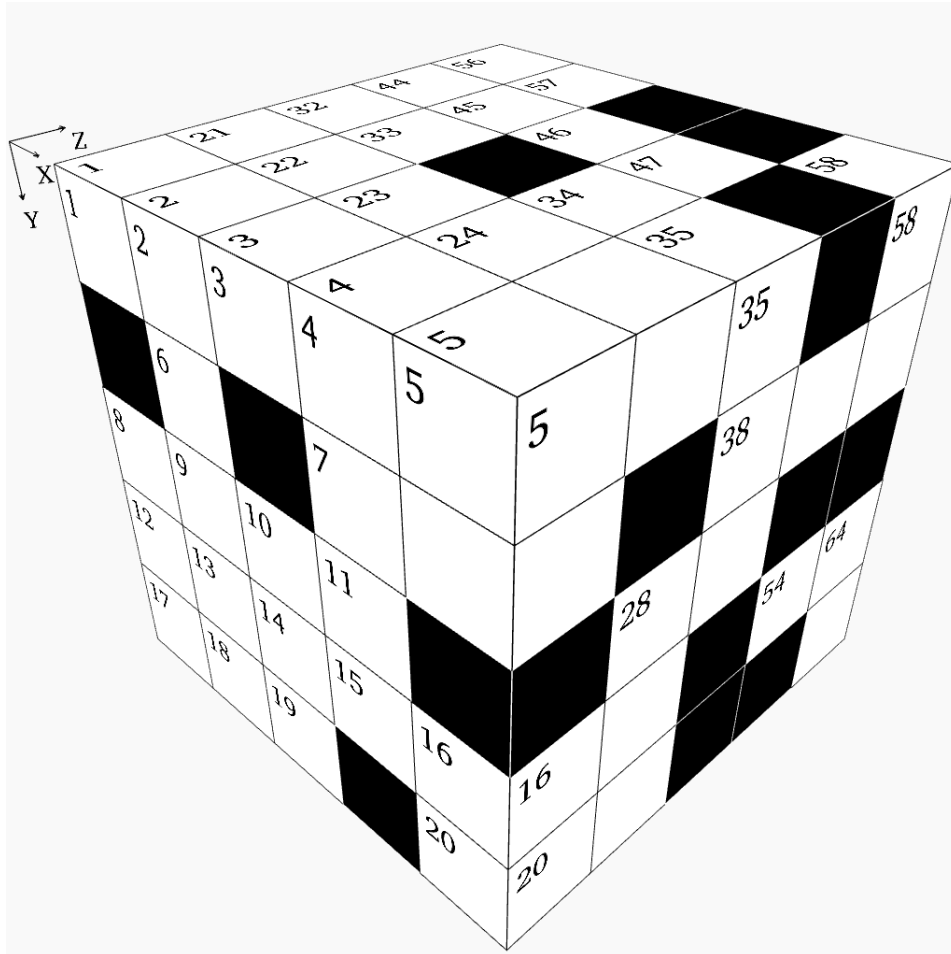# Cube - Challenging Puzzle #47

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	4	5
■	6	■	7	
8	9	10	11	■
12	13	14	15	16
17	18	19	■	20

21	22	23	24	
25		26		■
■	27			28
29				
30			31	

32	33	■	34	35
36		37	■	38
39	■		■	
40	41	■	42	■
■	43			■

44	45	46	47	■
■	48		49	
50	51	■	52	■
■		■	53	54
55				■

56	57	■	■	58
■	59	60	61	
62				■
63				64
65				

X Direction

1 Twice the result of X21 plus X53
7 Mean of Z55 and Z14
8 X65 divided by Z54
12 Twice a prime number
17 Z15 minus half of Z18
21 Rearranged digits of X63
25 Rearranged digits of Z26
27 Seventy-five times a prime number
29 A palindrome
30 Twice a prime number
32 X34 minus Z17
34 Y29 minus Z11
36 Mean of Z52 and Z5
40 Twice X50
43 Z16 plus Z17
44 Y58 times Z49
48 Z6 minus Y23
50 Mean of Y46 and X32
53 Mean of Z28 and Z49
55 X63 minus half of Z13
56 Mean of X50 and Z7
59 Last two digits are the same as Y42
62 Y32 plus half of Z20
63 A prime number
65 Y21 times X8

Y Direction

2 Three thousand seven hundred nine less than Z2
4 Rearranged digits of X62
5 A square
8 Fifteen times Z54
10 Three times a prime number
16 Z28 minus Z11
21 Y16 divided by four
22 Last two digits are the same as last two digits of Z1
23 Four times a prime number
24 Six thousand one hundred seventy-nine less than Z6
28 Y35 minus Y16
29 Mean of Z54 and Y8
32 X62 minus Z55
33 Y62 minus half of Y58
35 Twice a prime number
37 Mean of X7 and Z55
41 Mean of Y21 and Y62
42 X32 plus Z16
45 Twice a prime number
46 Y37 plus half of X34
47 X12 minus Z12
57 Twice a prime number
58 X34 minus Y37
60 X7 times Y41
61 Nine times a prime number
62 All digits are the same
64 X65 divided by X8

Z Direction

1 Eight times a prime number
2 First two digits are the same as first two digits of Y61
3 Y62 minus Z14
4 Consecutive digits unordered
5 Sixteen times Z49
6 Eighty-five times Z12
7 Y29 minus X40
9 Y41 minus Z16
10 Thirty-four times X56
11 Mean of Z9 and Y21
12 Y41 plus Y35
13 Z15 plus Y16
14 Y42 minus Y5
15 Four hundred fifty-five less than Z19
16 Same as Z52
17 Z51 minus X56
18 Twice a prime number
19 A prime number
20 Mean of X32 and Y42
25 Mean of Y64 and Z9
26 A square
28 Y16 plus Z7
31 A prime number
38 Mean of Z5 and Y58
39 Y10 plus half of Z38
49 X44 divided by Z28
51 Z3 minus Z54
52 Four times Z7
54 Y5 minus X50
55 X53 minus Y37

Solution:

Grid 1 (top-left):

3	6	9	8	4
■	5	■	1	9
1	1	8	1	■
6	3	1	3	4
5	6	3	■	4

Grid 2 (top-middle):

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

Grid 3 (top-right):

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

Grid 4 (bottom-left):

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

Grid 5 (bottom-right):

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