numberer cell *including the cell itself*.

The numbers on top of the diagram are for Answer purposes only.

Answer: For each row from top to bottom, enter the number of the first column from the left where a shaded square appears. Use only the last digit for two-digit numbers; e.g., use '0' if the first shaded square appears in column 10. If the row is empty, enter '0'.

Example Answer: 31250

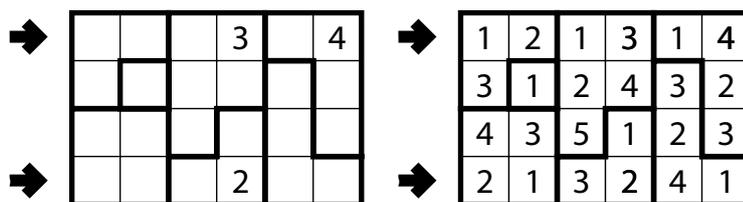


9-10. Ripple Effect [Hatice Esra Aydemir] (22, 34 points)

Place a number into each cell so that each bold region contains the numbers from 1 to n , where n is the number of cells in the region. Cells containing the same number x within the same row (or column) must have at least x cells between them in that row (or column). (For example, cells containing "1" cannot touch along an edge, cells containing "2" cannot touch or have exactly one cell between them in the same row or column, and so on.) Some numbers may be already filled in the grid.

Answer: For each designated row, enter its contents (including any given numbers).

Example Answer: 121314, 213241

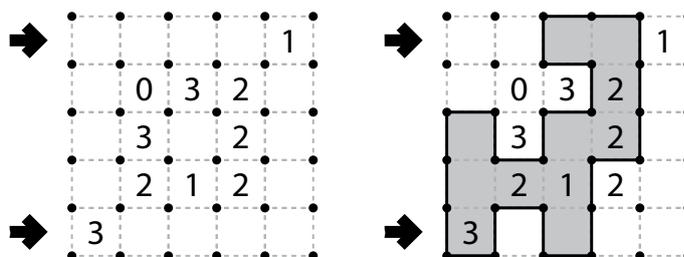


11-12. Slitherlink [Fatih Kamer Anda] (38, 44 points)

Draw a single, non-intersecting loop that only consists of line segments between the dots along the dotted lines. A number inside a cell indicates how many of the edges of that cell are part of the loop.

Answer: For each designated row, enter its contents from left-to-right. Use '0' for a cell inside the loop and 'x' for a cell outside the loop. You may switch the letters, as long as you are consistent.

Example Answer: XX00X, 0X0XX (or 00XX0, X0X00)



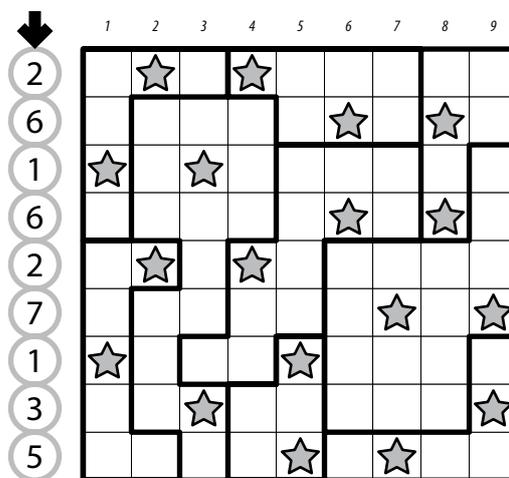
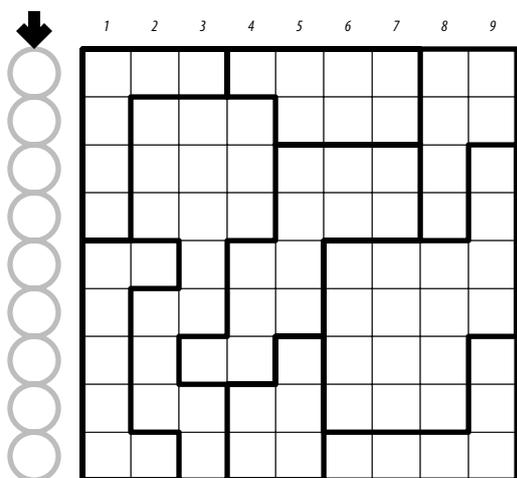
13-14. Star Battle [Fatih Kamer Anda] (98, 52 points)

Place stars into some cells in the grid, no more than one star per cell. Each row, each column, and each outlined region must contain exactly two stars. Cells with stars may not touch each other, not even diagonally.

The numbers on top of the diagram are for Answer purposes only.

Answer: For each row from top to bottom, enter the number of the first column from the left where a star appears (the number on top of that column). Use only the last digit for two-digit numbers; e.g., use '0' if the first star appears in column 10.

