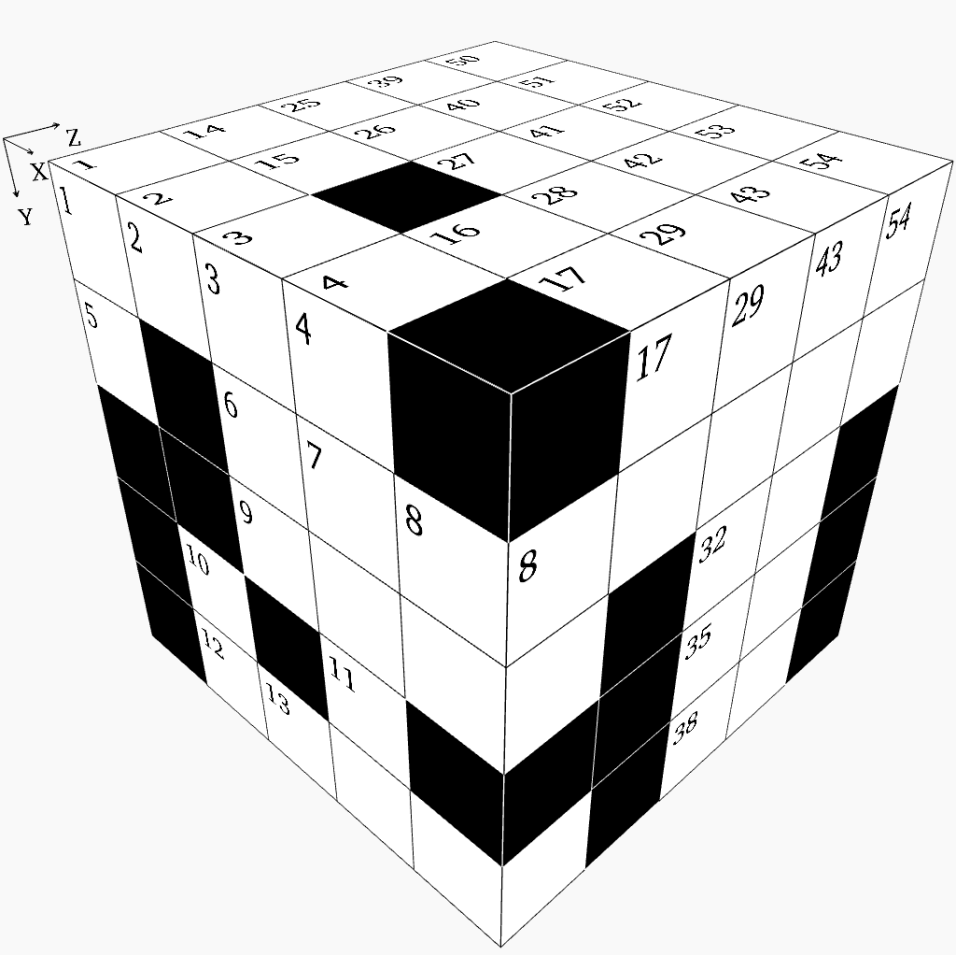
Difficulty: ★★★★☆

Cube - Hard Puzzle #41

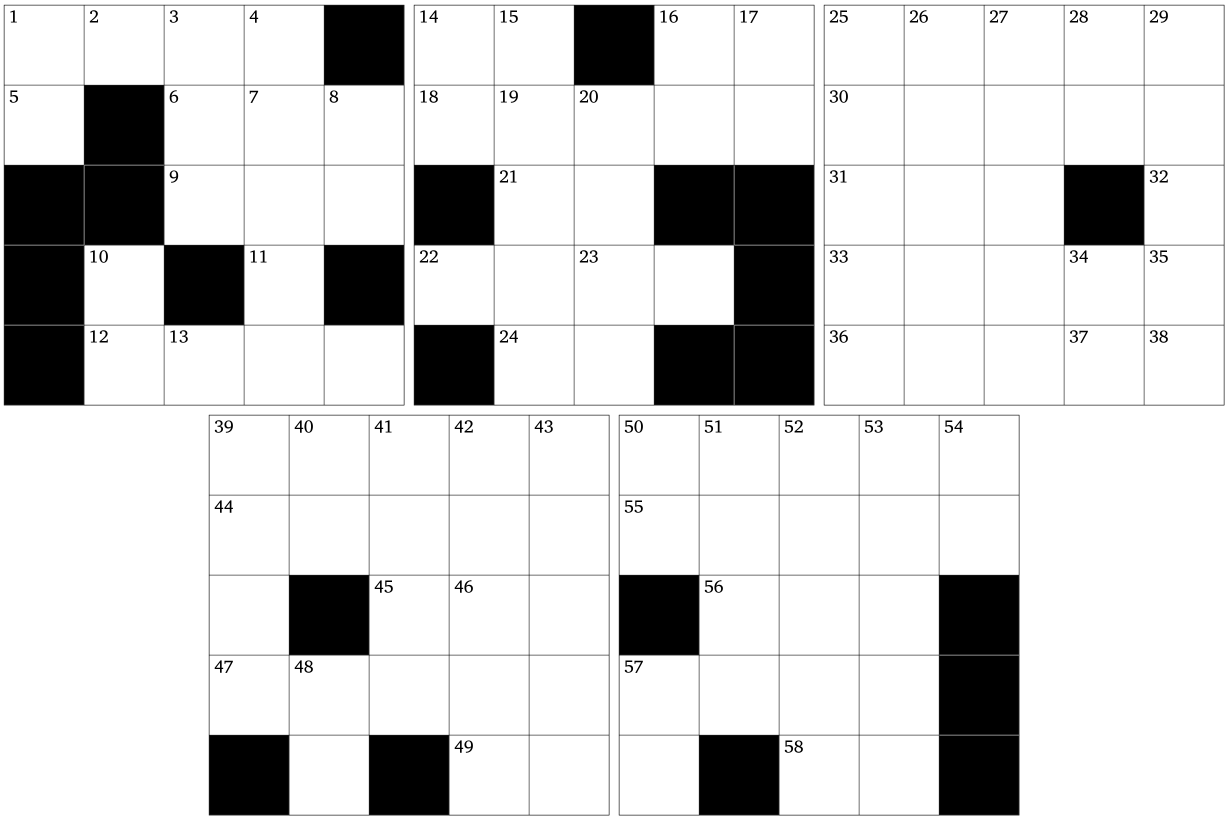


This puzzle is like a crossword, but with numbers. Each digit occupies a 3D block and can be a part of a "word" in the X,Y, and Z directions.

Rules:

1. "Words" may not start with a zero.
2. "Words" in the X direction read from left to right.
3. "Words" in the Y direction read from top to bottom.
4. "Words" in the Z direction read from front to back.
5. There is one unique solution which satisfies all the clues given below.
6. Some "words" may not have clues. They will be determined by the "words" which intersect them.

If we take the cube pictured above and divide it into individual X-Y layers, we will get these planes:



X Direction

1 Eighteen times a prime number
6 Four times a prime number
9 Consecutive digits unordered
12 Z23 minus Z13
14 Z10 minus X55
16 Mean of X49 and Y16
18 Y41 times Y40
21 Y3 divided by three
22 A prime number
24 Mean of Y34 and Z31
25 Three times a prime number
30 Twice a prime number
31 Z11 divided by Y57
33 X50 plus half of X6
36 Thirty-two times a prime number
39 A prime number
44 Seventeen times a prime number
45 Consecutive digits in descending order
47 Half of Y29, then subtract X22
49 Two-fifths of Y28
50 Five times a prime number
55 First two digits are the same as first two digits of Z17
56 Eighteen times X21
57 Thirty-four times a prime number
58 Twice X16

