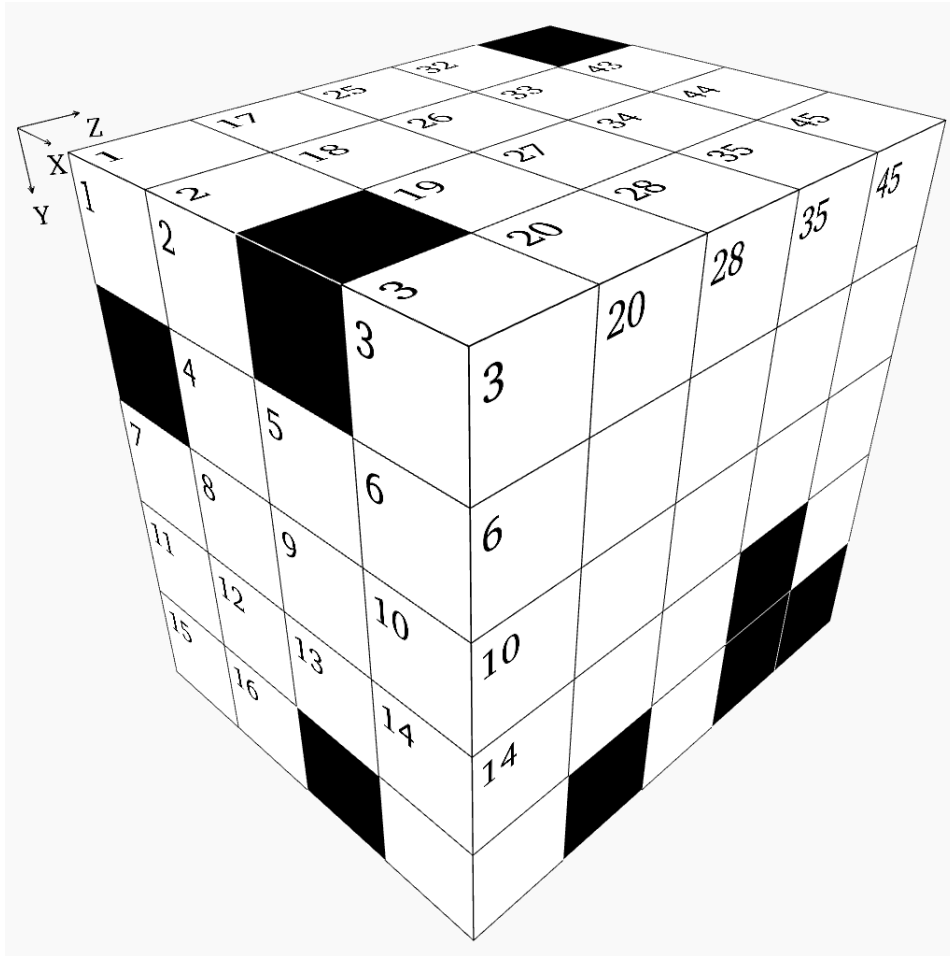# Box - Hard Puzzle #27

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 Z1 divided by X50
4 Y26 plus Y5
7 Twenty-three times a prime number
11 Y27 minus X47
15 Three times a square
17 One thousand nine hundred sixty-six less than Y20
21 X40 plus half of X48
22 Twice a prime number
23 Rearranged digits of Z4
24 Seven times a prime number
25 Two thousand one hundred eighty-one less than X11
29 Thirty-six times a prime number
30 A square
31 Y27 minus Y7
32 Eleven times a prime number
36 Four times a prime number
37 X36 reversed
39 A square
40 A square
43 Four times a prime number
47 Y26 plus X30
48 Y26 plus X31
49 Twice the result of Z6 minus Y19
50 X1 plus half of Z8

Y Direction

2 Forty-five times a prime number
3 Mean of Z13 and X17
5 Half of X43, then subtract Z16
7 A prime number
17 A prime number
18 A prime number
19 Twenty-two thousand sixty-three more than Z13
20 A square
25 Seventy-eight times a prime number
26 Z42 minus X49
27 A prime number
28 A prime number
32 Two thousand seven hundred seventy-two more than Y28
33 Eight thousand three hundred fourteen more than Z5
34 Twice a prime number
35 Eleven less than X43
44 Thirty-two times a prime number
45 Ninety-four times a prime number
46 Mean of X7 and X32

Z Direction

1 X4 plus X7
2 A prime number
3 Eight times a prime number
4 Twice the result of Z10 minus Y2
5 Mean of Z15 and Z19
6 First two digits are the same as first two digits of X11
7 Two thousand seven hundred seventy-nine less than Y19
8 X48 minus X31
9 A prime number
10 One thousand six hundred forty less than Z3
11 Three times a prime number
12 Mean of X25 and X22
13 Four times a prime number
14 Eight times a prime number
15 Three times a prime number
16 X1 minus X49
19 Fifteen times a prime number
21 Five times a prime number
38 Five times a prime number
41 Ten times a prime number
42 A square

Solution:

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