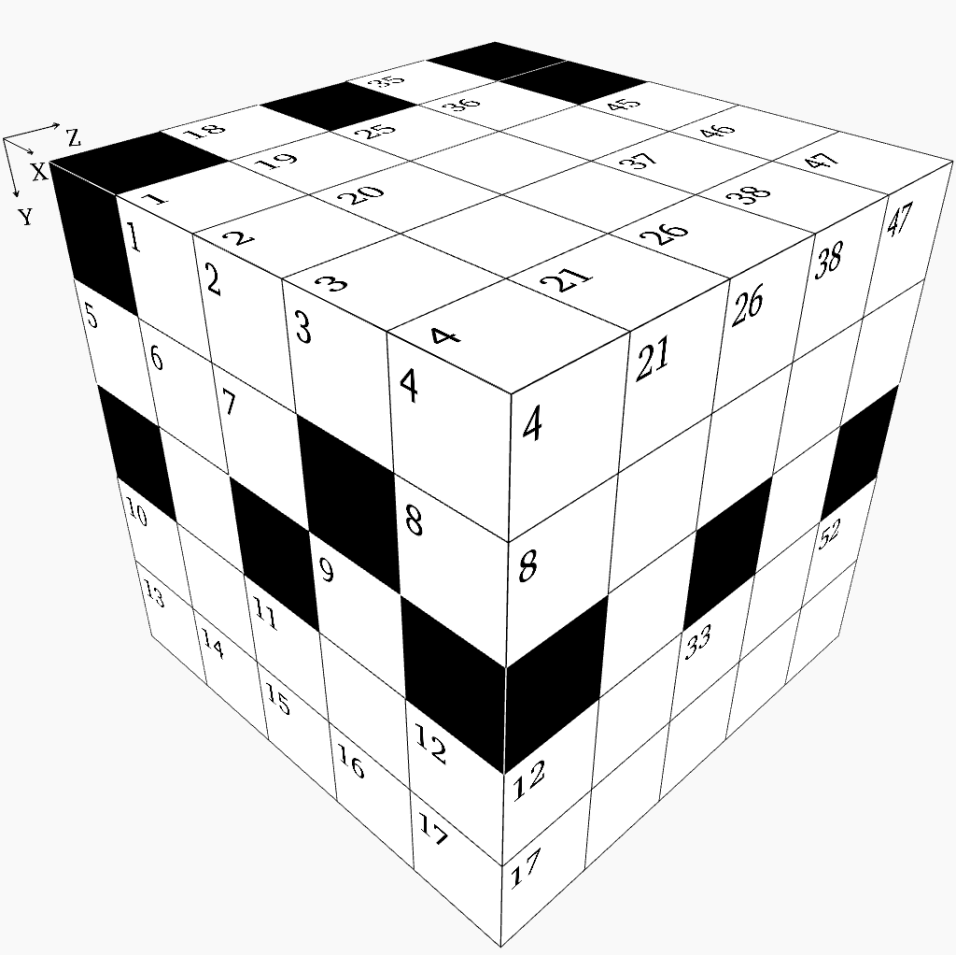
Difficulty: ★★★★☆

Cube - Hard Puzzle #48

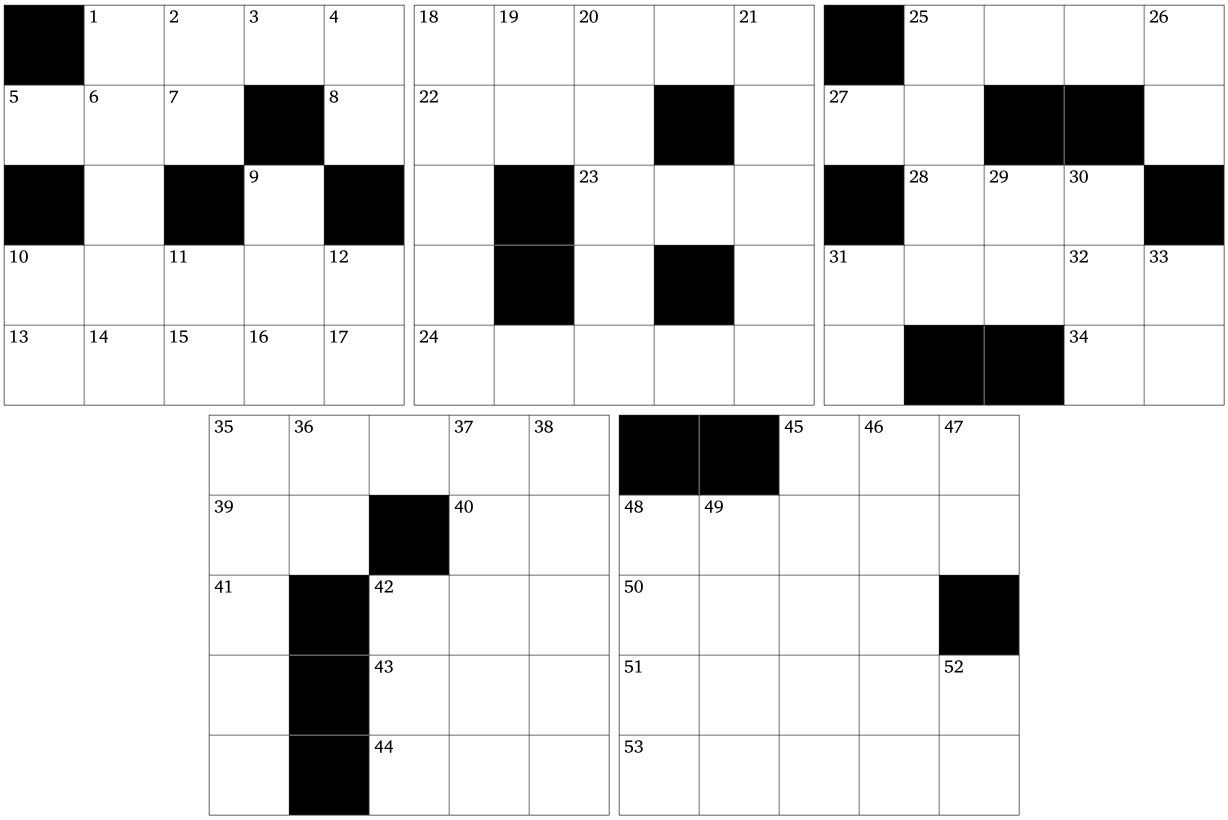


This puzzle is like a crossword, but with numbers. Each digit occupies a 3D block and can be a part of a "word" in the X,Y, and Z directions.

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 Eight times a prime number
5 Mean of X45 and Y29
10 Five times a prime number
13 Sixty-six times a prime number
18 Mean of Y20 and X1
22 Z14 plus X44
23 Y30 minus Y11
24 Four thousand four hundred sixty-seven more than Y45
25 X24 minus X35
27 Mean of X34 and Y33
28 Eleven times Z14
31 Three thousand eighty-four more than Z16
34 Three-fourths of Y52
35 Nine thousand six hundred one more than Y18
39 A square
40 Mean of Z15 and Y47
42 First two digits are the same as X39
43 Twelve times a prime number
44 A prime number
45 Four times a prime number
48 Three thousand three hundred ninety-six more than Z12
50 Seventeen times a prime number
51 Mean of Z5 and Y48
53 Twice a prime number

Y Direction

1 Two thousand four hundred thirty less than X51
2 Z32 minus X23
4 Mean of Y47 and Y29
9 Mean of X43 and Y29
10 A square
11 Z7 plus Y2
12 Y33 minus Y19
18 Its digits total Y19
19 X39 minus Z41
