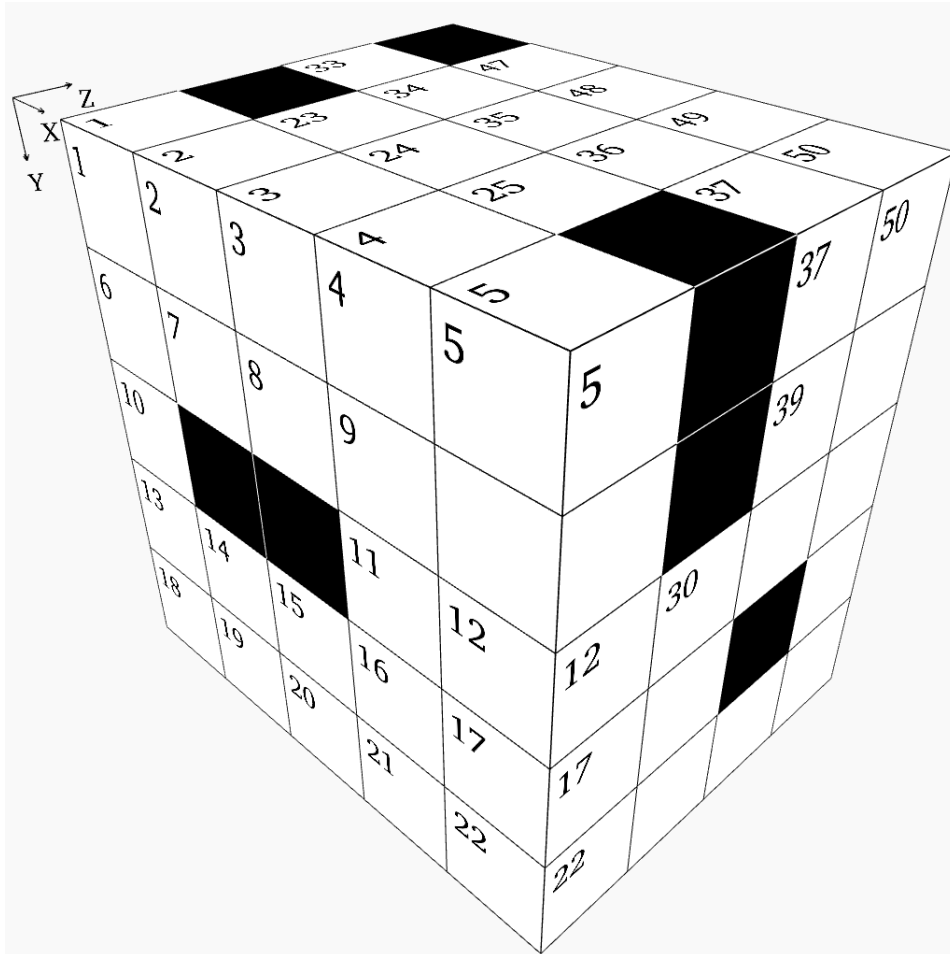# Box - Challenging Puzzle #14

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:

X Direction

1 A palindrome
6 X33 plus half of Y49
11 Same as Z11
13 A palindrome
18 Half of Y50, then subtract Y37
23 Z9 minus half of Z10
26 Fourteen times X53
27 X26 divided by thirty-five
29 A square
31 Thirty-five times a square
32 Twenty-one thousand three hundred eighteen more than X6
33 Eighteen times a prime number
38 Twice the result of X32 minus Y5
40 A prime number
42 Five times a prime number
45 Z41 minus Y36
46 X54 plus Z39
47 A prime number
51 Fourteen thousand six hundred six more than Y4
52 Twelve thousand one hundred fifty-eight more than Y33
53 Y3 plus X45
54 Mean of X11 and Y44
55 Mean of Y30 and X29

Y Direction

1 A prime number
2 Z38 plus X29
3 Sum of digits in X13
4 Eighty-nine times a prime number
5 Last two digits are the same as last two digits of X42
14 X45 plus Y36
15 Y24 reversed
23 Twice the result of Y34 minus Y33
24 Z15 divided by twenty-two
25 Fifteen times a prime number
27 Three-fourths of X55
30 Twice the result of X42 minus X40
31 Y36 minus X29
33 Nine thousand five hundred fifty-two less than Y5
34 Sixteen times a prime number
35 Z15 plus Y47
36 Mean of Z38 and Y2
37 Thirteen times a prime number
44 Mean of X11 and Y2
47 Z4 plus Z41
48 Y27 minus Y44
49 Thirty-two times a prime number
50 Twelve thousand seven hundred one more than Y1
51 Nine hundred twelve more than Y47

Z Direction

2 Z8 plus Z41
3 A prime number
4 Y47 minus Y14
7 Seven hundred three more than Z22
8 Z2 minus Y14
9 Y35 minus Z13
10 Twice a prime number
11 Y14 divided by three
12 A prime number
13 One thousand two hundred sixty-three more than Z22
15 Twenty-two times Y3
16 Y48 times X54
17 Y3 plus Z37
18 Eight times a prime number
19 Z37 times X29
20 Y44 minus X27
21 Six times a prime number
22 Mean of Y51 and Z15
28 Same as Z15
37 A cube
38 A square
39 A square
41 Same as Y14
43 Y44 minus Z38

Solution:

6	8	3	8	6
6	5	8	3	4
4	■	■	3	3
6	9	8	9	6
3	9	3	3	5

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

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

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