Example Answer: 261627135

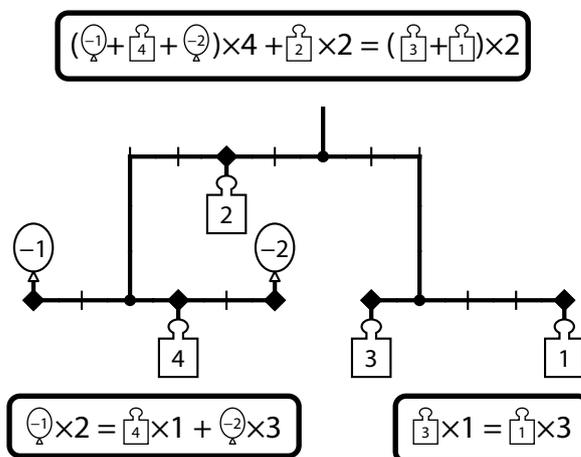
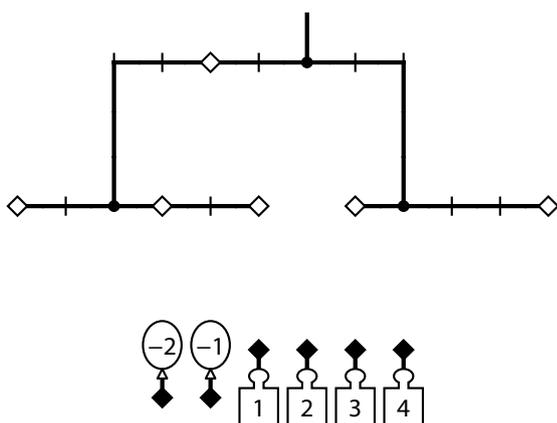


15-16. Balance [Murat Can Tonta] (23, 20 points)

Attach the given weights (and balloons with negative weight, if given) to the mobile at the diamond-shaped attachment points, one at each point, such that the entire mobile balances — that is, at each fulcrum (round black dot), the total torque (weight multiplied by distance from the fulcrum) on both sides of the balance must be the same. Ignore any weight of the rods themselves. Weights (or balloons) may already be attached for you.

Answer: Enter the weight of each attached item, from left to right (ignore the vertical position of each item). Use only the last digit for two-digit or negative numbers; e.g., use '0' for a weight of 10 and use '3' for a weight of -3.

Example Answer: 142231



17-18. Skyscrapers (Diagonal) [Fatih Kamer Anda] (19, 13 points)

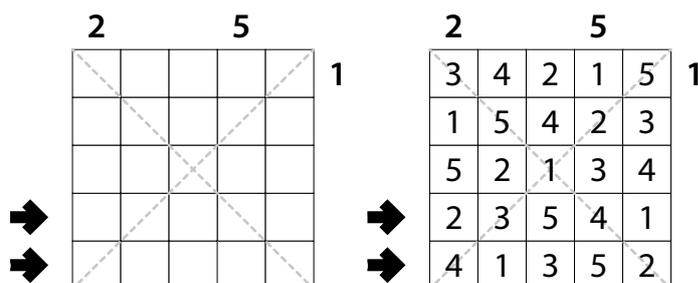
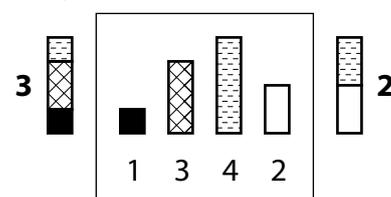
Place a number from 1 to X (integers only) into each cell so that each number appears exactly once in each row and column. (X is the number of cells in each row.) Each number represents a skyscraper of its respective height. The numbers outside the grid indicate how many skyscrapers can be seen in the respective row or column from the respective direction; smaller skyscrapers are hidden behind higher ones. Some numbers may already be filled in for you.

The skyscrapers along each main diagonal must be all different.

Answer: For each designated row, enter its contents. Do not include any numbers outside the grid.

Example Answer: 23541, 41352

Skyscraper Clue Examples

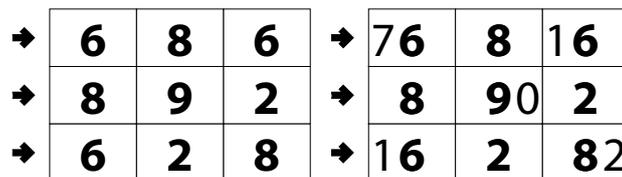


19-20. Hundred [Aziz Ateş] (35, 23 points)

Place digits into some (or all) cells such that the sum of numbers in each row and column is 100. Some digits are supplied for you; these digits are not necessarily aligned consistently with digits in other cells. Multi-digit numbers may not start with 0.

Answer: For each row, enter all the digits that you placed, from left to right. If you did not place any digits in the row, enter a single letter 'X'.

