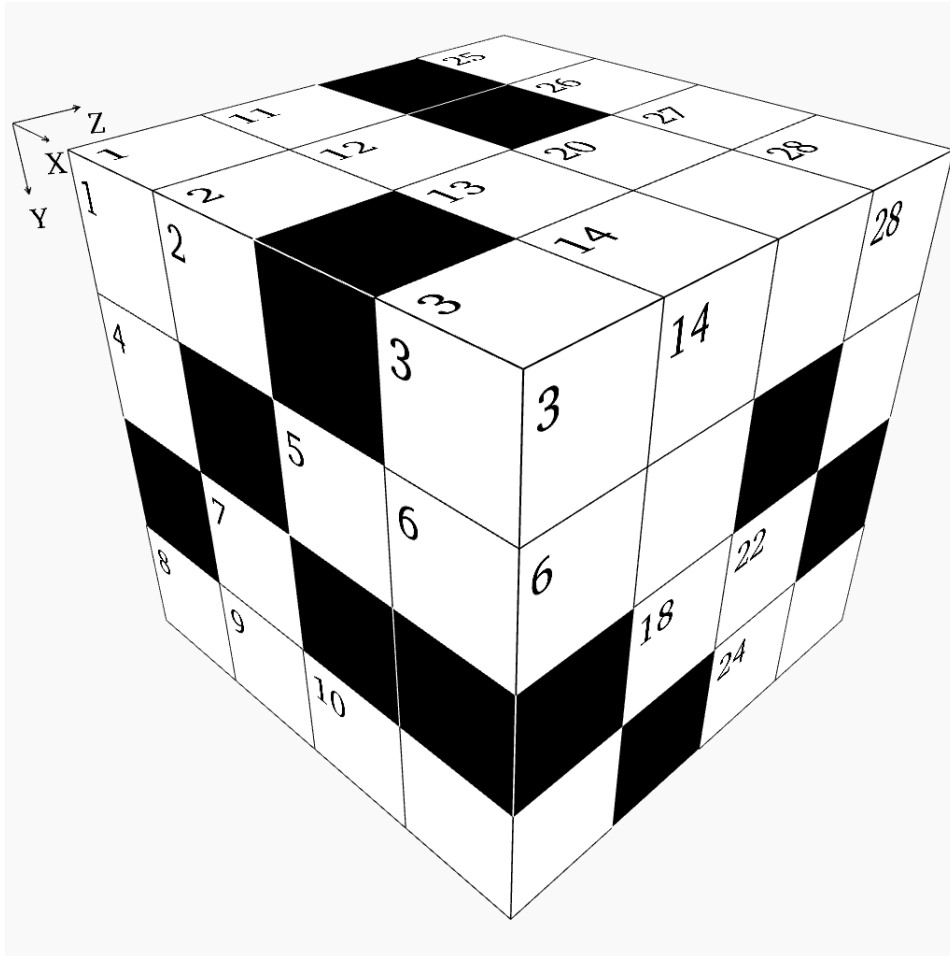# Cube - Challenging Puzzle #40

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 Z2 minus Z4
5 Z1 divided by four
8 Z10 times Y1
11 Fifty-seven times a prime number
15 X16 plus X29
16 Twice the result of Y14 minus X21
19 X8 minus X30
20 Same as Y21
21 Thirty-nine times Y3
23 Y3 reversed
25 Five times a prime number
29 A prime number
30 Fifteen times Y11
31 Y20 plus half of Z7

Y Direction

1 Mean of X5 and Z2
3 Y22 divided by six
7 Z24 minus Z10
11 Z6 minus X5
12 Eight times a prime number
13 Sixty-five times X1
14 Eighteen times a prime number
20 Twenty times a prime number
21 Mean of Y11 and Y22
22 Mean of Z2 and Y7
25 A prime number
26 Seven times a square
27 Its digits total Y3
28 A prime number

Z Direction

1 Mean of Y1 and X20
2 Half of Y12, then subtract X25
3 Thirty-five times a square
4 Z9 minus half of Y26
5 Mean of Y25 and X11
6 Z24 minus X20
7 A palindrome
8 Mean of Y13 and X23
9 Fifty-four times a prime number
10 A square
13 X31 minus Y27
17 Twelve times Z10
18 Y22 minus X23
24 Y21 plus Z6

Solution:

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