20 Eight hundred eighty less than Z2
21 X13 minus half of Y49
25 X40 times Y31
26 Y10 plus Z7
29 Z41 plus Z7
30 Z7 plus Z32
31 Y25 divided by Z44
33 Mean of Y12 and Y11
35 Twenty-nine times a prime number
36 All digits are the same
37 Y35 minus Y1
38 Thirteen thousand three hundred forty-three more than Y20
42 X43 minus X42
45 Mean of Z17 and Y12
46 Mean of Z8 and Z32
47 Mean of Y33 and Y11
48 Three times a prime number
49 First three digits are the same as first three digits of Z12
52 Two-thirds of Y10

Z Direction

1 A prime number
2 Mean of Z10 and Y38
3 Eight thousand seven hundred fifty-five less than Y38
4 Five thousand four hundred thirty-eight less than Z11
5 Three thousand six hundred sixty-two more than Y46
6 Four thousand four hundred sixty-two more than X24
7 Y52 plus Z41
8 Four thousand one hundred ninety less than X48
9 X48 plus Y9
10 Six thousand one hundred fifty-eight more than Y46
11 Eight thousand four hundred twenty-two more than Z17
12 Six times a prime number
13 Forty-three times a prime number
14 Y33 divided by three
15 Mean of X40 and Y29
16 Z11 plus X44
17 Forty-two times a prime number
23 A prime number
32 Twenty-three times Z14
40 Same as Y4
41 Y33 minus X39
44 Mean of Y47 and Z15

Solution: