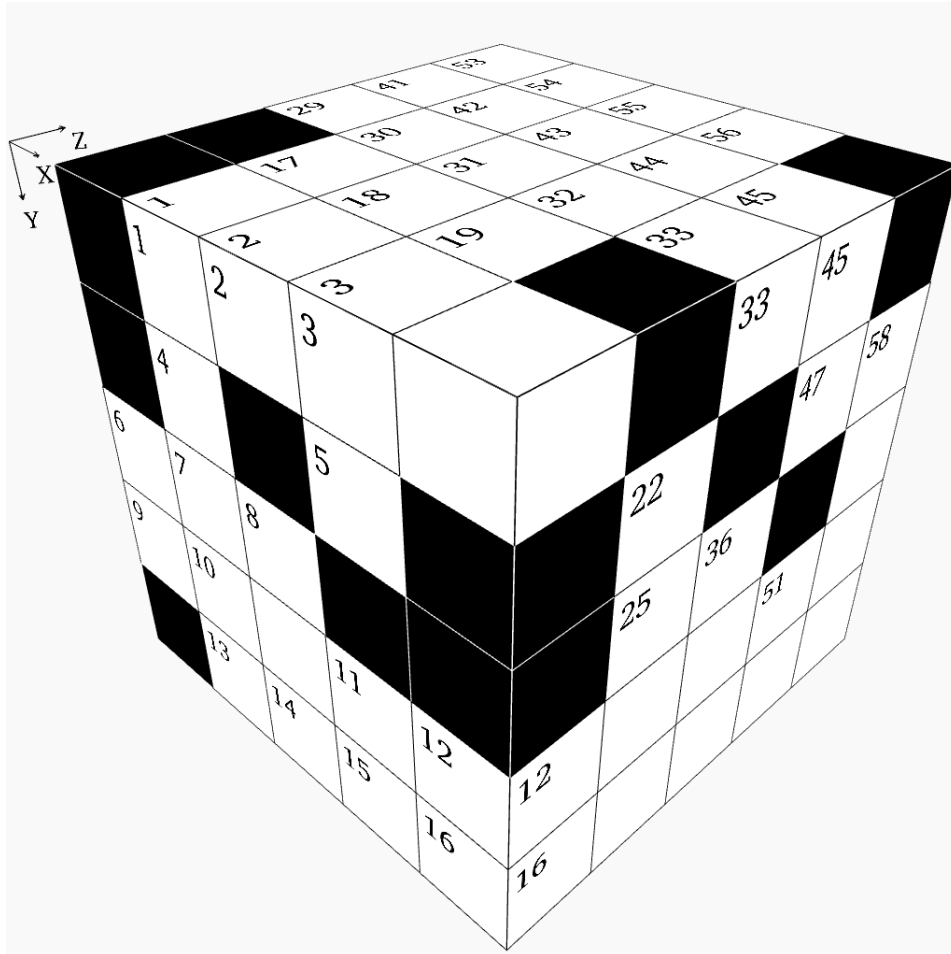# Cube - Hard Puzzle #20

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

X Direction

1 Five times a square
6 Mean of Y11 and Y8
9 Forty-eight times X6
13 Three hundred nineteen more than Z9
17 Z25 plus Y54
20 First two digits are the same as X48
23 Three thousand seven hundred thirty-seven more than X28
26 Six times Y11
27 X26 minus X40
28 Five thousand seven hundred twenty-eight more than Z2
29 Two thousand nine hundred fifty-two more than Z10
34 X60 plus half of X1
35 A prime number
37 Fifty times a prime number
39 Y51 minus Y12
40 Z47 minus Y45
41 Twice the result of Y17 minus Y58
46 Forty-six times a prime number
48 A square
49 Z21 plus half of X57
52 Two-thirds of Z29
53 Mean of Y45 and X29
57 Eleven thousand nine hundred thirty less than X46
59 Y41 plus Y59
60 X48 minus Y55

Y Direction

1 Twenty-eight times a prime number
3 Z29 minus Z33
6 Y51 minus X39
8 X29 divided by Z33
11 A square
12 Z33 minus Y6
17 A prime number
18 X9 divided by Y11
19 Mean of Y43 and Z20
20 Z6 minus Z13
22 One hundred thirty-eight less than Y20
29 A prime number
30 Eighteen thousand five hundred ninety-three more than Z3
31 Y45 plus Y58
32 Eighty-eight times a prime number
36 Five times X40
41 X59 minus X60
42 Mean of X27 and Z33
43 Eight times a prime number
44 Thirty-nine times a prime number
45 Mean of Y11 and Y51
50 Twice Y42
51 X40 minus Y55
53 A prime number
54 Mean of X17 and Z14
55 X48 minus Y59
56 Z4 minus X46
58 A prime number
59 Mean of X39 and Y42

Z Direction

1 Three thousand four hundred seventy-three less than Y1
2 Nine thousand four hundred sixty-five less than X23
3 Sixteen times a prime number
4 X46 plus X40
5 Six thousand six hundred twenty less than X28
6 Three times a prime number
7 Mean of Z24 and Y3
8 Y22 minus Z38
9 X37 divided by Z14
10 Last two digits are the same as last two digits of Y8
11 A prime number
12 A prime number
13 Four thousand two hundred twenty-six more than Y17
14 A square
15 Forty-one times Y11
16 A prime number
20 Six times a prime number
21 Six hundred eight more than Y41
24 Y53 minus Y50
25 A prime number
28 Z16 minus X53
29 Z38 divided by four
33 Z28 minus Y42
38 Mean of Y36 and Y18
47 Y56 plus Y45

Solution:

Top section (columns left to right):

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

Bottom section:

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