## Box - Hard Puzzle \#46



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:


## X Direction

1 Z9 plus Y20
6 A prime number
9 A square
11 Y19 divided by forty-one
14 A square
16 X27 divided by Y16
17 Z 7 minus Y16
18 Z19 minus X36
19 A prime number
23 Last two digits are the same as last two digits of Y27
25 Rearranged digits of Z2
27 A square
30 Rearranged digits of Z24
32 Eighteen times a prime number
33 Mean of Z24 and X9
36 Twice the result of Y35 minus X18
38 Twice the result of Y3 plus Y31

## Y Direction

1 X11 times Y2
2 X9 minus Z31
3 Three times a prime number
4 Mean of Z26 and Y29
13 Eleven times X18
14 A square
15 Z 7 minus Y16
16 Y34 divided by Z31
19 Y21 minus Y35
20 Mean of Y35 and X18
21 X11 plus X38
22 Mean of X6 and Y21
27 A prime number
28 X36 minus Z20
29 Six times a prime number
31 X9 minus Y2
33 Y22 minus Y35
34 Y31 times Y16
35 Mean of X18 and Z19
37 Twice a prime number

## Z Direction

2 X19 plus Y13
4 First two digits are the same as X16
5 Fifty times a prime number
7 A prime number
8 Sum of digits in Z5
9 Eighty-seven times a prime number
10 A prime number
11 Mean of X25 and Y15
12 Sixty-six times a prime number
15 Twice the result of Y28 plus Y33
19 Z8 plus X30
20 Y29 minus Y33
22 Mean of Z31 and X18
24 Y20 plus Y35
26 Twice the result of X30 minus Y14
31 Y34 divided by X16

## Solution:



