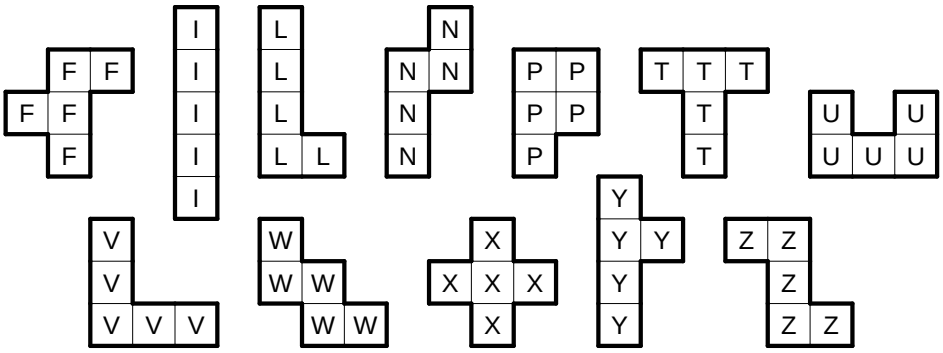
WPC 2016 Practice – Pentominoes

You are given twelve separate puzzles with various rules. In each puzzle one of the twelve pentominoes will be used, this pentomino can appear as often as needed (some puzzles specify a fixed number), and it can be rotated and reflected. Each pentomino must be used in exactly one puzzle. Some puzzles might have solutions with several pentominoes, however there is only one mapping of the pentominoes to the puzzles that allows to solve all puzzles. This mapping is for you to determine.



	F	I	L	N	P	T	U	V	W	X	Y	Z
Areas												
Classic												
Consecutive												
Fences												
in White												
Japanese Sums												
Minesweeper												
Rooms												
Scrabble												
Snakes												
Tapa												
Touch												

Answer keys

The answer key consists of 48 characters in total (digits or letters), four per puzzle. In each puzzle, four cages are marked using red lines, these are not relevant for the puzzles itself, they only serve to determine the answer key. According to specific rules that are given for each puzzle separately, each cage yields some number. Single-digit numbers remain unchanged, double-digit numbers are converted into letters: $10 = A,\ 11 = B,\ \ldots,\ 35 = Z$. For larger numbers only the remainder modulo 36 is used, thus $36 = 0,\ 37 = 1$ etc. Here is the full conversion table:

0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

9	9
10	A
11	B
12	C
13	D
14	E
15	F
16	G
17	H

18	I
19	J
20	K
21	L
22	M
23	N
24	O
25	P
26	Q

27	R
28	S
29	T
30	U
31	V
32	W
33	X
34	Y
35	Z

36	0
37	1
38	2
39	3
40	4
41	5
42	6
43	7
44	8

45	9
46	A
47	B
48	C
49	D
50	E
51	F
52	G
53	H

54	I
55	J
56	K
57	L
58	M
59	N
60	O
61	P
62	Q

63	R
64	S
65	T
66	U
67	V
68	W
69	X
70	Y
71	Z

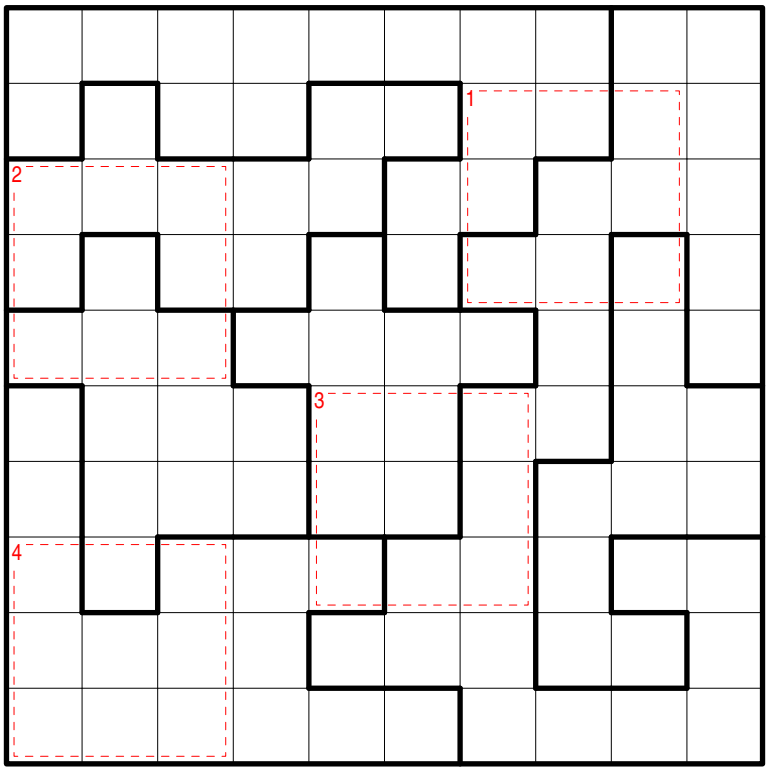
(Spoiler: Larger numbers will not appear.)

The Pentomino Scrabble is an exception to this procedure, this puzzle yields four letters directly.

The four characters in the given order (the cages are numbered) form one part of the answer key; for the complete answer key, put together the twelve strings obtained from the twelve puzzles in the same order as the puzzles are shown here.

Pentomino Areas

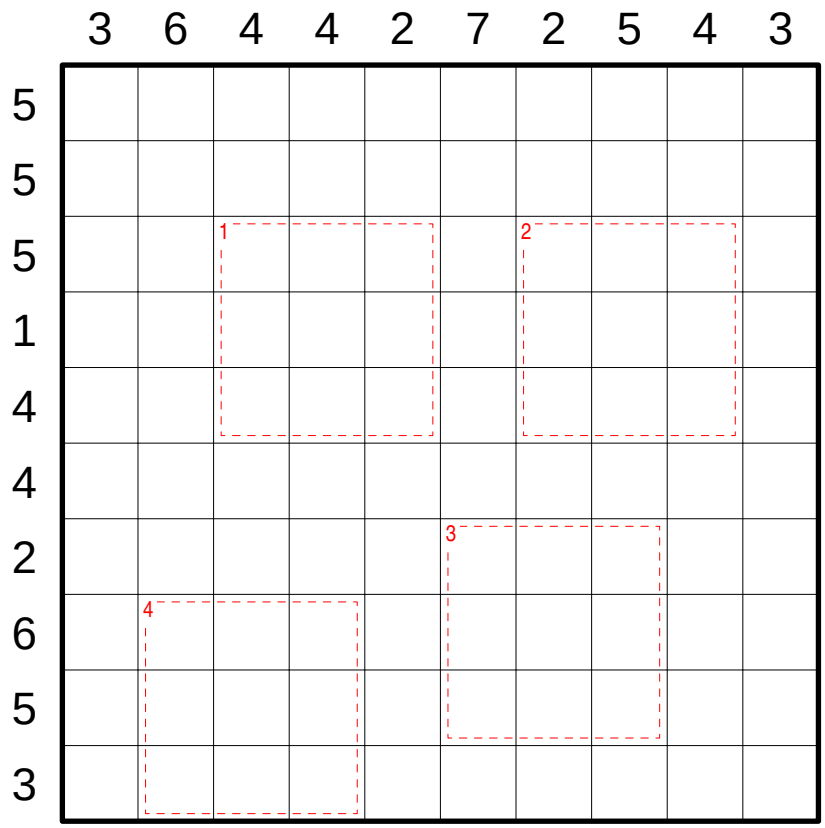
Place identical pentominoes into the grid, so that they do not touch each other, not even diagonally. Each pentomino must lie completely within one of the outlined regions, and each region must contain exactly one pentomino.



Answer key: For each cage the number of cells occupied by pentominoes, multiplied by the number of pentominoes involved.

Pentomino Classic

Place identical pentominoes into the grid, so that they do not touch each other, not even diagonally. The numbers outside the grid indicate how many cells are occupied by pentominoes in the respective row or column.



Answer key: For each cage the number of cells occupied by pentominoes, multiplied by the number of pentominoes involved.