Y Direction

1 A cube
3 X12 divided by eight
4 Two thousand twenty-seven more than X50
8 Y42 divided by X1
10 Mean of Y16 and Y8
14 Y39 minus X57
15 First two digits are the same as first two digits of X12
16 Mean of Z46 and Y54
17 X14 minus Y10
20 X30 minus half of X56
25 Four times a prime number
26 Four thousand fifty-four more than X25
27 Twice a prime number
28 Y48 plus Y1
29 Twelve times a prime number
34 Y50 minus Y57
39 A prime number
40 Twice Y17
41 Z12 plus Z46
42 Fifteen thousand twenty-five less than X44
43 Forty-six times a prime number
48 Mean of Y10 and X21
50 Z31 plus Y40
51 A prime number
52 Last two digits are the same as last two digits of X57
53 Twenty-two times a prime number
54 Y50 minus Y1
57 A square

Z Direction

1 Its digits total Y1
2 A prime number
4 Four thousand two hundred ninety-eight less than Y53
5 Seventy-nine times a prime number
6 Twice a prime number
7 One thousand one hundred eighty-one more than X25
8 Twelve times a prime number
9 First two digits are the same as X21
10 First two digits are the same as first two digits of Z17
11 First two digits are the same as Y34
12 X36 minus half of Y27
13 Four times a prime number
17 Y3 times Z31
19 Ninety-seven times Y10
21 Y28 minus Z32
22 Rearranged digits of Y39
23 Four times a prime number
27 Twenty-nine times X49
31 Y48 minus Z46
32 Y3 divided by fifteen
35 Y48 minus Y8
37 X56 minus Y57
38 Mean of Y28 and X58
46 X12 divided by X58

Solution: