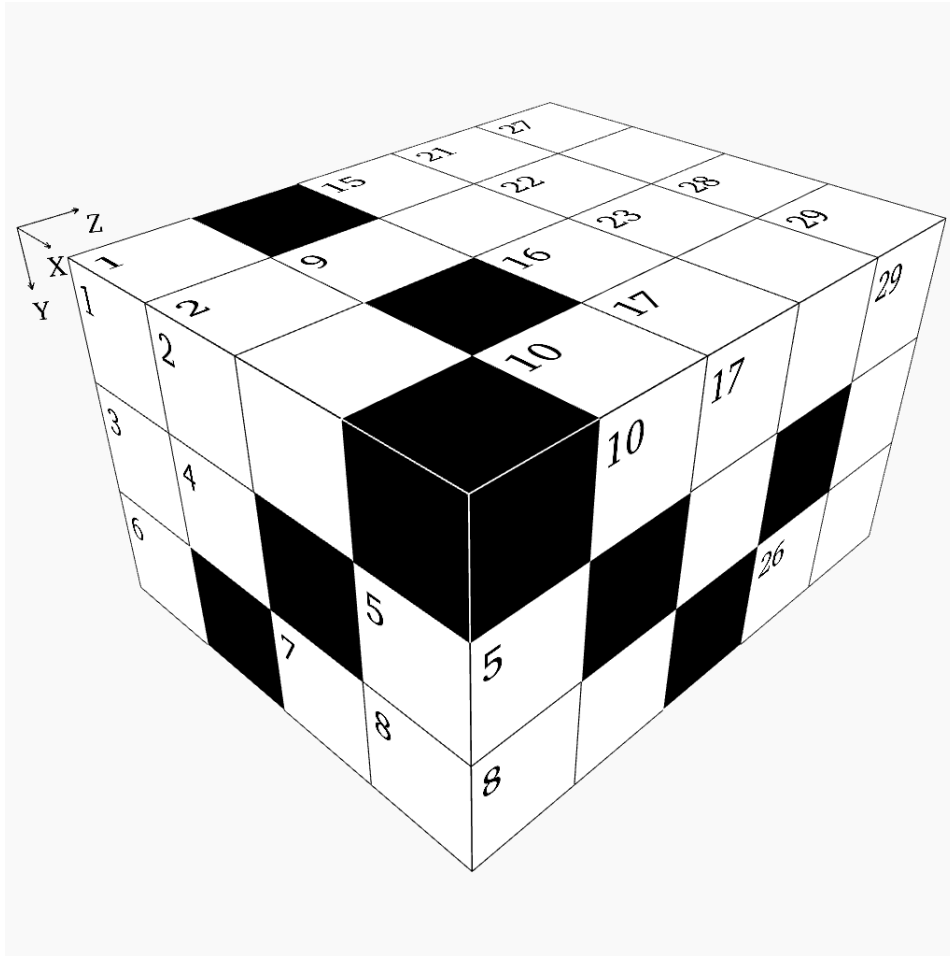# Box - Challenging Puzzle #52

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	■	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	

X Direction

1 A prime number
3 Seven times Y21
7 Y1 minus Y23
11 Z6 minus Z8
13 Half of X31, then subtract Y21
15 Z12 plus half of Y29
18 Y21 plus Z26
19 Mean of Z8 and Y28
21 A prime number
24 X13 times Y11
25 Mean of Z20 and X19
27 A prime number
30 Mean of Y11 and X3
31 Four more than X30

Y Direction

1 Thirty-three times Y11
2 Y1 divided by X18
5 Y9 minus Y27
9 Half of Z16, then subtract Y5
11 X24 divided by X7
15 X24 minus Y21
16 X1 minus Y17
17 Mean of Z26 and X30
21 Z26 minus Y5
22 Sixty-one times Z4
23 A square
27 Fifteen times Z4
28 Eight times a prime number
29 Last two digits are the same as X31

Z Direction

2 Twice a prime number
3 A prime number
4 Two-thirds of Y11
6 Mean of X31 and Z16
8 Half of Y16, then subtract Y27
10 X21 minus Y15
12 Twenty-five times a prime number
14 Mean of Z10 and Y2
15 Mean of Y16 and X31
16 Rearranged digits of Y28
20 Y23 minus Y27
26 Twice a square

Solution: