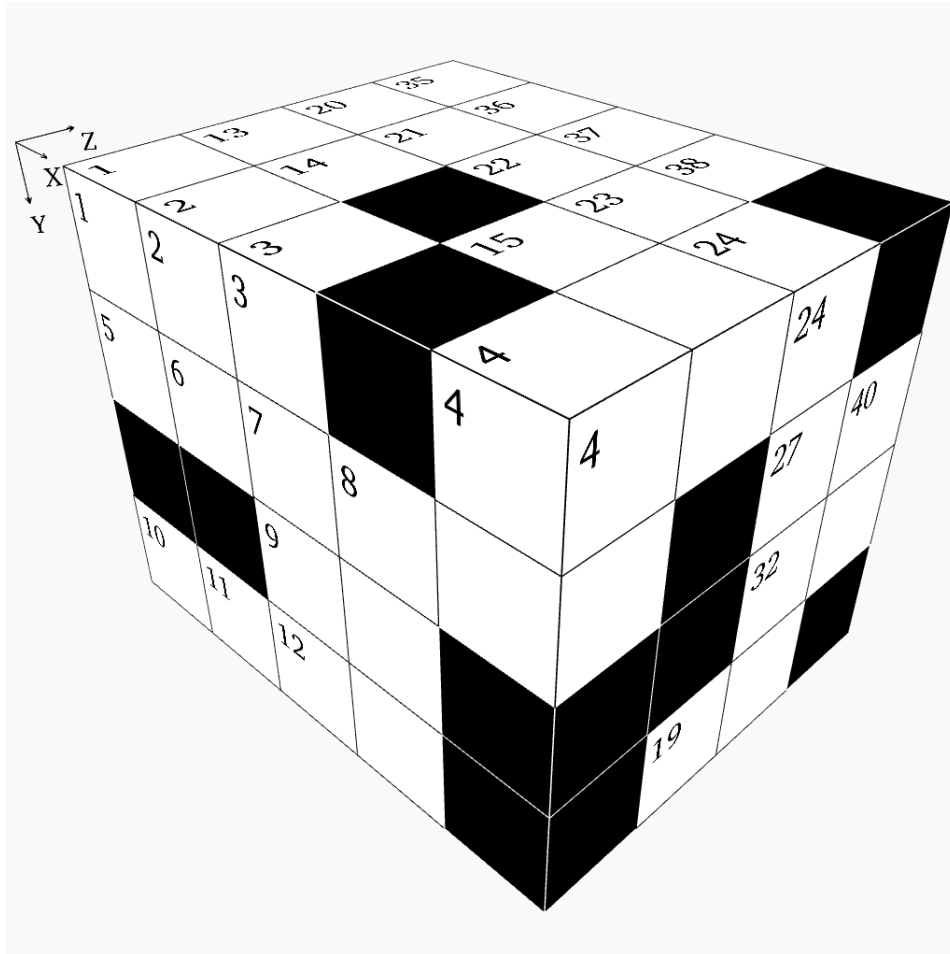# Box - Hard Puzzle #41

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 square
5 Twice a prime number
9 Y35 divided by X16
10 X20 divided by Y40
13 Z31 plus Y14
15 Z29 minus Z34
16 Fourteen times a prime number
18 Y15 plus X1
20 Last two digits are the same as last two digits of Z15
25 Y15 minus Y17
26 A square
28 Fifteen thousand one hundred forty-two less than X39
33 Two thousand seven hundred nine more than Y36
35 Three times a prime number
39 A prime number
41 Rearranged digits of X39
42 Mean of Y36 and Y17

Y Direction

1 Z17 minus Z30
2 Z29 minus X15
3 X42 plus X10
4 A square
8 A prime number
14 X15 plus Y17
15 Z34 plus Z19
17 Z19 minus Z31
20 Y3 minus Y4
21 A prime number
23 Four times a prime number
24 Seventy times a prime number
30 Mean of Z30 and Y14
35 A palindrome
36 A prime number
37 Six times a prime number
38 X35 plus half of Y24
40 Z19 minus X9

Z Direction

1 Twice a prime number
2 Twice a prime number
4 Seven times a prime number
6 Sixty-three times Y1
7 Mean of Z31 and Z22
8 Twice the result of X5 minus Y21
10 X33 minus Z12
11 Mean of X18 and X35
12 Fourteen times a prime number
15 A prime number
17 A prime number
19 X13 minus X15
22 Z30 minus Z31
25 Z31 plus Z34
27 Y4 minus Z31
29 A square
30 Z32 minus Z31
31 Z11 minus Z2
32 Y40 plus Y30
34 Z7 minus Y40

Solution:

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