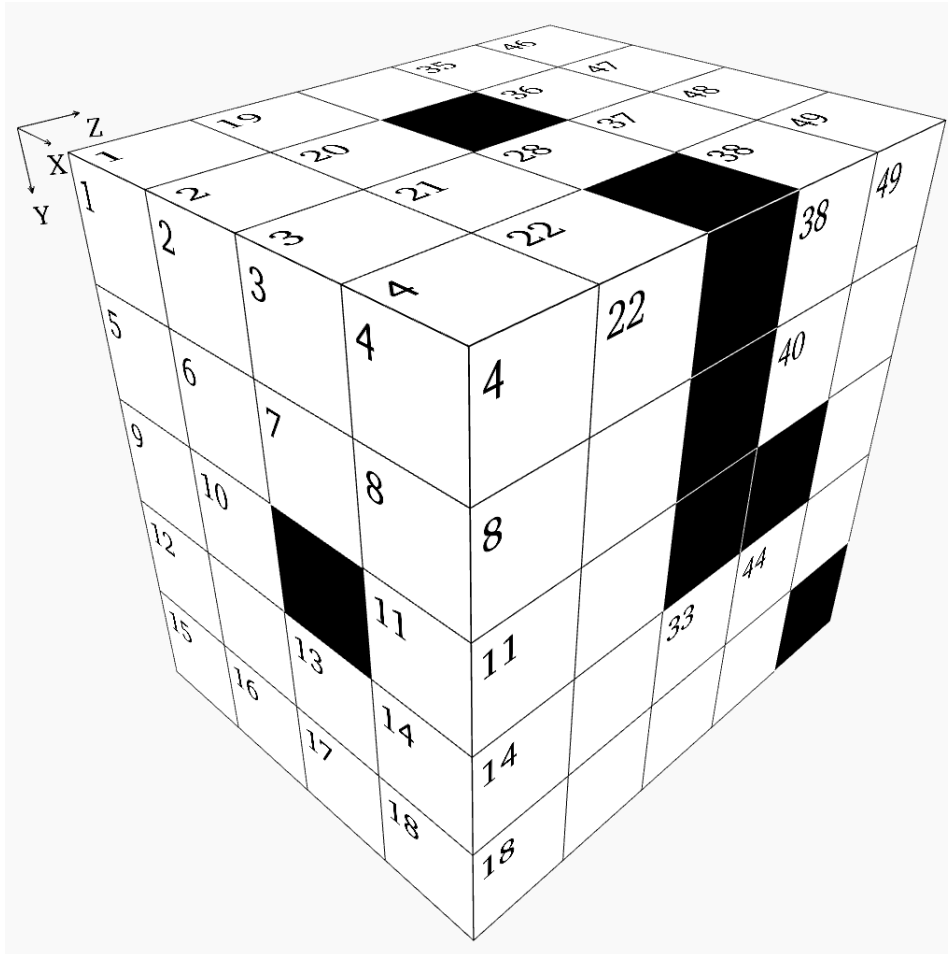


Difficulty: ★★★★★

Box - Hard Puzzle #20



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

1	2	3	4	19	20	21	22			28	
5	6	7	8	23					29		
9	10		11	24		25			30		
12		13	14			26		31	32		33
15	16	17	18	27				34			

35	36	37	38	46	47	48	49
39			40	50			
41						51	
42		43	44			52	
45				53			

X Direction

- 1 Z39 plus Z18
- 5 Fourteen times a prime number
- 9 X27 minus Y29
- 12 Twice the result of X50 minus X53
- 15 A palindrome
- 19 Sixty-seven times Y47
- 23 One thousand one hundred thirty more than Z10
- 24 X34 minus Y3
- 26 Mean of Z39 and Z40
- 27 Forty-one times a prime number
- 29 Y28 minus Z8
- 30 Z41 plus Y47
- 31 Mean of X9 and Y28
- 34 Sixty-three times a prime number
- 35 A square
- 39 Three times a prime number
- 41 Three times a prime number
- 42 Twice the result of X15 plus X26
- 45 Twelve times a prime number
- 46 Two thousand ninety-seven less than X24
- 50 Fifty-three times Z39
- 51 Mean of Y38 and X9
- 52 Two-thirds of Z2
- 53 Y20 minus Y31

Y Direction

- 1 Fifty-three times a prime number
- 2 First two digits are the same as Z4
- 3 Mean of X30 and Z32
- 4 A prime number
- 13 Mean of Z2 and Z41
- 19 X42 divided by twenty-six
- 20 X53 plus Z38
- 21 X45 times Z5
- 22 A prime number
- 28 Z8 plus Y38
- 29 One thousand one hundred sixty-five more than X34
- 31 Z11 plus Z39
- 33 Z32 minus Z9
- 35 Three thousand eight hundred fifty-four more than Y22
- 36 Seventy times a prime number
- 37 Last two digits are the same as last two digits of X5
- 38 Z2 plus X30
- 44 Z8 plus Z43
- 46 Fifty-one times a prime number
- 47 Z36 reversed
- 48 A prime number
- 49 Y48 minus half of Y37

Z Direction

- 1 Twice the result of Y35 plus Y47
- 2 X29 minus X30
- 3 Nine times Y29
- 4 Z32 minus X51
- 5 A square
- 6 Half of Y36, then subtract X5
- 7 Seven times a prime number
- 8 Z39 minus X26
- 9 Z31 divided by Y33
- 10 Twenty-eight times a prime number
- 11 Y33 plus Z13
- 13 Mean of Z41 and Z2
- 14 Twice a prime number
- 15 A prime number
- 16 Thirteen times a prime number
- 17 Four thousand four hundred sixty more than Y48
- 18 Twice a prime number
- 25 Twenty-two times a prime number
- 31 Y44 times Z4
- 32 Z4 plus Z9
- 36 Z5 plus Z2
- 38 Z11 plus Z39
- 39 Mean of Y38 and Z11
- 40 Half of Y31, then subtract Z41
- 41 Z4 plus Z40
- 43 Two-thirds of X31

Solution:

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

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