Pentomino Consecutive

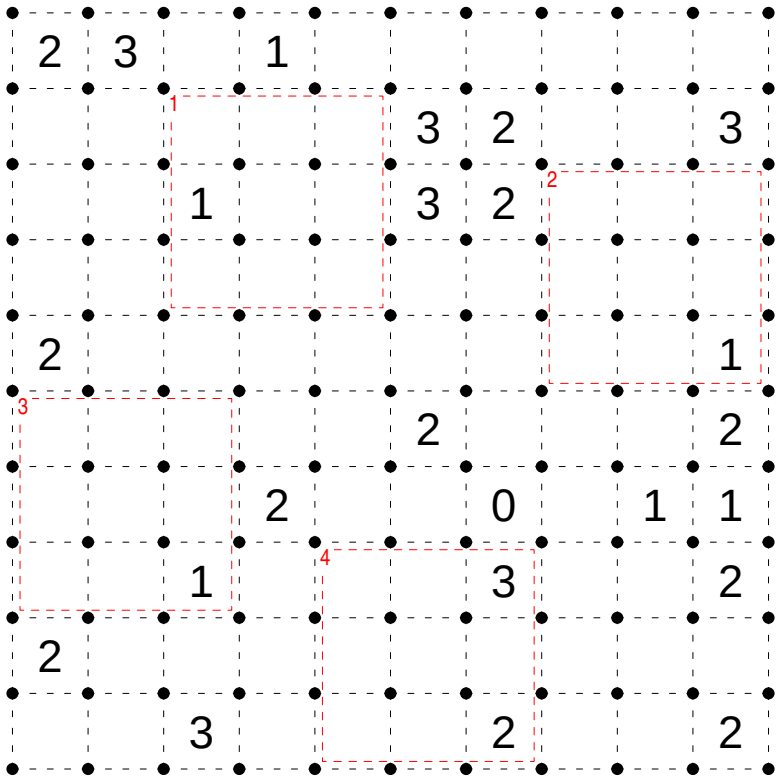
Place five identical pentominoes into the grid, so that they do not touch each other, not even diagonally. Each pentomino must contain five consecutive digits (in any order), and different pentominoes must contain different sets of digits.

4	7	5	2	3	5	2	9	7	3
1	6	8	7	4	7	6	8	4	5
2	8	4	3	9	8	5	1	2	6
3	4	5	1	2	6	3	2	4	1
6	7	3	4	5	3	4	5	8	6
8	5	6	2	6	7	9	6	7	9
6	9	2	5	4	8	2	3	5	7
4	5	4	3	7	6	5	4	6	5
3	2	1	6	5	4	7	6	3	8
2	6	5	9	8	1	3	5	9	3

Answer key: For each cage the sum of the digits in cells occupied by pentominoes, multiplied by the number of pentominoes involved.

Pentomino Fences

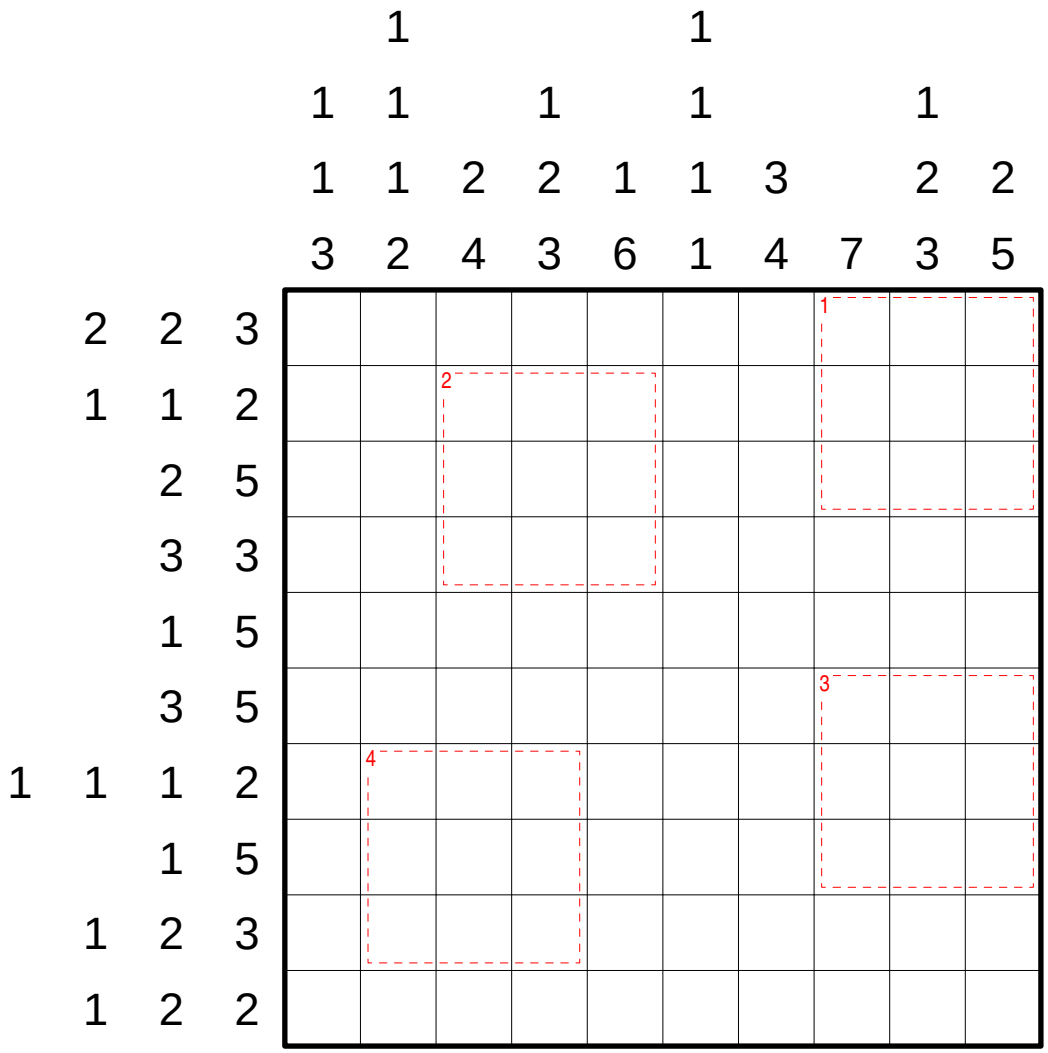
Draw a single continuous loop by connecting adjacent dots along the dotted lines. The loop must not touch or cross itself, and it doesn't need to touch all of the dots. The numbers indicate how many edges of the respective cells are used by the loop. Fill the interior of the loop with identical pentominoes, so that each interior cell is part of exactly one pentomino.



