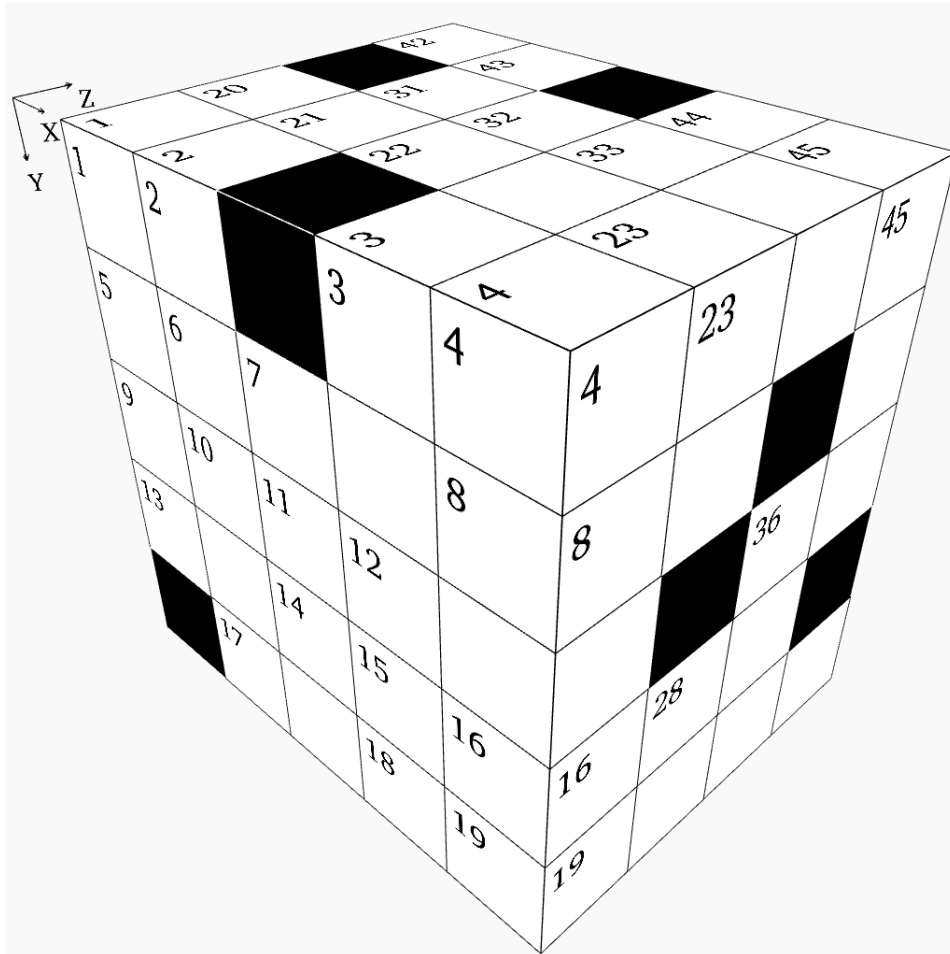# Box - Hard Puzzle #7

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:

1	**2**	■	**3**	**4**
5	**6**	**7**		**8**
9	**10**	**11**	**12**	
13		**14**	**15**	**16**
■	**17**		**18**	**19**

20	**21**	**22**		**23**
24			■	
25			**26**	■
■	■	**27**		**28**
29	■	■	**30**	

■	**31**	**32**	**33**	
34				■
35				**36**
37	**38**			
39	**40**	■	**41**	

42	**43**	■	**44**	**45**
46		**47**	■	
48				
49			■	■
50				

X Direction
1 Twice the result of X20 minus Y43
3 Y28 minus X41
5 Thirteen times a prime number
9 Four times a prime number
13 Mean of X9 and Y4
17 Twice the result of Z18 plus Y32
20 Eighteen times a prime number
24 Twice Z38
25 A prime number
27 Twice a prime number
30 Mean of Z40 and Y23
31 Mean of Z14 and Z29
34 A prime number
35 Z29 times Y28
37 A prime number
39 Y23 minus X42
41 Mean of Z8 and Z38
42 X44 minus X1
44 Mean of Z22 and X24
46 Forty-four times Z8
48 Nine hundred eighty-four less than Y42
49 Seven times a prime number
50 Y47 times Z36

Y Direction
1 Thirty-four times a prime number
2 First two digits are the same as first two digits of Z2
3 A prime number
4 Twenty-six times a prime number
7 Eighty-six times a prime number
20 A prime number
21 Ten times a prime number
22 Eight times a prime number
23 X24 minus X3
26 Same as Y45
28 Z38 plus X42
31 Forty-two times a prime number
32 Twenty-one times a prime number
33 A prime number
34 Seventeen times a prime number
36 X48 divided by Z40
42 Last two digits are the same as last two digits of Z2
43 A palindrome
45 Z15 reversed
47 Three times a prime number

Z Direction
1 Z37 minus X39
2 Z3 minus half of X27
3 Ninety-six times a prime number
4 Z38 times X42
5 Y26 times Z8
6 Mean of Y22 and Y7
7 Two hundred sixty more than Z11
8 Z22 divided by four
9 Eighty-two times X3
10 Four times a prime number
11 Thirty-six times a prime number
12 Eighty-five times Y23
14 Rearranged digits of Z18
15 Y26 reversed
16 Nineteen times a prime number
18 Rearranged digits of Z4
19 Fifteen times a prime number
22 Y28 minus X39
29 Three times a prime number
36 Mean of X39 and X30
37 Z10 minus Y20
38 Mean of X3 and Y23
40 A square

Solution:

5	4	■	5	1
5	7	8	1	1
4	1	8	5	2
2	6	5	5	5
■	7	8	1	8

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

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

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