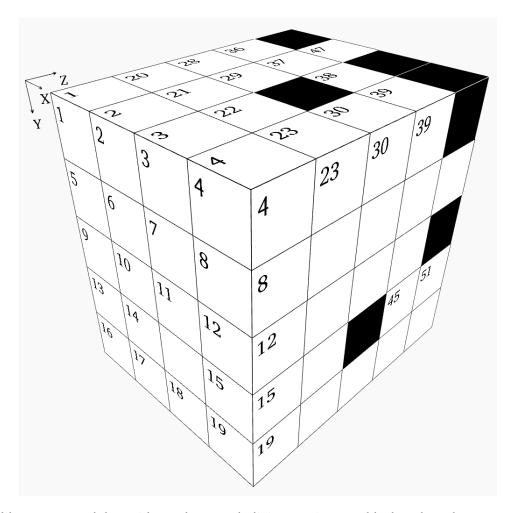# Box - Hard Puzzle #34

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	51
52			

X Direction

1 X24 plus X13
5 Z19 divided by Y51
9 A square
13 Four times a prime number
16 Twelve times a prime number
20 Eighty-five times a prime number
24 Half of X16, then subtract X20
25 X42 times Z15
26 X28 reversed
27 Two hundred forty-nine less than X43
28 Mean of Z7 and Z15
31 Same as X26
32 Z7 plus X26
33 Eight times a prime number
35 X40 minus X25
36 A prime number
40 Y28 minus Y44
42 Z11 reversed
43 Mean of Z4 and X35
46 X9 minus half of Y47
48 Five times a prime number
49 Mean of X32 and Z3
50 Mean of X49 and Z16
52 Two thousand ninety more than Z1

Y Direction

1 A prime number
2 Y25 times Z10
3 A prime number
4 Twelve thousand one hundred eighty-three less than Z13
21 A prime number
22 Thirteen times a prime number
23 A prime number
25 Four times a prime number
28 Twenty-two times a prime number
29 Y3 plus Y30
30 Three times X32
34 Y50 minus X28
36 Twice the result of X36 minus Y22
37 Three-fifths of Y34
38 Last two digits are the same as last two digits of X13
39 Fifty-five times a prime number
44 Twice Z15
47 Twenty-two times a prime number
48 A palindrome
50 Z11 minus X26
51 Y50 divided by three

Z Direction

1 Thirteen times a prime number
2 Sixty-one times a prime number
3 Y51 plus Y37
4 Twenty-one times a prime number
6 Last two digits are the same as Y34
7 Z41 minus X28
8 X50 plus Z18
9 Two thousand six hundred ninety more than Z8
10 Mean of Y30 and Z31
11 Y50 plus X31
12 Seven times a prime number
13 First two digits are the same as Y50
14 Y48 minus Z41
15 A square
16 Y34 plus X49
17 Y39 minus half of X13
18 Z8 minus Z45
19 Eight hundred thirteen less than Y38
31 A prime number
34 Fourteen times a prime number
41 Mean of Z45 and Y44
45 Same as X50

Solution:

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

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