Answer key: For each cage the number of cells occupied by pentominoes, multiplied by the number of pentominoes involved.

Pentomino in White

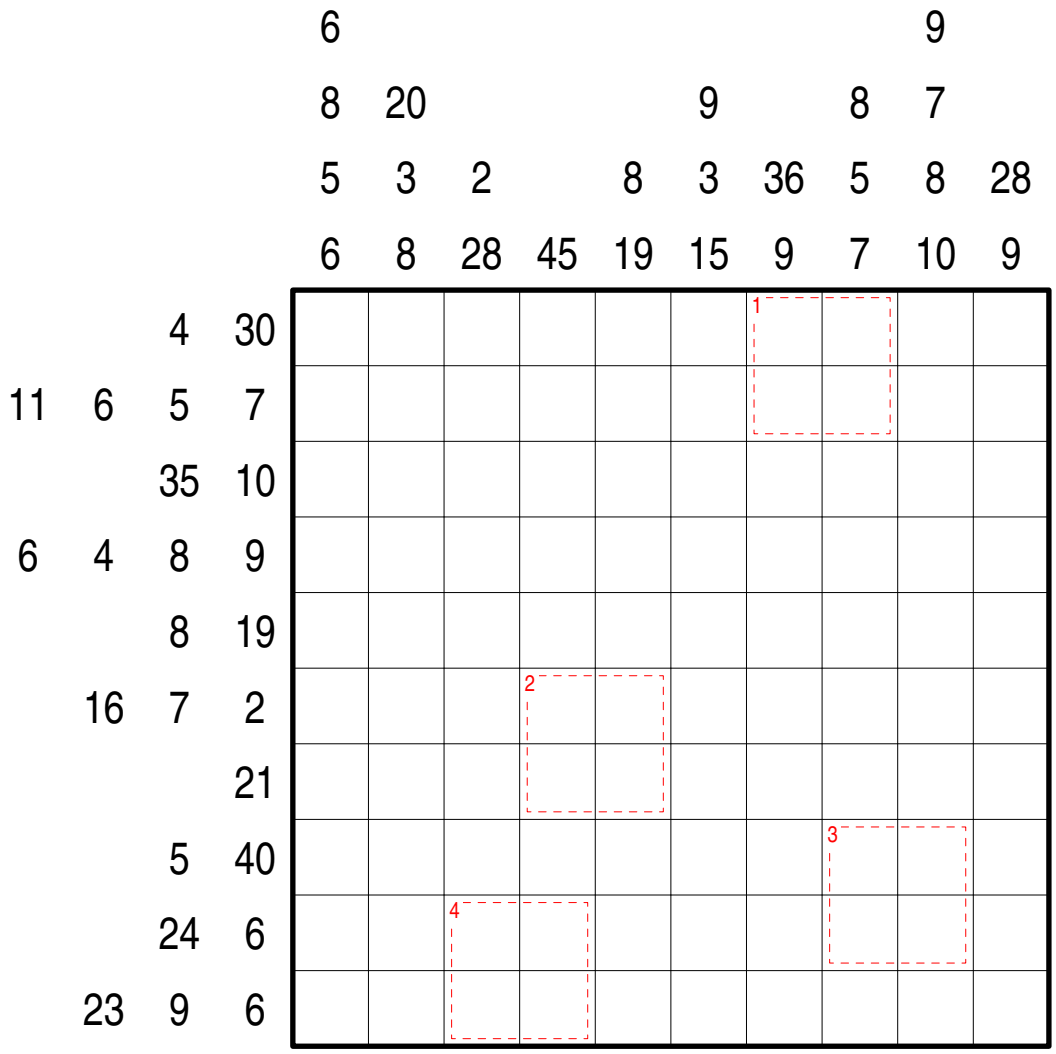
Place identical pentominoes into the grid, so that they do not touch each other, not even diagonally. The numbers outside the grid indicate the lengths of all contiguous blocks of empty cells in the respective row or column, with one or more pentomino cells between two blocks. The numbers are given in increasing order.



Answer key: For each cage the number of cells occupied by pentominoes, multiplied by the number of pentominoes involved.

Pentomino Japanese Sums

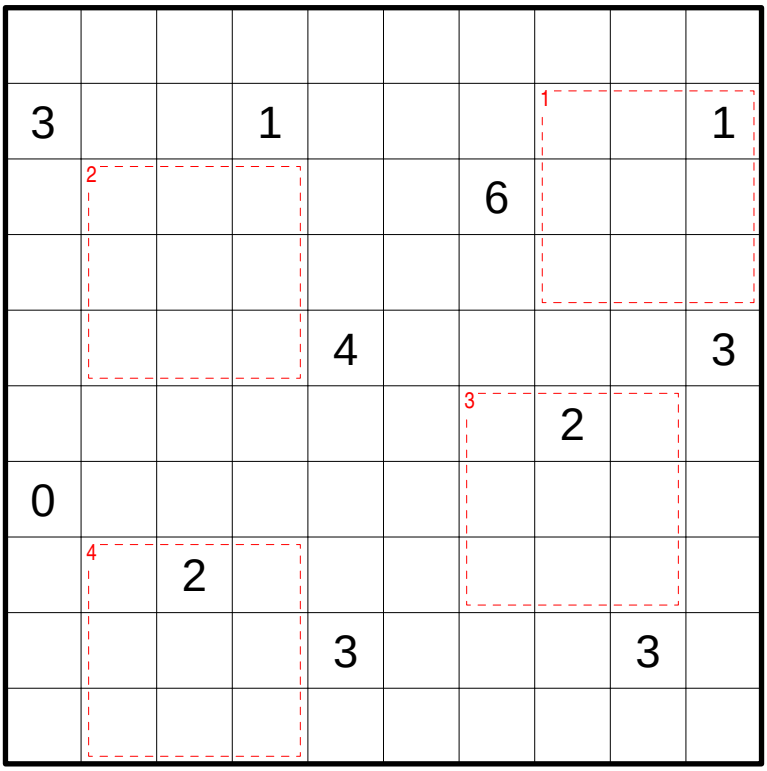
Place identical pentominoes into the grid, so that they do not touch each other, not even diagonally. Enter digits from 1 to 9 into the remaining cells, so that no digit is repeated within a row or column. The numbers outside the grid indicate the sums of all contiguous blocks of digits (including single digits) in the respective row or column, with one or more pentomino cells between two blocks. The order of the sums corresponds to the order of the blocks.



Answer key: For each cage the sum of the digits within the cage. Ignore pentomino cells.

Pentomino Minesweeper

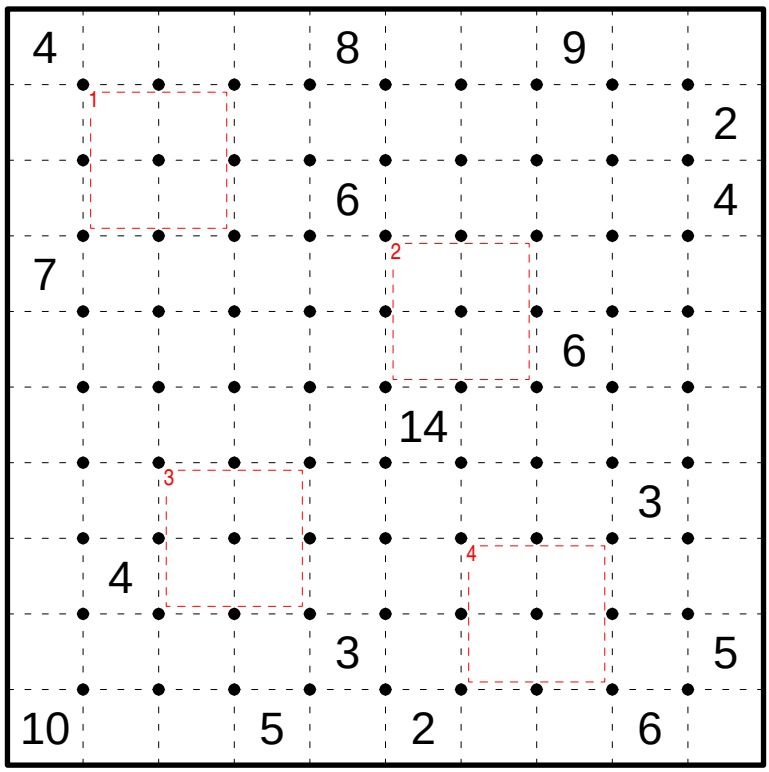
Place identical pentominoes into the grid, so that they do not touch each other, not even diagonally. Pentominoes can not be placed on clue cells. The numbers indicate how many of the horizontally, vertically and diagonally adjacent cells are occupied by pentominoes.

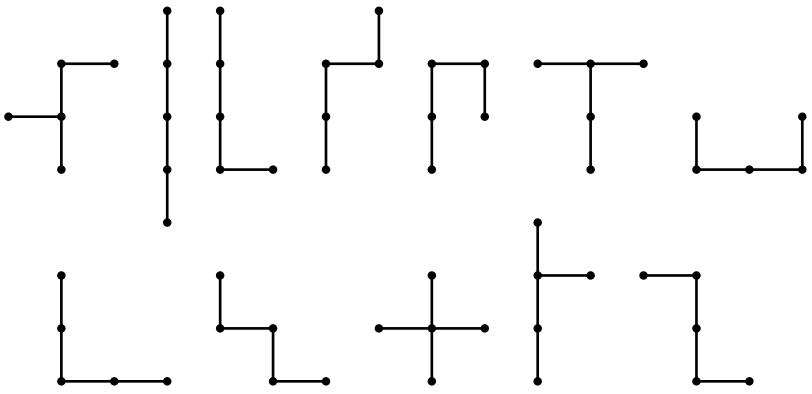


Answer key: For each cage the number of cells occupied by pentominoes, multiplied by the number of pentominoes involved.

Pentomino Rooms

Place identical pentominoes consisting of four line segments (see below) into the grid along the grid lines, so that they do not touch each other. No part of a pentomino can lie along the border of the grid, and no pentomino can touch the border in more than one point. The pentominoes represent walls; the numbers indicate how many cells can be seen from the clue cell in all four directions horizontally and vertically, including the clue cell itself.

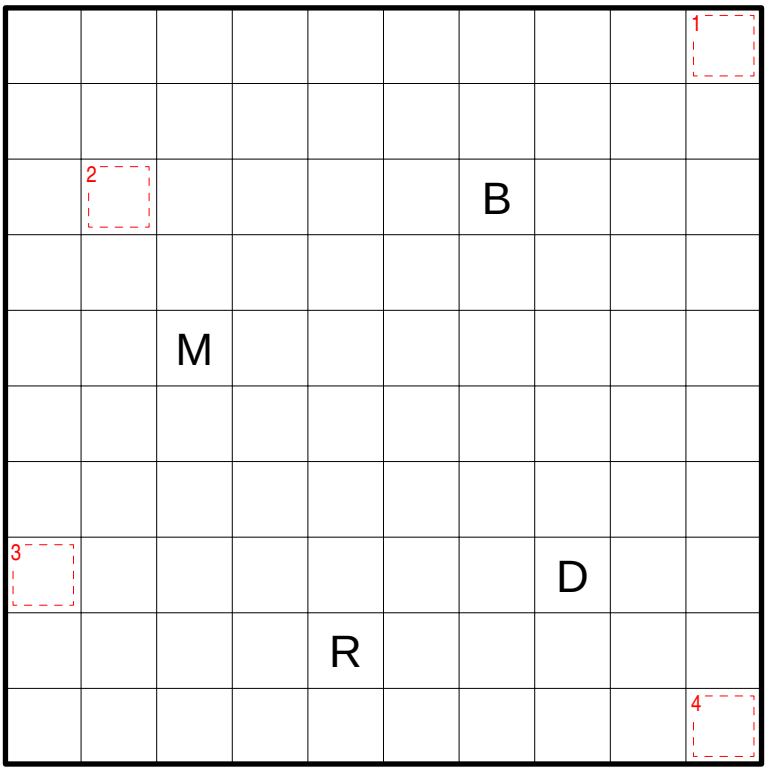




Answer key: For each cage the sum of the numbers that could be entered into the cells within the cage, according to the puzzle rules.

