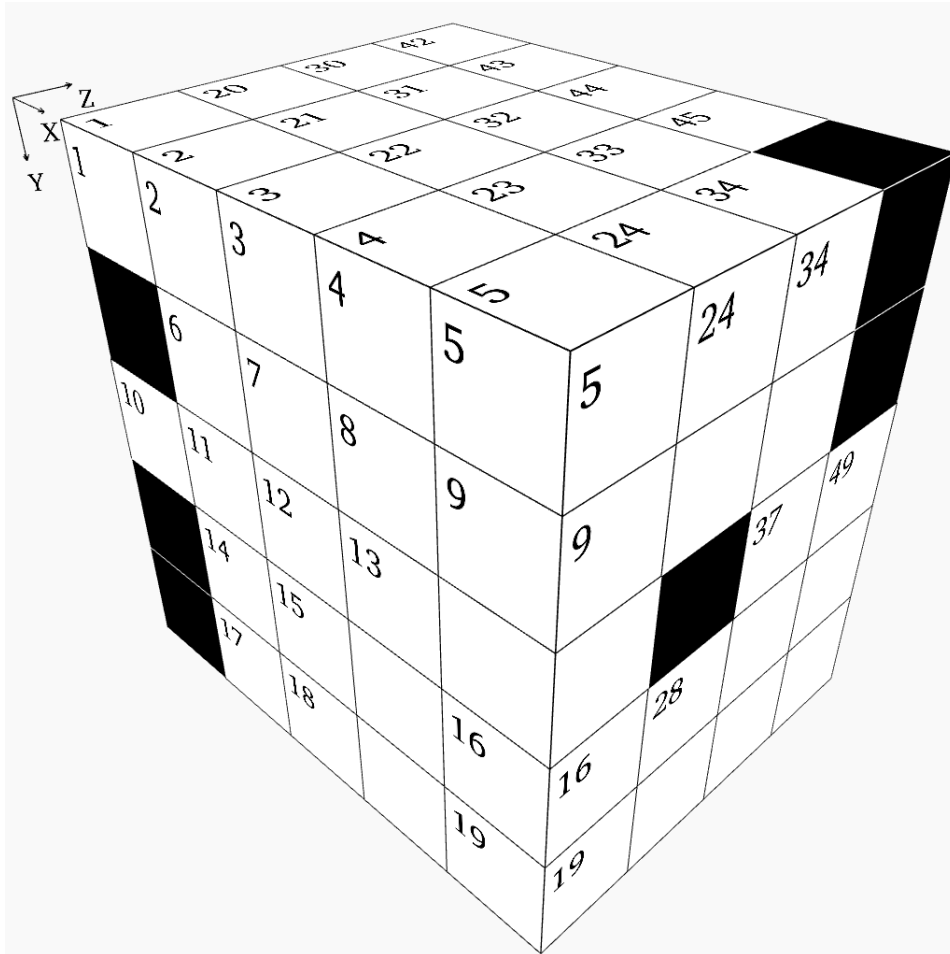# Box - Hard Puzzle #33

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 Two thousand four more than Y34
6 Six times a prime number
10 Fifty times a prime number
14 Fifty-four less than Y30
17 Ninety-six times a prime number
20 Z11 times X41
25 Z10 plus half of X6
26 Twenty-seven times a prime number
29 Z27 minus Z18
30 Sixty-three times a prime number
35 A prime number
36 Fourteen times a prime number
38 Z39 reversed
40 X41 minus Z40
41 X40 plus Y24
42 Half of X52, then subtract Y24
46 Ten times a prime number
47 Y51 divided by seven
48 Twice the result of Y33 minus Z17
50 Mean of X30 and Z3
52 Last two digits are the same as last two digits of X50

Y Direction

2 A prime number
3 A palindrome
4 Fifty-three times a prime number
5 Twice the result of Y45 plus Y44
20 A prime number
21 Five times a square
22 Four times a prime number
23 X1 minus half of Y3
24 Same as Z40
28 X47 plus Z15
30 Forty-two times a prime number
31 Five thousand six hundred eighty-two less than Y4
32 Twice a prime number
33 Fifty-six times a prime number
34 Last two digits are the same as Z37
42 Y45 minus X46
43 Y4 plus Z16
44 Y23 minus X48
45 Eighty-six times a prime number
49 Z2 minus Y42
51 Y23 minus Y44

Z Direction

1 Twice a prime number
2 Six times a prime number
3 Thirteen times a prime number
4 Thirteen times a prime number
5 A prime number
6 Thirteen times a prime number
7 Forty-one times a prime number
8 Z13 plus X42
9 Mean of Y32 and X41
10 Z13 minus Z37
11 Twice a prime number
12 Eighteen times a prime number
13 Y28 plus X52
15 X14 divided by Z37
16 Twice a prime number
17 One thousand one hundred seventy-five more than Z8
18 Three times Y24
19 Z13 plus half of Z12
25 Twice a prime number
27 Twice a prime number
37 Z41 plus X40
39 Y31 minus X35
40 Y28 minus X38
41 Three times X47

Solution:

3	3	6	7	2	7	6	5	1	2	4	7	3	1	3
■	8	6	8	2	1	0	1	8	2	7	2	9	0	1
5	1	9	5	0	8	5	5	9	■	4	9	4	0	6
■	4	6	9	2	8	■	9	■	8	6	1	■	2	6
■	9	6	9	6	7	9	6	■	3	■	7	■	4	8

2	8	9	1	■
8	1	1	0	■
1	4	■	9	8
2	6	9	2	6
■	5	8	2	6