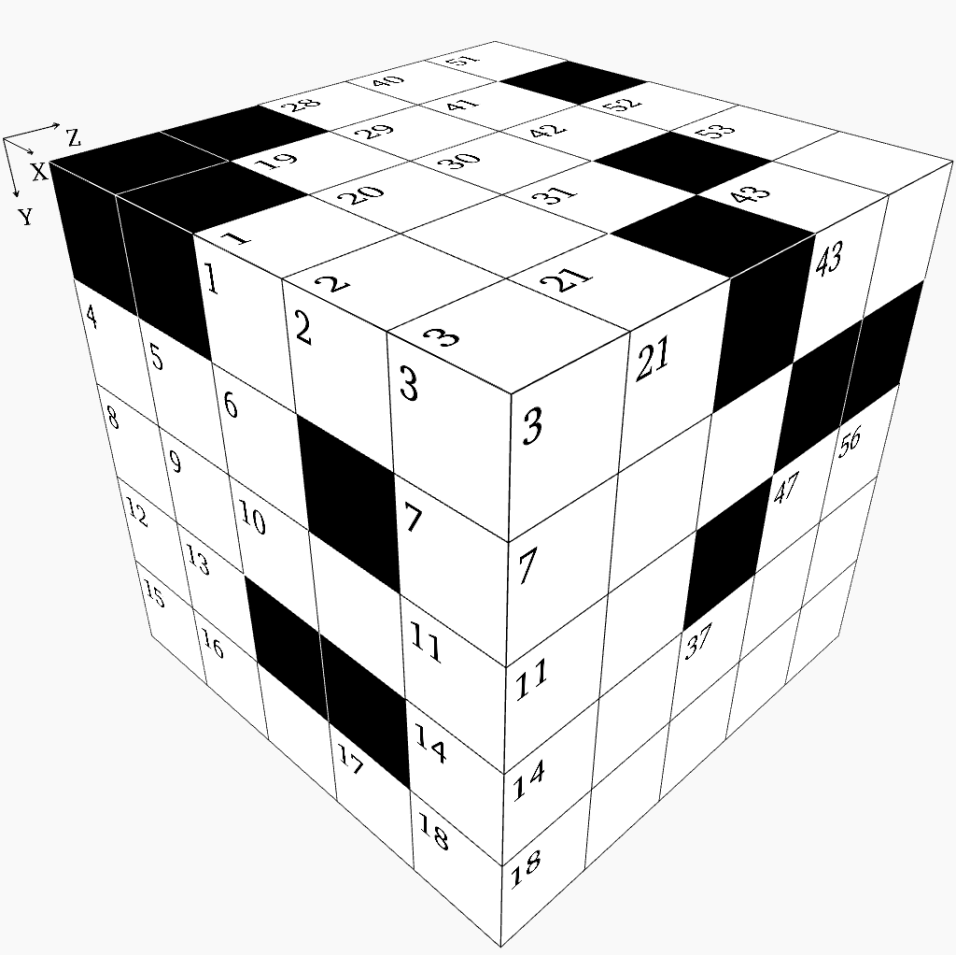
Difficulty: ★★★★☆

Cube - Hard Puzzle #19

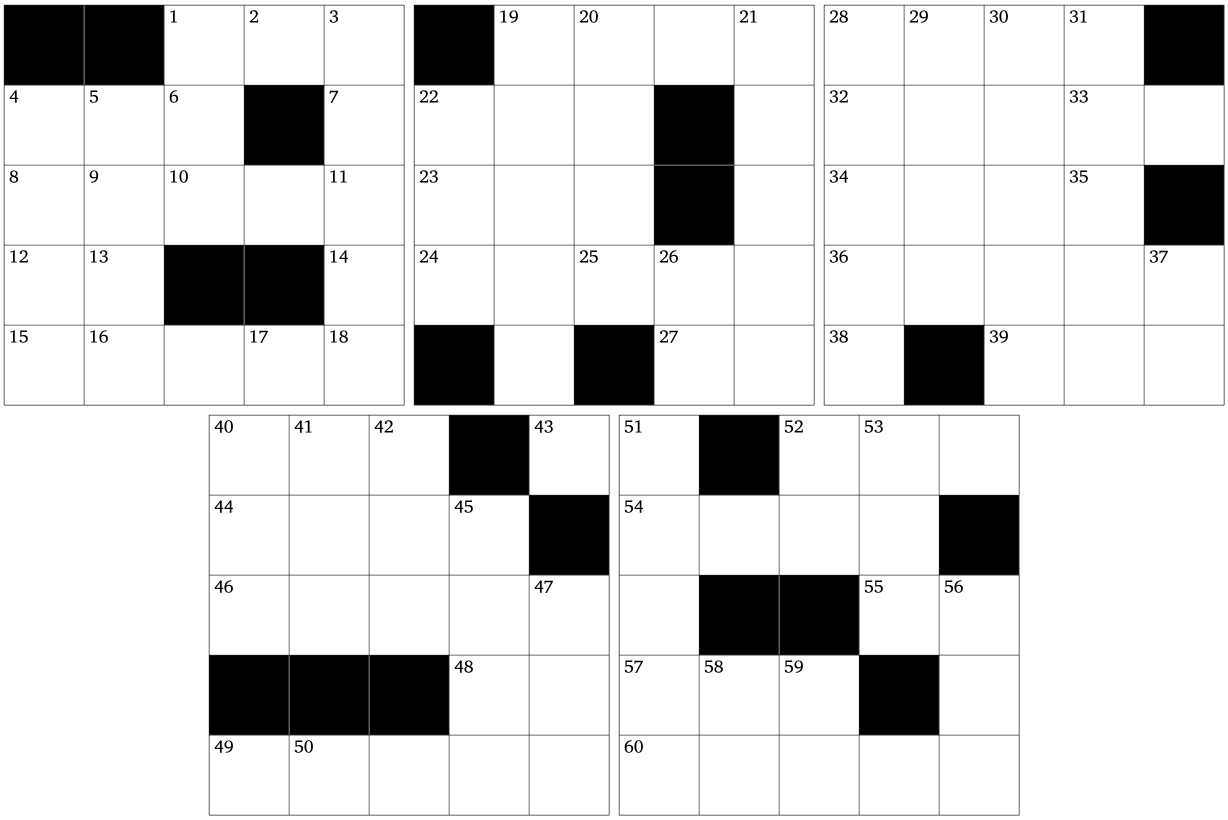


This puzzle is like a crossword, but with numbers. Each digit occupies a 3D block and can be a part of a "word" in the X,Y, and Z directions.

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 Mean of Z38 and Y1
4 X52 minus Y59
8 Fifteen times a prime number
12 Z25 minus Z11
15 Sixty-five times a prime number
19 Three times a prime number
22 Z38 minus Z3
23 X54 minus Z38
24 X8 minus Z47
27 Mean of Y37 and Z43
28 Three times Z7
32 Sixteen thousand six hundred thirty-two more than X24
34 Forty-five times a prime number
36 Y41 plus half of X32
39 Thirty-one times Y37
40 A prime number
44 Forty-eight times a prime number
46 Four times a prime number
48 Z43 minus Z3
49 Last two digits are the same as last two digits of X39
52 Y53 minus Y37
54 Five times a prime number
55 Z38 minus X22
57 X54 minus half of X23
60 Three thousand eleven less than X36

Y Direction

1 Half of Y42, then subtract Z16
3 Z8 minus half of Z12
4 Twice a prime number
5 X34 plus Z47
19 Fourteen times a prime number
20 X57 plus X54
21 Sixty-seven times a prime number