Pentomino Scrabble

Place identical pentominoes into the grid, so that they do not touch each other, not even diagonally. Enter letters in the remaining cells, so that each of the given words can be read exactly once, either horizontally from left to right or vertically from top to bottom. All words must be orthogonally connected, and words that are not listed can not appear anywhere in the grid.

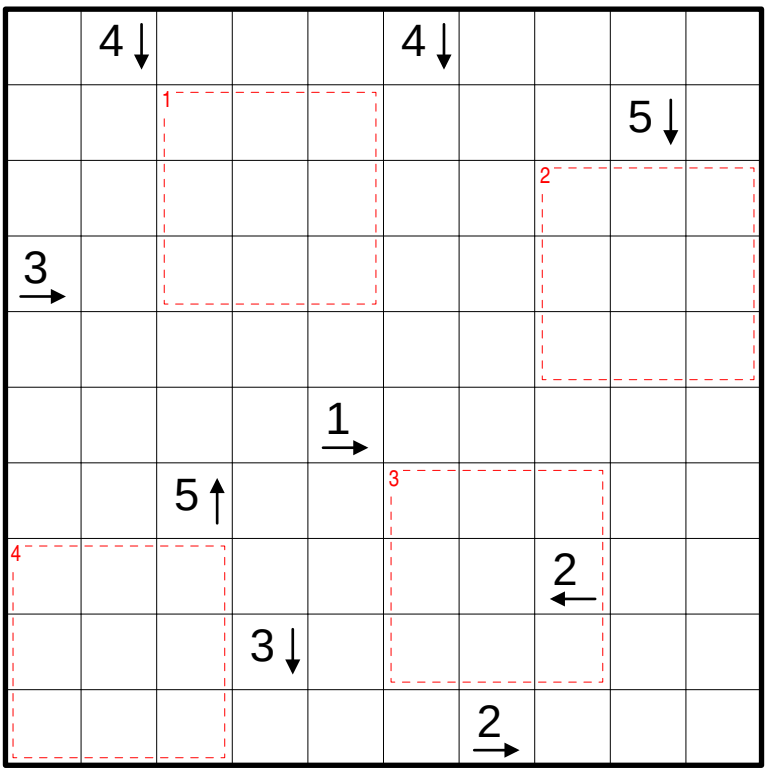


HE	LSD	ETAT	KLOPS
SI	OLD	HIOB	LIBRA
TB	ROM	IGEL	EMPORE
AOL	TAZ	LEIM	PLOMBE
AUS	TSG	MARS	UBONGO
DIA	BOOT	URIN	ALMOSEN
EMU	ENTE	ATARI	BALLAST
LOS	ERDE	BLOCK	LEIPZIG

Answer key: For each cage the letter in the respective cell; for cells occupied by pentominoes, the letter assigned to the pentomino used here (see page 1).

Pentomino Snakes

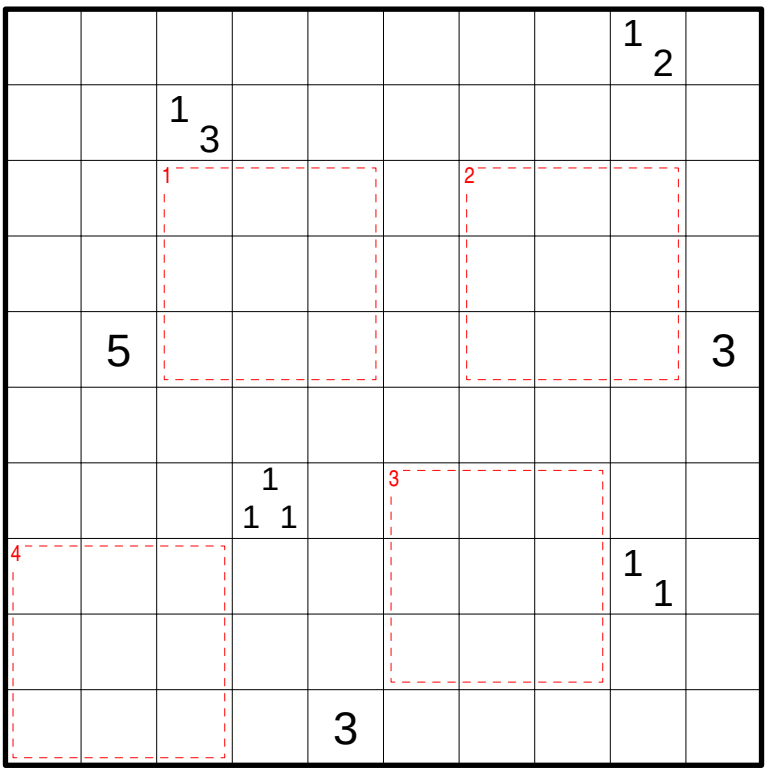
Place seven identical pentominoes into the grid, so that they do not touch each other horizontally or vertically (they may touch diagonally). Pentominoes can not be placed on clue cells. Each pentomino represents a snake whose cells are numbered from 1 to 5; consecutive numbers must be horizontally or vertically adjacent. Each snake looks from its head (the number 1 cell) in the direction opposite the number 2 cell. No snake can see another snake; clue cells don't block their view. The clue cells indicate which number can be seen first in the specified direction.



Answer key: For each cage the sum of the numbers in cells occupied by pentominoes, multiplied by the number of pentominoes involved. Ignore clue cells.

Pentomino Tapa

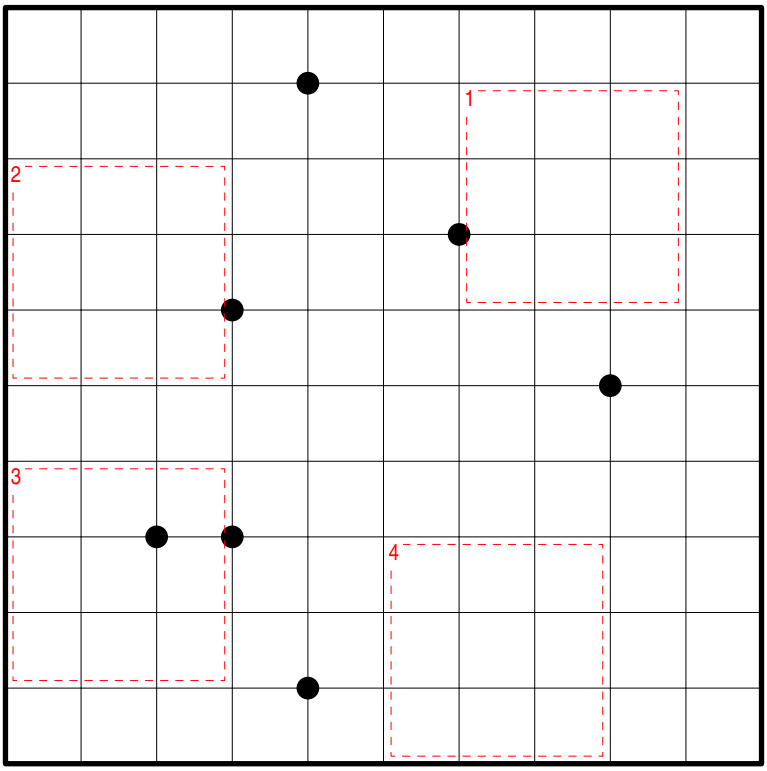
Place identical pentominoes into the grid, so that all cells occupied by pentominoes are orthogonally connected and no 2×2 region is completely occupied. Pentominoes can not be placed on clue cells. The clues indicate how many of the horizontally, vertically or diagonally adjacent cells are occupied by pentominoes: Each number corresponds to a group of horizontally and vertically connected pentomino cells, regardless of how many pentominoes are involved. The groups are separated by one or more empty cells. The layout of the numbers within a clue cell is irrelevant.



Answer key: For each cage the number of cells occupied by pentominoes, multiplied by the number of pentominoes involved.

Pentomino Touch

Place identical pentominoes into the grid, so that they do not touch each other horizontally or vertically. Every point where two pentominoes touch diagonally is marked by a black dot.



Answer key: For each cage the number of cells occupied by pentominoes, multiplied by the number of pentominoes involved.