## Cube - Hard Puzzle \#5



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 $\mathrm{X}, \mathrm{Y}$, 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

1 A square
3 Mean of Z50 and Y62
5 Mean of X61 and X24
9 A square
11 Y32 plus Z54
13 Y52 plus Y45
15 Y42 plus Y55
20 X5 minus X9
24 Z10 minus Y52
25 Z12 divided by forty-five
26 Seven hundred seventy-four less than Y20
28 A prime number
30 A prime number
31 X44 plus X57
33 Twice the result of X59 minus Y32
34 Y35 plus Y1
36 Thirty-five times X42
39 Three times a prime number
41 Y45 minus Y63
42 Y62 minus X60
44 A square
46 Sixty-seven times Y35
49 Thirteen times a prime number
51 X42 plus Y38
53 X51 plus Z27
55 Y14 minus Y38
57 X33 plus Z54
59 Y62 minus X42
60 Mean of Y61 and X9
61 A prime number
64 Fifty times a prime number

## Y Direction

1 Y27 plus Y45
2 Eleven times a prime number
3 X34 plus half of X1
4 Z1 minus X13
14 Y43 minus Y37
20 Mean of Y33 and Y44
21 Nine thousand two hundred seventy-one less than X61
22 Thirty-five times a prime number
23 Z15 divided by Y14
27 X3 plus Y23
32 Z19 minus X44
33 A palindrome
35 A prime number
37 Z46 plus Z9
38 Mean of Y37 and Y63
42 X15 minus Z46
43 Y52 plus X3
44 Twelve times a prime number
45 Mean of Z54 and X3
47 Z16 minus half of X11
52 Z10 minus X51
55 A square
56 Twice the result of X20 plus X57
57 Twice the result of Y43 minus X13
58 Ten times a prime number
61 Z5 plus Z8
62 X44 plus X11
63 A square

## Z Direction

1 Y4 plus Z13
2 Three times a prime number
3 Two thousand seven hundred twenty-seven less than X30
4 Twice a prime number
5 A square
6 Nine thousand one hundred twelve less than Y56
7 Mean of Y58 and X60
8 X11 minus Z35
9 X13 minus Y38
10 Z 5 plus Y37
11 Z17 times Z19
12 X34 plus Y38
13 Mean of Y61 and Z10
14 Thirty-one times X25
15 Y37 times Y23
16 Z13 plus Z9
17 Y32 plus Y45
18 First two digits are the same as X13
19 Z10 minus Y52
27 X53 minus Z53
28 Thirty-seven times a square
29 Twice a square
35 Z17 reversed
40 Three times a prime number
46 A square
48 Y55 plus Z46
50 X44 plus X1
53 X44 plus Y32
54 X60 minus Y38

## Solution:

| 6 | 4 |  | 8 |  |  | 3 | 6 |  | 3 | 9 | 4 |  | 9 | 3 |  | 4 | 8 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 3 | 6 | 4 | 4 |  |  | 6 | 3 | 3 |  | 1 | 9 |  |  | 8 | 1 | 3 |  |
| 4 | 9 |  | 5 |  |  | 3 | 5 | 5 | 5 | 7 | 5 |  |  |  | 7 | 3 | 5 |
|  | 8 | 5 |  |  |  | 4 | 5 | 5 | 8 | 3 |  |  | 4 |  | 9 | 3 | 9 |
| 2 | 1 | 9 | 8 | 6 |  | 9 | 2 | 2 | 1 | 5 | 3 |  | 2 | 8 |  | 4 |  |
|  |  |  | 2 | 1 |  |  | 2 | 5 |  | 1 | 7 |  | 6 |  | 8 |  |  |
|  |  |  | 1 | 1 | 9 |  | 9 | 3 |  | 6 | 2 |  | 6 |  | 2 |  |  |
|  |  |  | 9 | 8 | 9 |  | 3 |  |  |  | 9 |  |  |  | 7 |  |  |
|  |  |  | 7 |  |  |  | 6 | 3 |  | 7 | 2 | 8 | 2 |  | 3 |  |  |
|  |  |  | 0 |  | 6 |  | 4 | 2 |  | 5 | 4 | 3 | 5 |  | 0 |  |  |

