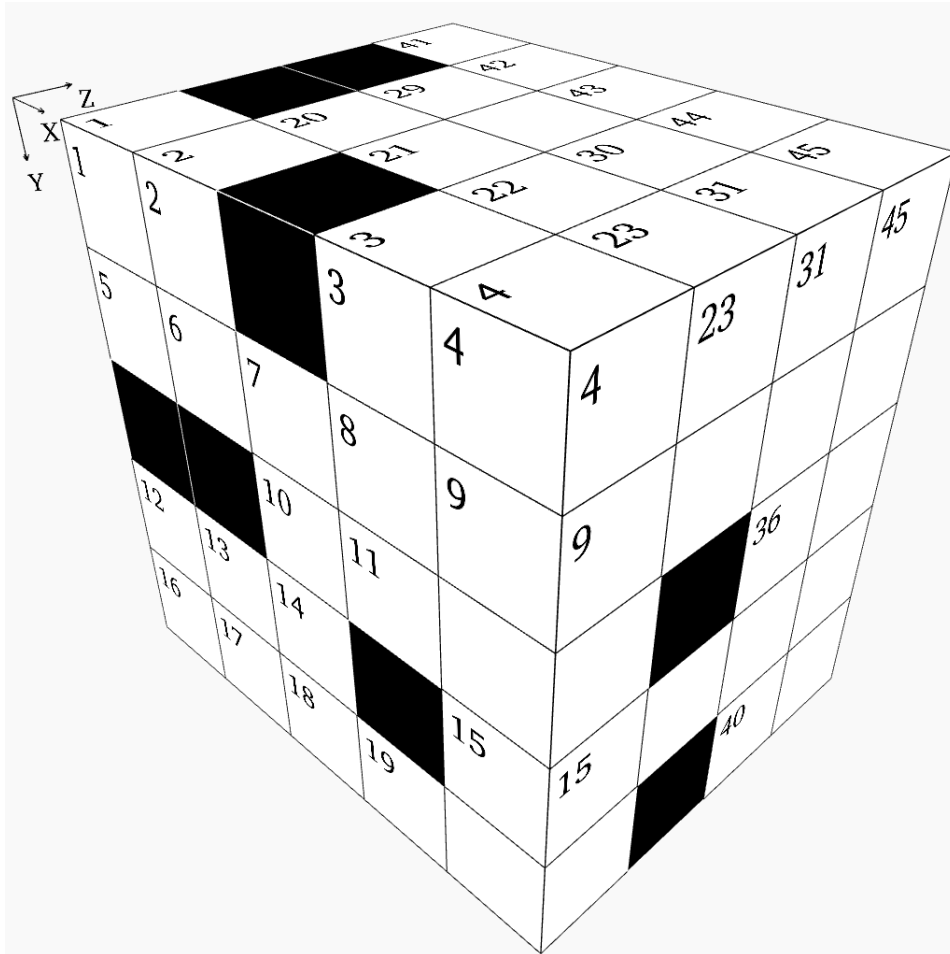# Box - Hard Puzzle #2

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 Y23 minus Y12
3 X24 divided by X26
5 Ninety-six times a prime number
10 A prime number
12 Y35 minus Y22
16 Twelve thousand four hundred seventy-one less than X34
20 Three times a prime number
24 One hundred sixty-seven more than Y7
26 Nineteen times a square
28 Z21 times Z38
29 Thirty-three times Y2
32 X3 plus Z38
33 Z32 minus Y13
34 First two digits are the same as first two digits of Z25
37 Twice a prime number
39 Forty-eight times a prime number
41 Eighty-two times a prime number
46 Rearranged digits of Y41
47 Twenty times a prime number
48 Forty-four times a prime number
49 Mean of Z40 and Y35

Y Direction

1 Mean of Z36 and Y2
2 Z32 minus Y13
3 Nine times a prime number
4 First two digits are the same as first two digits of X49
7 Last two digits are the same as last two digits of Y41
12 X48 minus X34
13 X3 plus Y27
20 Consecutive digits unordered
21 A square
22 Z7 plus Z34
23 Z21 minus Y1
26 Z32 minus Y27
27 X29 divided by Y1
29 Y7 plus half of Z15
30 Mean of X37 and Z25
31 A palindrome
32 One hundred thirty-eight less than X29
35 A prime number
41 A prime number
42 Consecutive digits unordered
43 Mean of X41 and Z35
44 Seven thousand two more than X47
45 Four thousand six more than Y30

Z Direction

2 Y42 minus Z12
3 First three digits are the same as Z21
4 Forty-six times a prime number
6 Mean of X12 and Z15
7 Mean of Y13 and Y12
8 Ninety-three times a square
9 X49 plus half of Z19
11 Twice a prime number
12 Thirty-five less than Y7
13 Twenty-nine times a prime number
14 X28 plus Y21
15 Four times a prime number
16 Z21 minus Y2
17 A prime number
18 Mean of Z4 and Z11
19 Mean of Z40 and Y7
21 Eight times X3
25 Consecutive digits in descending order
32 Mean of Z21 and Z35
34 Y1 plus Y13
35 Y13 plus Z40
36 X16 divided by Z8
38 Z32 minus X1
40 Sum of digits in X5

Solution:

Left grid:

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

Middle grid:

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

Right grid:

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

Bottom grid:

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