Example Answer: 71, 0, 12



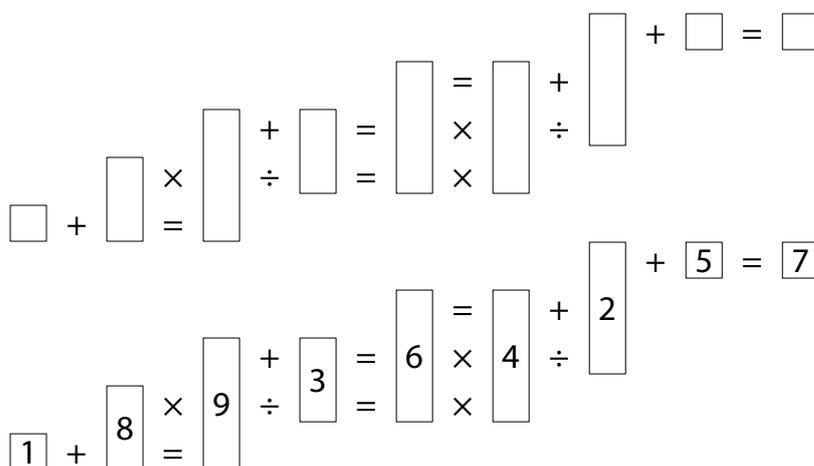
21. Simultaneous Equations [Aziz Ateş] (24 points)

Place the numbers from 1 to 9 into the cells (a different single number in each cell) so that the indicated equations/relations are correct. Use standard arithmetic precedence of the operators (multiplication and division occur before addition and subtraction). Cells may be used in multiple equations/relations.

It is possible for expressions and partial expressions to be negative or non-integral.

Answer: Enter the numbers from left to right.

Example Answer: 189364257

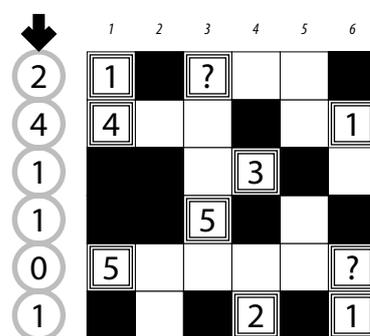
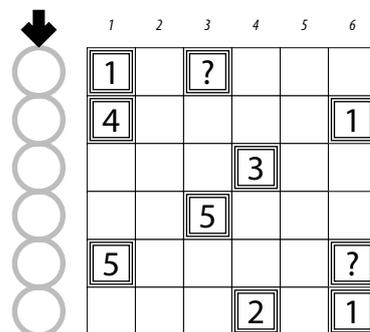


22-23. Tasquare [Murat Can Tonta] (19, 22 points)

Shade some empty (non-numbered) cells black (leaving the other cells white) so that the grid is divided into non-overlapping regions; cells of the same color are considered in the same region if they are adjacent along edges. All white cells are in the same region. All black cells are part of square-shaped regions. Each given number must match the total area of all black regions touching that number's cell along an edge. Some numbers have been replaced with a question mark (?); their value is for you to determine, but cannot be zero (0).

Answer: For each row from top to bottom, enter the number of the first column from the left where a black cell appears (the number on top of that column). Use only the last digit for two-digit numbers; e.g., use '0' if the first star appears in column 10. If there are no black squares in the row, enter a single digit '0' for that row.

Example Answer: 241101

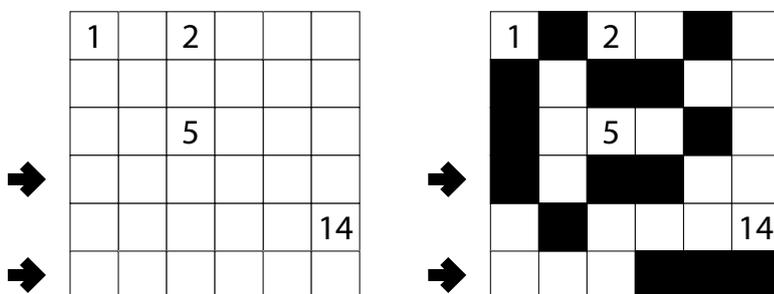


24-25. Nuribou [Murat Can Tonta] (46, 43 points)

Shade some empty (non-numbered) cells black (leaving the other cells white) so that the grid is divided into non-overlapping regions; cells of the same color are considered in the same region if they are adjacent along edges. Each given number must be in a white region that has the same area in cells as that number. Each white region must have exactly one given number. All black regions must be a rectangle or square of width or height 1. Black regions of the same size cannot touch each other at a corner.

Answer: For each designated row, enter its contents from left-to-right. Use 'o' for a white cell and 'x' for a black cell. You may switch the letters, as long as you are consistent.

Example Answer: X0XX00, 000XXX (or 0X00XX, XXX000)



26. Minesweeper (Double) [Serkan Yürekli] (16 points)

Place mines into the un-numbered cells in the grid, at most two mines per cell, so that each number in a cell represents the number of mines adjacent to that cell (including diagonally adjacent cells).

The number of mines you must locate is NOT provided.

Answer: For each designated row, enter its contents from left to right. Use '1' for a cell containing one mine, '2' for a cell containing two mines, and 'x' for a cell that does not contain any mines (but may contain a number).

Example Answer: 1xxx2, xx2xx

