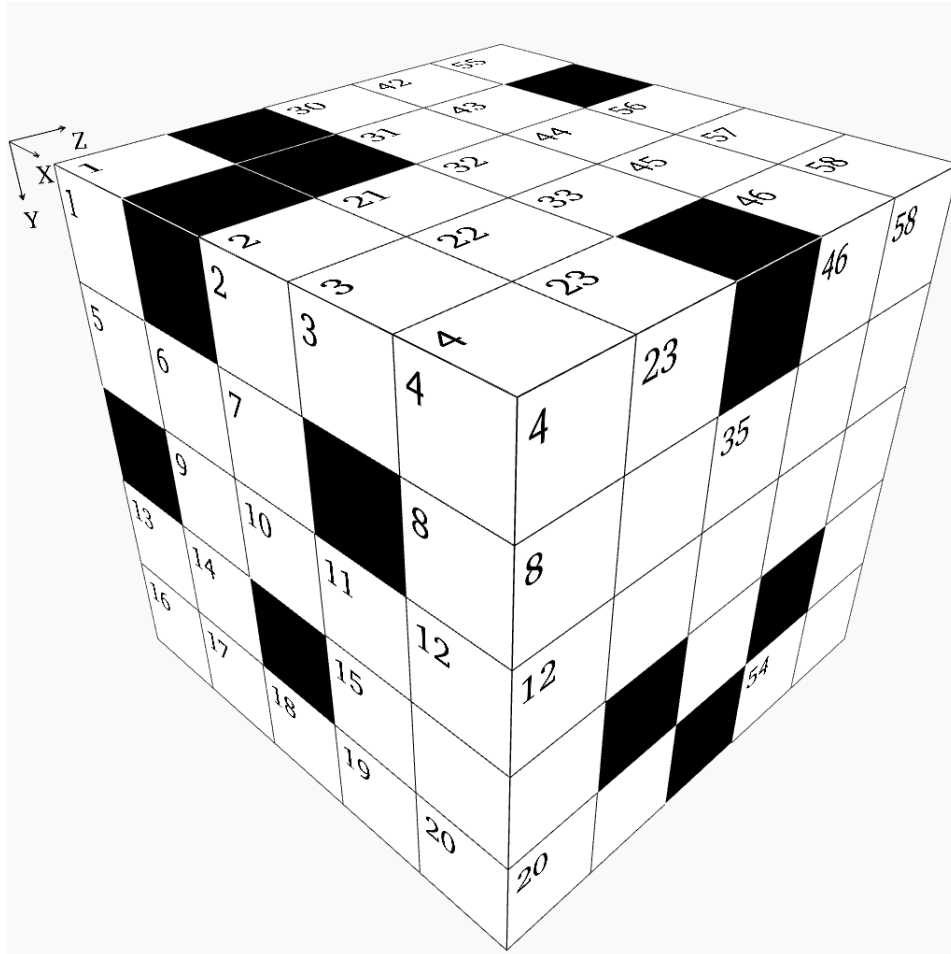# Cube - Hard Puzzle #16

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 cube pictured above and divide it into individual X-Y layers, we will get these planes:

X Direction

2 Z10 minus half of Y1
5 Y55 plus Y35
9 Fifty-six times Z20
13 X15 plus half of Y13
15 X28 minus Y57
16 One thousand three hundred thirty less than Z7
21 Z9 plus Z40
24 Ten thousand three hundred thirty less than Y43
27 Twice a square
28 Sum of digits in Z14
29 Twenty-seven times a prime number
30 Two thousand nine hundred eighty-five less than Z13
34 Eighty-six times a prime number
37 A prime number
38 One thousand two hundred seventy-six more than X16
41 Z53 reversed
42 Its digits total Z53
47 Eight hundred ninety-four more than X34
48 Y56 minus Y50
49 Seventy-two times Z4
52 Eighteen times a prime number
56 Y31 plus Y21
59 Seventy-nine times a prime number
60 Two thousand four hundred sixty-one more than Z7
64 Z53 times Z30

Y Direction

1 Y39 minus Y28

Y Direction (continued)

2 Y28 plus Z4
4 Y6 times Y28
6 Mean of Z26 and Z9
11 X47 minus Y32
13 X64 divided by Z30
21 X21 plus Z20
22 Nine thousand five hundred eighty-nine more than X24
23 Y57 times Z4
25 Six hundred sixty-three less than X30
28 Z54 minus Y63
31 Mean of Y45 and Z20
32 Eighteen times a prime number
33 Last two digits are the same as last two digits of Z19
35 Z5 times Y57
36 Mean of Z40 and Y61
39 Y11 minus Z40
43 Four hundred twenty-eight more than Z6
44 Z18 minus Z31
45 Z5 minus Y1
46 Z36 plus X48
48 Y23 minus half of Y36
50 X15 reversed
51 X9 divided by Y31
55 X64 divided by Z30
56 Twice the result of Z9 plus X41
57 Y60 minus X41
58 Twenty-eight times a prime number
60 Y2 minus Y39
61 Z15 divided by Z40
62 X48 minus Z20
63 Z31 plus Y45

Z Direction

2 Nineteen times a prime number
3 A prime number
4 Z30 minus X5
5 Z18 plus Y62
6 Y22 plus X37
7 Six thousand five hundred eighty-three more than Z16
8 Y58 minus Y28
9 Z4 minus X48
10 Z5 plus Y46
11 Y23 minus Y63
12 Four times a prime number
13 Three times a prime number
14 Thirty-two times a prime number
15 X41 times Z40
16 A prime number
17 Y33 plus Z54
18 X56 divided by Z46
19 Nine thousand nine hundred forty more than X24
20 Z18 minus Y57
26 Thirty-eight times a square
30 Z18 plus Y21
31 Mean of Y61 and Y44
36 Mean of X15 and Y51
40 Z15 divided by Y50
46 Mean of Y45 and Y50
53 X41 reversed
54 Z36 plus Y45

Solution:

Left grid:

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

Middle grid:

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

Right grid:

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

Lower-left grid:

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

Lower-right grid:

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