## Box - Hard Puzzle \#17



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

| 1 | 2 | 3 | 4 |  | 17 | 18 |  | 24 |  | 25 | 26 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 5 | 6 | 7 |  |  | 19 |  |  | 27 |  |  | 28 |
| 8 |  | 9 |  |  |  |  |  |  |  | 29 | 30 |
| 10 | 11 | 12 | 13 |  | 20 |  | 21 |  | 31 |  |  |
| 14 |  | 15 | 16 | 22 | 23 |  |  | 32 |  |  |  |
|  |  | 33 | 34 | 35 | 36 | 42 | 43 |  | 44 |  |  |
|  |  | 37 |  |  |  | 45 |  |  |  |  |  |
|  |  | 38 | 39 |  |  | 46 |  |  |  |  |  |
|  |  | 40 |  |  |  | 47 |  | 48 |  |  |  |
|  |  | 41 |  |  |  |  |  | 49 |  |  |  |

## X Direction

1 One thousand nine hundred ninety-two more than X47
5 Seven hundred eighty-two less than Z3
9 Mean of Y31 and X42
10 Twenty-seven times a prime number
15 X 1 divided by Z23
17 Thirty-eight times Y20
19 Mean of Y48 and Y17
20 X5 divided by Y20
22 X41 minus Z34
25 Z40 minus X46
27 Fifty-three times Z39
29 X19 minus Z39
31 Mean of Y24 and Z39
32 Six times a prime number
33 First two digits are the same as first two digits of Y36
37 X40 minus X41
38 X41 divided by five
40 Three times a prime number
41 X25 plus X22
42 X31 minus half of Z24
45 Twenty-nine times a prime number
46 Z40 minus Z34
47 Z 6 minus half of Y26
49 Y21 minus Z34

## Y Direction

1 Nineteen thousand nine hundred seven more than Y3
2 Y17 minus X42
3 Twelve times a prime number
4 Seventeen times a prime number
17 All digits are the same
18 X40 plus Z40
20 Y31 reversed
21 X25 plus X49
24 Z24 minus X29
25 Twice the result of Z8 minus X32
26 First two digits are the same as first two digits of X5
31 X29 plus X15
33 Z 4 minus X37
34 Five thousand six hundred seventy-eight less than Y4
35 Nineteen times a prime number
36 One thousand seven hundred forty-three more than Z4
42 Thirty-seven times a prime number
43 Two thousand ninety-eight less than X41
44 Mean of Y36 and Z39
48 A square

## Z Direction

2 Mean of Y17 and Y21
3 Twice the result of X10 plus X9
4 One hundred fifty-five more than Z11
6 Sixty-nine times a square
7 Mean of Y35 and Y1
8 Last two digits are the same as last two digits of X41
9 Mean of X27 and Y42
11 Six thousand three hundred ninety-one more than Y25
12 Three thousand six hundred seventy-six less than Z6
13 Eleven thousand three hundred seventy-one more than Y26
14 One thousand three hundred forty-three more than X41
15 One thousand seven hundred four less than Z8
16 Seventeen times a prime number
23 X31 plus X15
24 Sixteen times a prime number
27 X31 minus X19
28 A prime number
30 Four times a prime number
34 Mean of Y2 and X29
39 Z40 minus X42
40 Y20 plus Y2

## Solution:

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

