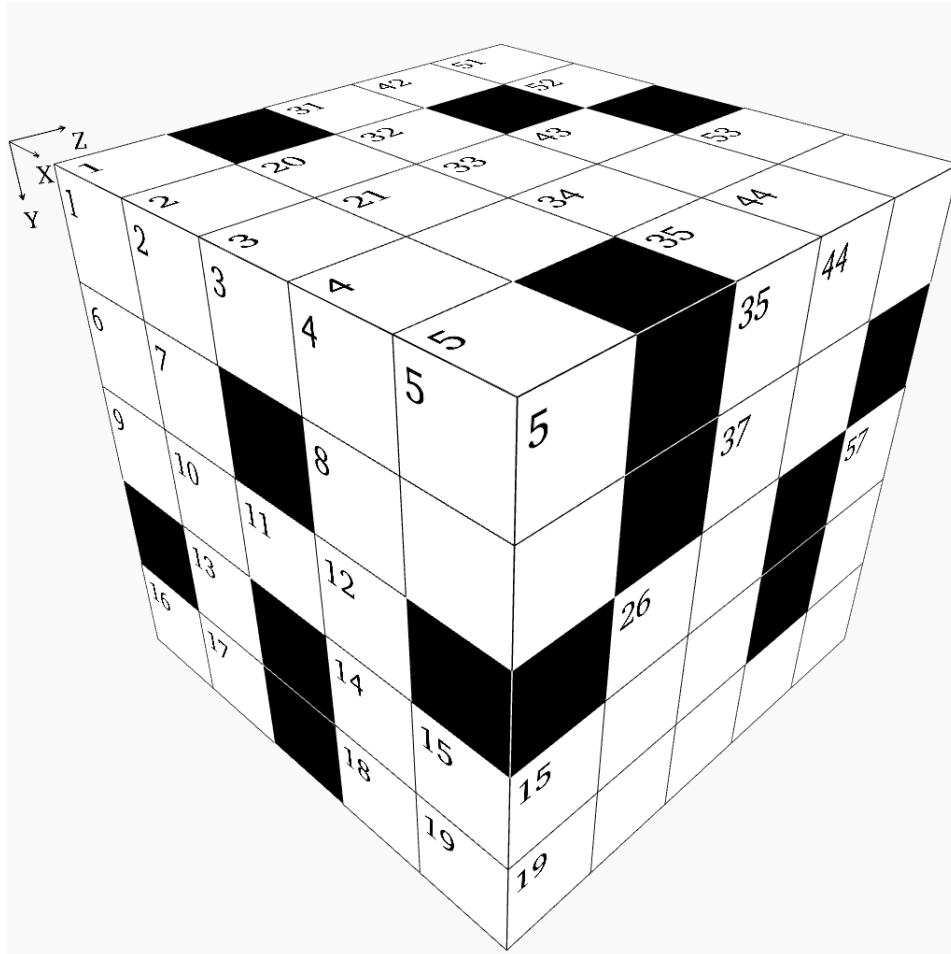# Cube - Hard Puzzle #27

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:

(Grid 1 cell numbers: 1 2 3 4 5 / 6 7 8 / 9 10 11 12 / 13 14 15 / 16 17 18 19)

(Grid 2 cell numbers: 20 21 / 22 23 / 24 25 26 / 27 28 / 29 30)

(Grid 3 cell numbers: 31 32 33 34 35 / 36 37 / 38 / 39 40 / 41)

(Grid 4 cell numbers: 42 43 44 / 45 46 / 47 48 / 49 / 50)

(Grid 5 cell numbers: 51 52 53 / 54 55 / 56 57 / 58 / 59)

X Direction

1 Last two digits are the same as last two digits of Z31
6 Sum of digits in X1
8 X6 minus Z48
9 A prime number
14 X47 minus X58
16 X43 minus Z37
18 X16 minus X14
20 Z37 plus Z35
22 Z9 minus Z17
24 Five thousand six hundred sixty-three less than X27
27 Twenty-six times a prime number
29 Twice a prime number
31 A prime number
36 Three times a prime number
38 Its digits total X8
39 Seventy-one times a prime number
41 Seventy-three times a prime number
43 Y44 plus X59
45 Rearranged digits of Z15
47 A prime number
49 Same as Z28
50 Twenty-seven times a prime number
51 Mean of X14 and Y5
53 Mean of Y15 and X14
54 X58 minus Y53
56 X45 plus half of Y46
58 Fourteen times a prime number
59 Mean of Y34 and X6

Y Direction

1 Seven times Y44
2 Mean of Y21 and X50
4 Nineteen times a prime number
5 X20 divided by Z26
15 Y1 divided by fourteen
20 Eight thousand one less than Z4
21 Twenty thousand nine hundred sixty less than Z16
22 Thirty-four times Y26
25 X49 minus Z27
26 Half of X54, then subtract Y44
31 Z18 plus Y25
32 Fifteen times a prime number
33 X49 plus Z35
34 X6 reversed
35 Two hundred seventeen more than X27
40 Y48 minus Y58
42 Mean of Z16 and X36
43 Rearranged digits of Y31
44 Mean of Y5 and X6
46 Twice a prime number
48 Y40 plus half of Y55
52 Z13 divided by Z12
53 Mean of Y15 and X47
55 X8 plus Y25
57 Fourteen times Z48
58 Nine times Z12

Z Direction

2 Mean of Z35 and X22
3 X31 minus half of Y22
4 Z19 plus X24
6 Twice a prime number
7 Consecutive digits unordered
9 Same as X9
10 Thirteen thousand seven hundred four less than Z4
11 Ninety-seven times a prime number
12 X20 divided by Y5
13 Y52 times Z26
14 Two thousand three hundred seventy-one less than X31
15 A prime number
16 Eleven thousand forty-eight more than X24
17 X9 minus X22
18 Fifty-six times Z15
19 Z13 minus X50
23 Three times a prime number
26 Y58 divided by nine
27 Z28 minus Y25
28 Y33 minus Z35
30 A prime number
31 X51 plus half of Y57
35 A prime number
37 Square root of Y26
48 A square

Solution:

Top grid:

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

Bottom grid:

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