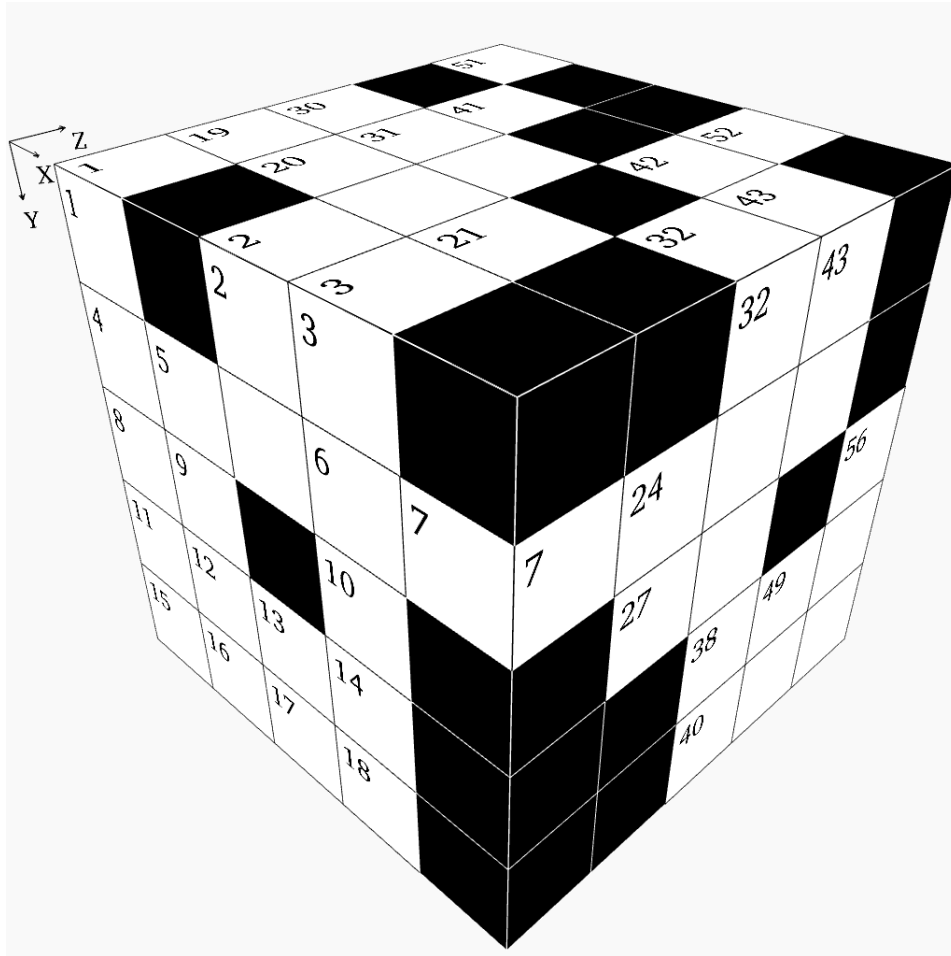


Difficulty: ★★★★★

## Cube - Hard Puzzle #9



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:

1		2	3		19	20		21		30	31			32
4	5		6	7	22			23	24	33			34	
8	9		10		25		26		27	35		36		
11	12	13	14		28						37			38
15	16	17	18		29					39				40

	41		42	43	51			52	
44		45					53		
		46			54	55			56
47	48			49	57				
50					58				

### X Direction

- 2 Z32 minus X23
- 4 Thirty-one times a prime number
- 8 Z42 minus X2
- 11 Z1 plus Y44
- 15 Thirty-eight times X53
- 19 Seventy-four times a prime number
- 22 X34 plus Y24
- 23 A square
- 25 Eight thousand nine hundred fifty-seven more than X47
- 28 X29 plus Y43
- 29 Six times a prime number
- 30 A prime number
- 33 Y2 plus X23
- 34 Z45 plus Y41
- 35 Twice the result of Y1 plus Y53
- 37 Twice a prime number
- 39 Twice a prime number
- 42 Z2 minus X22
- 44 Four thousand nine hundred seventeen more than Z15
- 46 X4 minus Z16
- 47 Seventy-two times a prime number
- 50 All digits are the same
- 53 Mean of X42 and Z32
- 54 Four thousand one hundred fifty-four less than X25
- 57 Eight thousand six hundred eighty-nine more than Z6
- 58 Y49 plus Y48

### Y Direction

- 1 Ninety-two times a prime number
- 2 X53 minus X33
- 3 Thirty-six times a prime number
- 5 Z18 plus Y52
- 13 Sum of digits in Z4
- 19 Twice a prime number
- 20 Nineteen times a prime number
- 21 Ninety-four times a prime number
- 24 Y56 minus X53
- 26 Y30 plus Z47
- 30 Z38 plus half of Z9
- 31 Thirty-seven times a square
- 32 Twice the result of X44 minus X42
- 34 A prime number
- 36 Mean of Z40 and Y41
- 41 Y43 minus Y13
- 42 Five thousand three hundred ninety-seven more than Y3
- 43 Y24 minus Y41
- 44 A prime number
- 45 Mean of X29 and Z1
- 48 Y41 plus X46
- 49 Z32 plus Z47
- 51 Thirty-three times a prime number
- 52 Z17 minus half of X39
- 53 Forty-six times a prime number
- 55 Y24 plus Z27
- 56 X58 minus Y2

### Z Direction

- 1 Y31 minus Y3
- 2 X58 plus Z47
- 3 X46 plus X23
- 4 A prime number
- 5 Seventy-three times a prime number
- 6 Eight times a prime number
- 7 Last three digits are the same as last three digits of X47
- 8 Fourteen thousand five hundred thirty-three less than Z4
- 9 X30 plus Y48
- 10 Eight thousand nine hundred two less than Z4
- 11 Z27 minus X2
- 12 Half of Z8, then subtract X23
- 13 A prime number
- 14 Mean of X50 and X22
- 15 Thirty-nine times a prime number
- 16 Four thousand eight hundred ninety-three more than Y21
- 17 Seventy-eight times a prime number
- 18 Forty-three times a prime number
- 20 X34 plus half of Y26
- 26 Fourteen times a prime number
- 27 Half of Y21, then subtract X54
- 32 Z3 minus X34
- 38 A prime number
- 40 Twenty-nine times Y13
- 42 Mean of X58 and Z11
- 45 X23 minus Y2
- 47 X2 plus Z45

**Solution:**

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

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