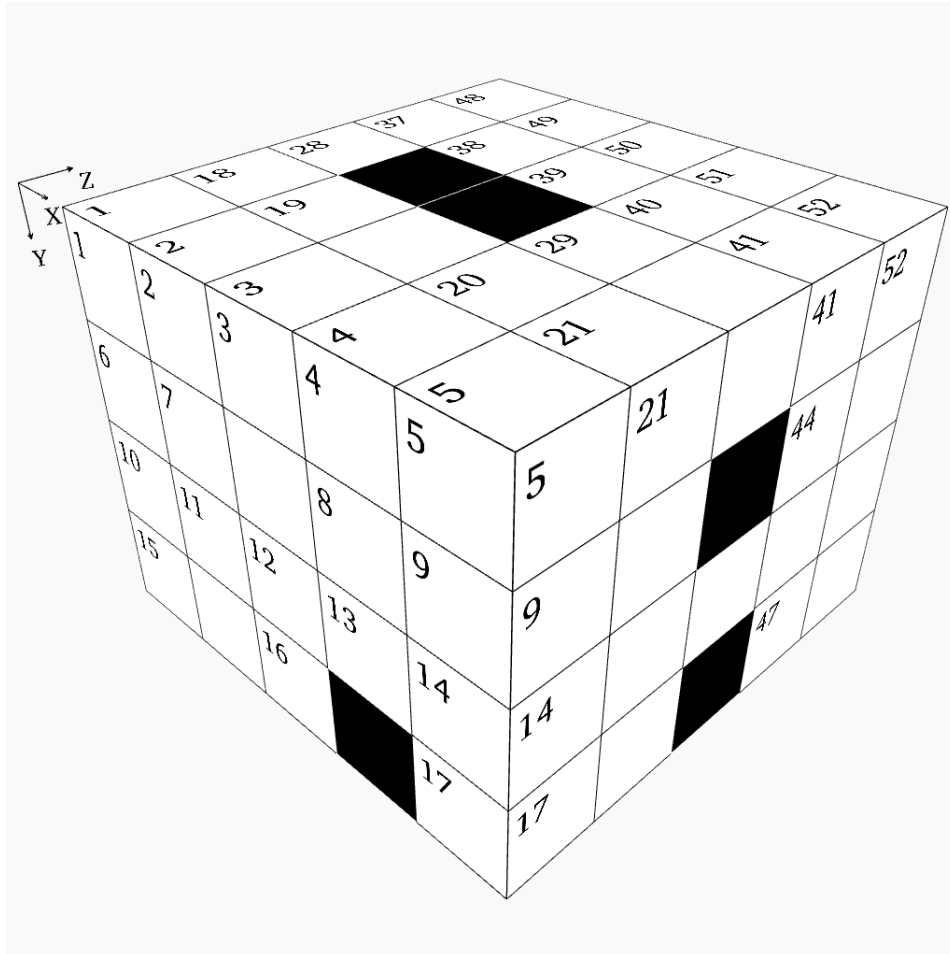# Box - Hard Puzzle #5

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
53				
54			■	
	■	55		

X Direction

1 Three thousand three hundred fourteen more than X18
6 Twice the result of X1 minus Y19
10 Two thousand eight hundred sixty-five more than X1
15 Eleven times a prime number
18 Fifteen times a prime number
22 A square
23 Y32 minus Y25
24 Y37 minus X55
26 Forty-five times X22
29 X45 minus Z39
30 Z33 minus X46
33 Its digits total Y38
36 Z17 plus Z3
37 Mean of X53 and Z6
42 First two digits are the same as Y38
45 Twice the result of X48 minus X18
46 Z3 plus Z39
48 Nine times a prime number
53 Thirty-nine times a prime number
54 Y40 plus X26
55 Y19 minus Z2

Y Direction

1 First two digits are the same as first two digits of X33
2 A prime number
3 Seventeen times a prime number
4 Mean of Z13 and X54
5 Four hundred seventy-three less than Y41
18 Z13 minus X23
19 Z16 plus Z11
20 Four times a prime number
21 Twenty times a prime number
25 Mean of Z47 and X23
28 A prime number
31 Mean of Z9 and Z38
32 Half of X26, then subtract Z32
34 Z2 minus Z3
37 Y28 plus Y1
38 Mean of Y34 and Y31
39 Z16 minus X46
40 Mean of Y25 and X29
41 X24 plus Z35
48 Seventy times a prime number
49 X55 plus X46
50 Forty-five times a prime number
51 Z3 plus X22
52 Twice the result of Y20 plus Y31

Z Direction

1 Twice a prime number
2 Mean of Y32 and Z39
3 Mean of X36 and Y34
4 Thirteen times a prime number
5 Twenty-three times a prime number
6 Six thousand six hundred twenty-three less than X6
7 Fifteen times a prime number
8 Z38 plus Y34
9 X10 divided by Z27
11 A square
12 Three times a prime number
13 Y32 minus Z38
14 Sixty-four times a prime number
16 X36 plus half of X55
17 Sum of digits in Z12
27 Y25 times Y38
32 Y32 plus Z9
33 Eleven times a prime number
35 X54 plus Z32
38 A square
39 Mean of X22 and Z17
43 Z32 minus X23
44 Same as Y51
47 X45 minus Z9

Solution:

Grid 1:

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

Grid 2:

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

Grid 3:

4	■	■	6	1
3	2	1	■	■
4	9	6	3	9
9	■	9	3	■

Grid 4:

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

Grid 5:

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