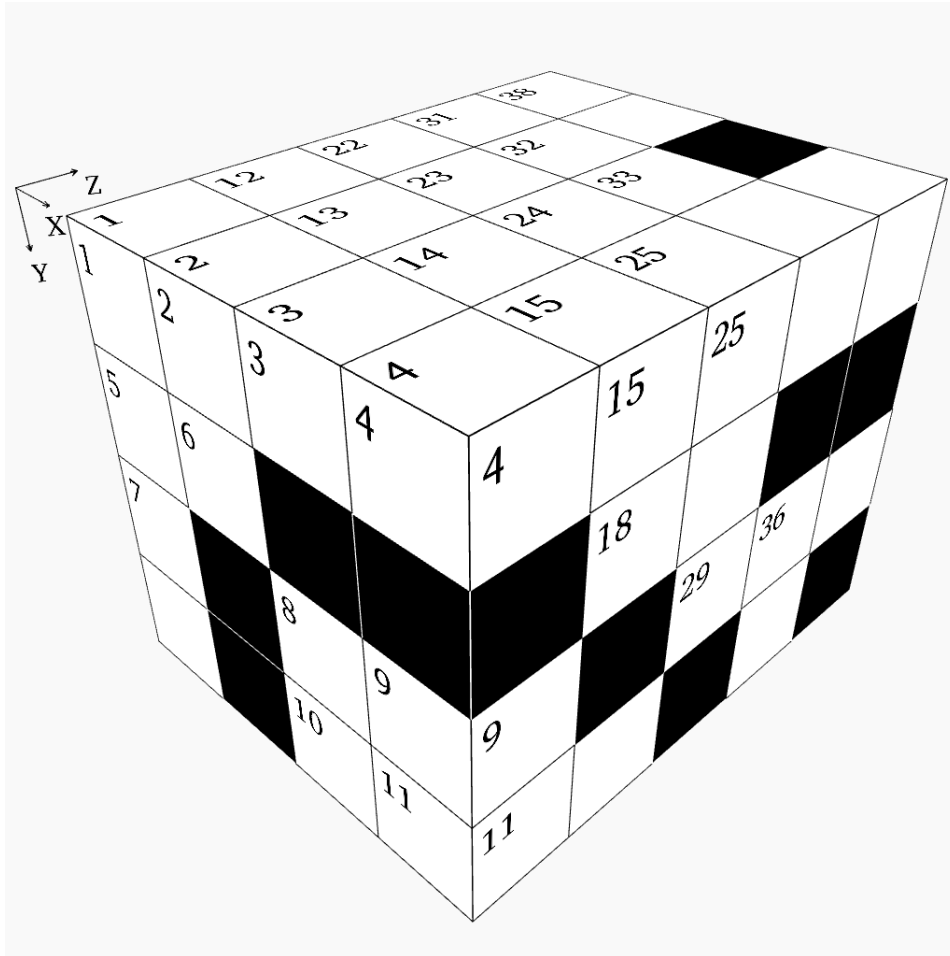# Box - Challenging Puzzle #53

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			■

X Direction

1 A prime number
5 Y9 plus Y14
8 Mean of Y8 and Y2
10 X8 minus Z18
12 Seven times a square
16 X1 minus half of X10
19 Y2 minus X10
21 Three times a prime number
22 Fourteen times a prime number
26 Thirty-five times a square
27 A prime number
30 X41 minus X5
31 A prime number
34 X21 plus half of X41
35 Z4 minus half of Z1
37 Eight times a prime number
38 Half of Y36
40 Z29 divided by twenty-one
41 Fourteen times Y9

Y Direction

1 A prime number
2 Y24 minus Y13
8 Mean of X38 and Y15
9 X5 minus Z11
12 Rearranged digits of Z20
13 Forty-four times a prime number
14 Y38 divided by Z30
15 X41 minus Z30
22 Twice a prime number
23 Mean of Y22 and Z18
24 Rearranged digits of X27
25 Y39 minus half of X8
31 Rearranged digits of Y38
32 Y12 plus half of X37
33 One thousand nine hundred fifty-eight more than Y13
36 Y1 minus half of Z21
38 Twenty-one times a prime number
39 Mean of X16 and Y8

Z Direction

1 A square
2 Nineteen times a prime number
3 Fifty-three times X5
4 A palindrome
5 Eight times a prime number
6 Twice a prime number
7 Thirty-one times a prime number
10 Four times a prime number
11 Y2 divided by three
17 X16 plus X5
18 X10 plus X40
20 Mean of X30 and X38
21 Six times X34
28 A prime number
29 Y14 times X40
30 Y38 divided by Z11

Solution:

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

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