

Computational Thinking: Cut Block Logic Puzzles

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Learn how to solve a logic puzzle and find out about why logical thinking is a core part of computational thinking. Discover how generalisation and pattern matching are the secret skills of experts, both in computer science and other areas too, from chess players to firefighters.

A Logic Puzzle

If you enjoy doing logic puzzles and are good at them you will probably make a good computer scientist. You've probably heard of Sudoku: logic puzzles based on a grid of numbers. There are a lot of different kinds of logic puzzles though, that all need the same abilities to think logically. My favourite kind of logic puzzle at the moment was invented by Japanese puzzle inventor Naoki Inaba called 'Cut Blocks'.

A Cut Block puzzle consists of a block of squares, with different areas marked out using darker lines. There are two rules that must hold of a completed block.

- 1) Each area must contain the numbers from 1 up to the number of squares in the area. For example, the topmost area in the puzzle below consists of 5 squares so those squares must be filled with the numbers: 1, 2, 3, 4 and 5 with no repeated numbers. If the area has two squares, like the one bottom left below, then it must be filled with the numbers 1 and 2.
- 2) No number can be next to the same number in any direction, whether horizontally, vertically or diagonally. So in the grid below, the fact that there is a 4 on the side means there cannot be a 4 in any of the 5 squares surrounding it.

Here is a simple one for you to solve. Try to complete it before you read on.

		2
4		
2		

Another puzzle

Here is another puzzle to try. See if you can use any of our rules above to solve it. As you fill in numbers you will find that new rules apply. If none of our derived rules apply you might have to go back to the original puzzle rules. Remember that rule 2 says that a number can't be next to itself.

	3	
	5	

The answer is at the end of the booklet.

A harder puzzle

Here is another, much bigger, harder puzzle. As you solve it, look out for other rules you might devise, either that are immediately useful again in solving this puzzle or that might be useful for future puzzles.

		1	4			
			3			
		6				
2		3		5		4

HINT: In looking for a new rule, think about what happens when you have lines of areas of size 4 next to one another.