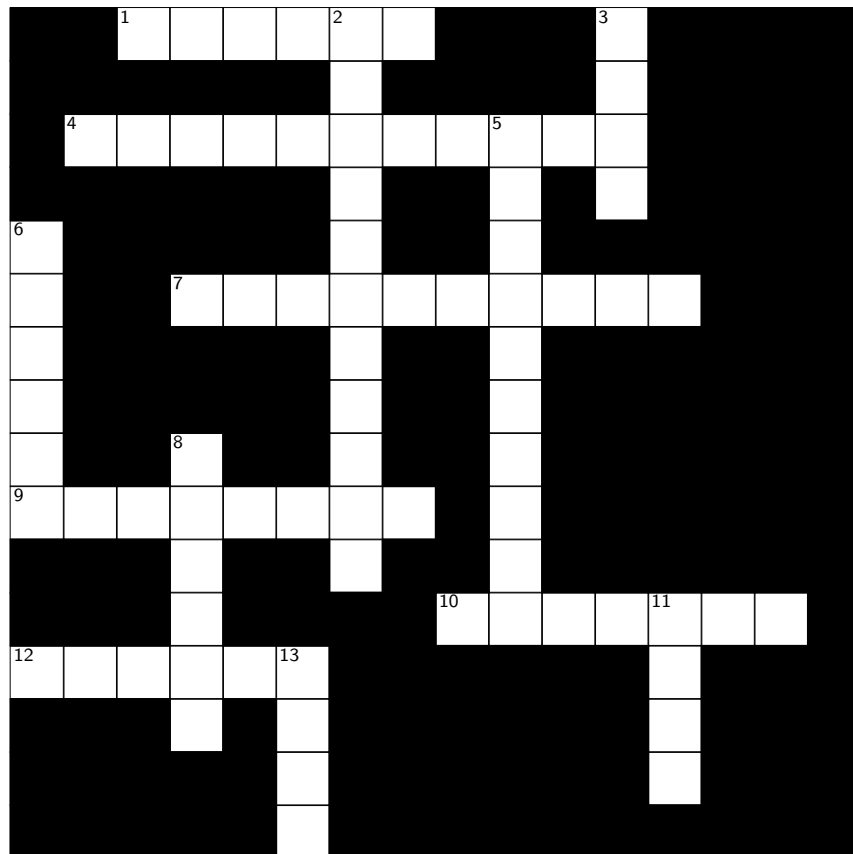


## Puzzles

### Crossword:



**Across** 1 All out, no in 4 Loop that uses all vertices exactly once 7 Same nodes, different edges 9 All edges used exactly once 10 Cycleless 12 A collection of #13

**Down** 2 Tree where all nodes form a single path 3 All in, no out 5 Same product, different packaging 6 Removing this disconnects the graph 8 Number of edges on a node 11 Back to where you started 13 Acyclic, simple graph.

### Takuzu:

The goal of this problem is to fill the grid with 1 and 0. Rules:

1. There have to be the same number of 1 and 0 in each line.
2. No more than two cells in a row can contain the same digit.
3. Each row and each column have to be unique.

1			0		1	0		0	
							1		
	0		1						
					1			0	
1		0				0			
				1					1
	1				1			1	
0	1			0		1			1
			0					1	1
0			0		0			0	

Answer:

1	0	1	0	0	1	0	1	0	1
0	1	0	1	1	0	0	1	1	0
1	0	0	1	1	0	1	0	1	0
0	1	1	0	0	1	1	0	0	1
1	0	0	1	0	1	0	1	1	0
1	0	0	1	1	0	1	0	0	1
0	1	1	0	1	1	0	0	1	0
0	1	0	1	0	0	1	1	0	1
1	0	1	0	0	1	0	0	1	1
0	1	1	0	1	0	1	1	0	0

### Brain teasers:

A. Prove that  $\sqrt{2 + \sqrt{2}} + \sqrt{2 - \sqrt{2}} < 2\sqrt{2}$

B. Find a Hamiltonian Circuit in the following image: Z