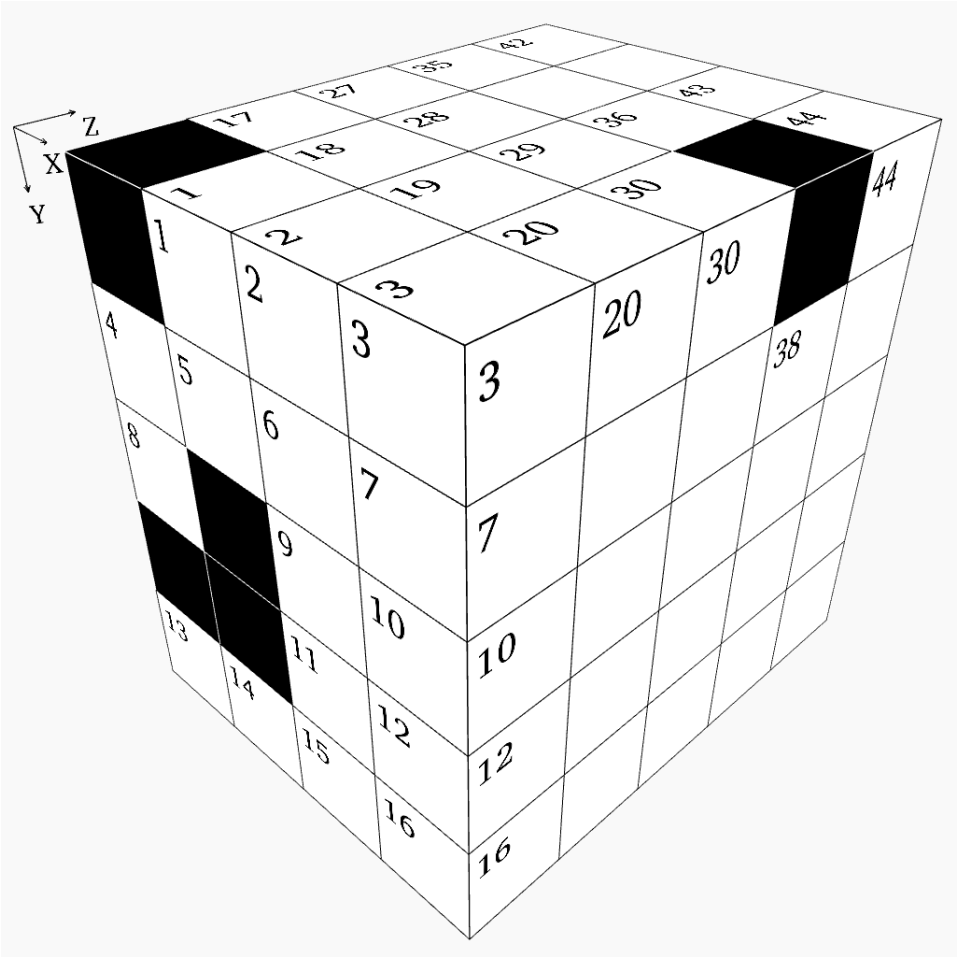
Difficulty: ★★★★☆

Box - Hard Puzzle #13

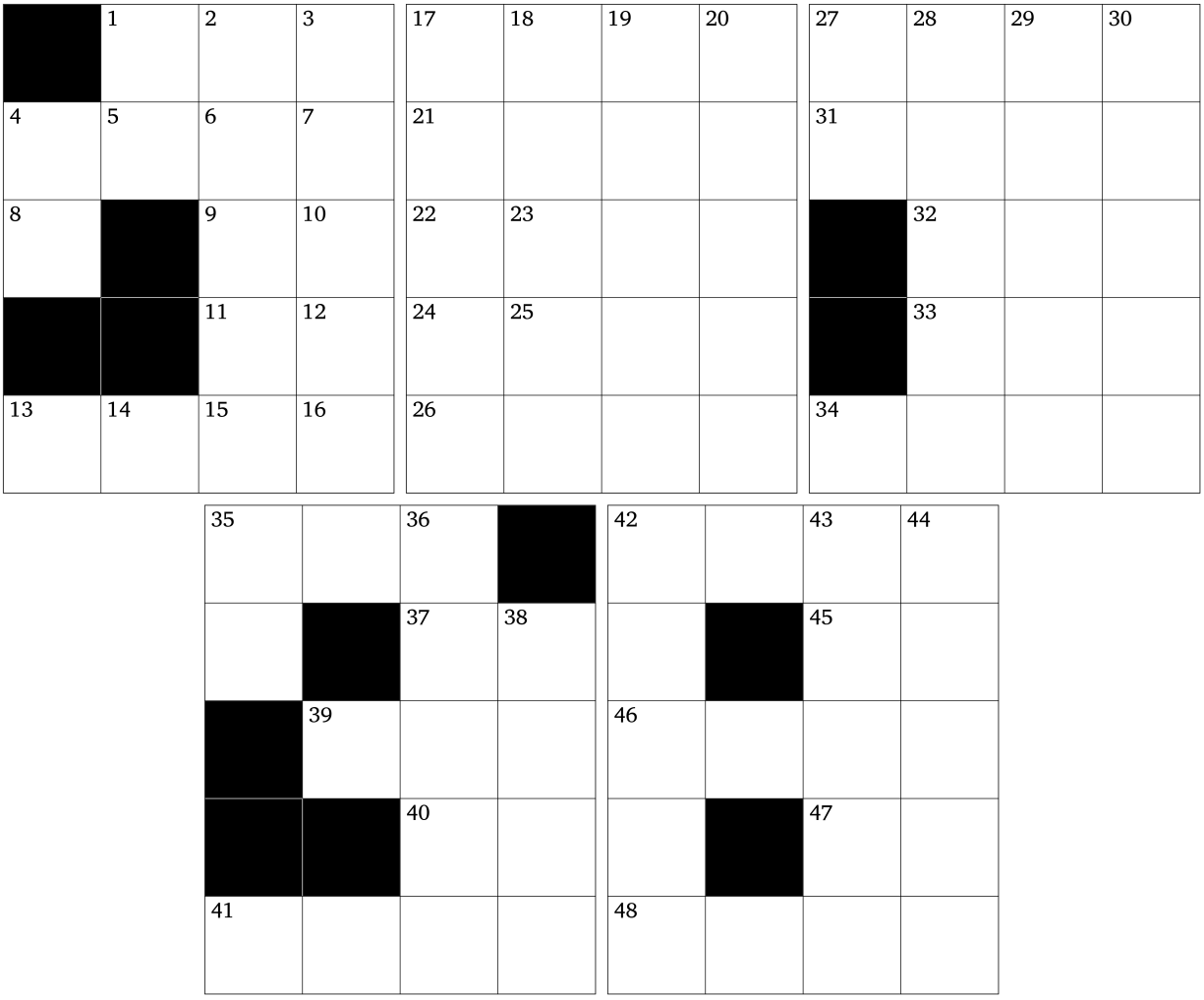


This puzzle is like a crossword, but with numbers. Each digit occupies a 3D block and can be a part of a "word" in the X,Y, and Z directions.

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 box pictured above and divide it into individual X-Y layers, we will get these planes:



X Direction

1 Three times a prime number
4 Fifty-five times a prime number
9 X37 minus X47
11 Sum of digits in X17
13 Three times a prime number
17 Twice a prime number
21 One thousand five hundred forty-four less than X31
22 X31 minus X35
24 Eighteen times a prime number
26 Last two digits are the same as last two digits of Y20
27 Fifty-three times Y35
31 A prime number
32 Twice a prime number
33 Eleven times a prime number
34 X26 minus Z23
35 Twice a prime number
37 X9 plus X11
39 A prime number
40 Six more than Z8
41 X33 plus X35
42 Mean of X4 and Y35
45 X34 divided by sixty-three
46 Sixty-one times X11

X Direction (continued)

47 Same as X11
48 One thousand seven hundred seventy-one less than X31

Y Direction

1 Mean of Z25 and Z8
2 Eighty-one times a prime number
3 Nine thousand five hundred forty-six less than Y2
4 Z25 minus X45
17 Forty-six times a prime number
18 A prime number
19 Z5 times X40
20 Mean of Z12 and Z9
27 Digits are the same as first two digits of Z9
28 Forty-five times a prime number
29 Twice a prime number
30 Thirty times a prime number
35 A prime number
36 Mean of Z4 and X13
38 Z8 plus half of X24
42 Two hundred four more than Z9
43 Ten times a prime number
44 Mean of Z10 and X27

Z Direction

1 Thirty-four times a prime number
2 One thousand six hundred eighty-eight less than Y2
3 A cube
4 Rearranged digits of Z9
5 A prime number
6 Nine thousand three hundred five more than Z2
7 First two digits are the same as first two digits of X24
8 X26 divided by ninety-five
9 Mean of Y17 and Z8
10 Seven thousand one hundred sixty-three more than Z6
11 A prime number
12 Thirty-nine times a prime number
13 Sixty-three times a prime number
14 Mean of Y43 and Z6
15 One thousand six hundred seventy-seven more than Y18
16 Mean of Y42 and X1
17 X31 minus Z23
23 Eighty times a prime number
25 Consecutive digits in ascending order

Solution: