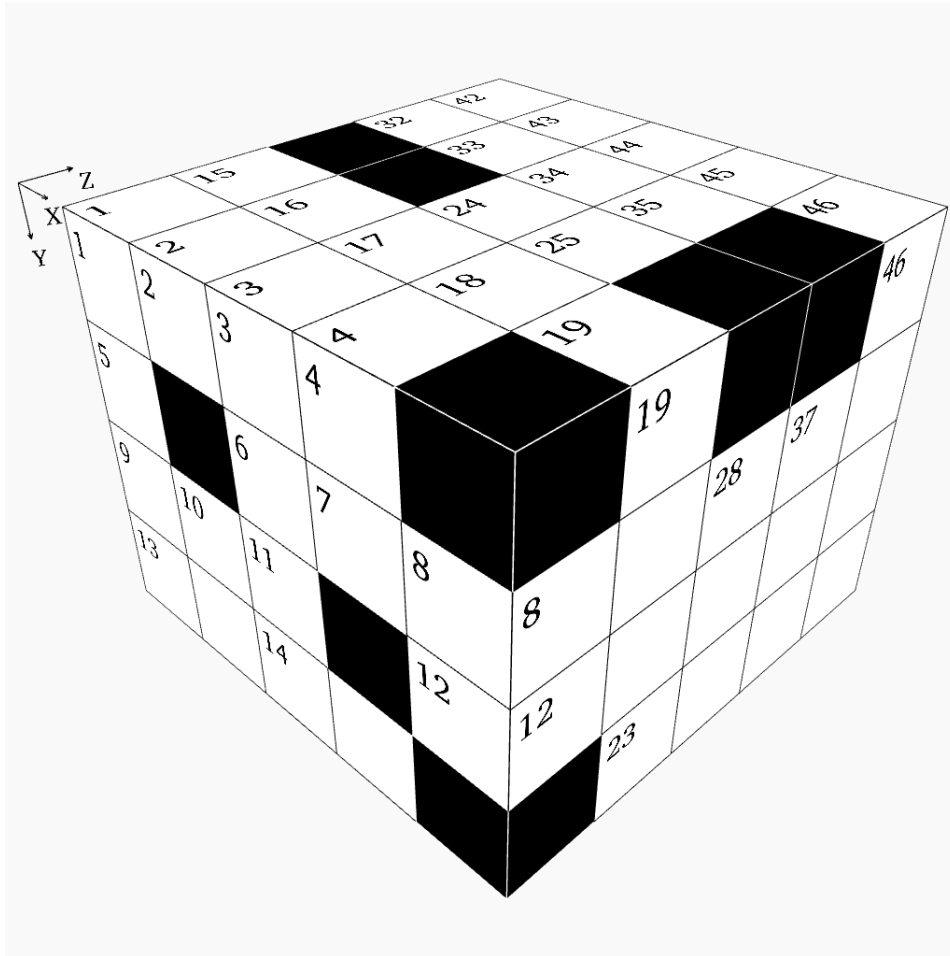# Box - Hard Puzzle #14

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:

(Grid 1)

1	2	3	4	■
5	■	6	7	8
9	10	11	■	12
13	14		■	

(Grid 2)

15	16	17	18	19
20	21		■	
22			■	23
		■	■	

(Grid 3)

■	■	24	25	■
26	27			28
29			30	
	■	■	31	

(Grid 4)

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

(Grid 5)

42	43	44	45	46
47				
■	48			
49				

X Direction

1 A prime number
6 Y16 minus Y10
9 Y42 plus Z9
13 Its digits total Z33
15 A prime number
20 First two digits are the same as first two digits of Y34
22 Z33 plus Z31
24 X36 divided by Y8
26 Z7 minus Z40
29 Nine thousand two hundred seventy-four less than Z10
31 Z9 divided by nine
32 Sixty-two times a prime number
36 X24 times Z41
38 Y42 times Z9
39 Nineteen times a prime number
42 Nine times a prime number
47 Sixteen thousand one hundred thirteen more than X15
48 Twenty-six times a prime number
49 Y44 plus Y15

Y Direction

1 Seven hundred fifty-five less than Y34
3 Fifty-seven times Z1
4 Y32 plus Y8
8 Y38 minus Y32
10 Twice the result of Y46 minus Y28
15 Z23 minus X48
16 Mean of Y24 and Y18
17 Two hundred eighteen less than Y1
18 Mean of X31 and Z33
19 Half of Z10, then subtract Z3
24 Twenty-seven times a prime number
25 Its digits total X31
26 Thirty times a prime number
27 Z33 plus Z1
28 Z30 plus Z1
32 Y38 minus Z41
34 Seven times a prime number
35 Y45 minus Y16
37 A prime number
38 Z41 plus Z32
42 Same as Y32
43 Mean of Y3 and Y24
44 Rearranged digits of Y19
45 Twelve times a prime number
46 Twenty-five times a prime number

Z Direction

1 X31 plus Z2
2 Y46 minus Y28
3 Eight thousand seven hundred forty-six more than Z12
4 Eighty-six times a prime number
5 Y17 times Y18
6 Last two digits are the same as Y32
7 X26 plus Y10
8 First three digits are the same as first three digits of Y25
9 X38 divided by Z32
10 Eight times a prime number
11 Three thousand eight hundred nine more than Z3
12 Twice a prime number
13 Its digits total Z41
14 Z30 minus Y26
21 Z40 minus Y18
23 X1 plus half of Y1
30 Thirty-two times a prime number
31 Z33 plus Z9
32 Same as Y32
33 Z41 reversed
40 Same as Y10
41 Z21 minus Z1

Solution:

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

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