22 Mean of Z2 and Y52
26 Z50 minus X27
28 Four times a prime number
29 X34 minus Z26
30 Three hundred thirteen less than Y19
31 Eighteen thousand six hundred nineteen more than X24
37 X4 minus Y56
40 Y22 plus Z33
41 Nineteen times X48
42 Z19 plus Z43
45 Three times a prime number
47 Y52 plus X52
51 Six hundred sixty less than X36
52 X44 divided by X22
53 Mean of Z38 and Y58
56 Mean of Z3 and Z26
58 Y56 minus X27
59 Y22 divided by nine

Z Direction

1 Thirty-two times a prime number
2 X39 minus Z13
3 Y56 minus half of X4
4 Twenty-one times a prime number
5 Sixty-seven times a prime number
6 Twenty-four times a prime number
7 Y4 minus Z19
8 Thirteen thousand seven hundred thirty-nine less than X32
9 Forty-five times a prime number
10 Ninety-two times a prime number
11 A prime number
12 Mean of X57 and Y59
13 Mean of Y37 and Z28
14 Rearranged digits of Y31
16 Mean of Y37 and Z25
17 Y30 plus half of Z2
18 Twice the result of X49 minus Y20
19 Y41 plus Z47
25 Y53 minus Z13
26 Z3 plus X4
28 Y47 plus Y59
33 Z13 plus Z38
35 Twice the result of Z13 plus Z43
38 Y1 plus Z25
39 Y59 plus X39
43 Z2 divided by eight
47 Z16 minus X12
50 Mean of Y26 and Y56

Solution: