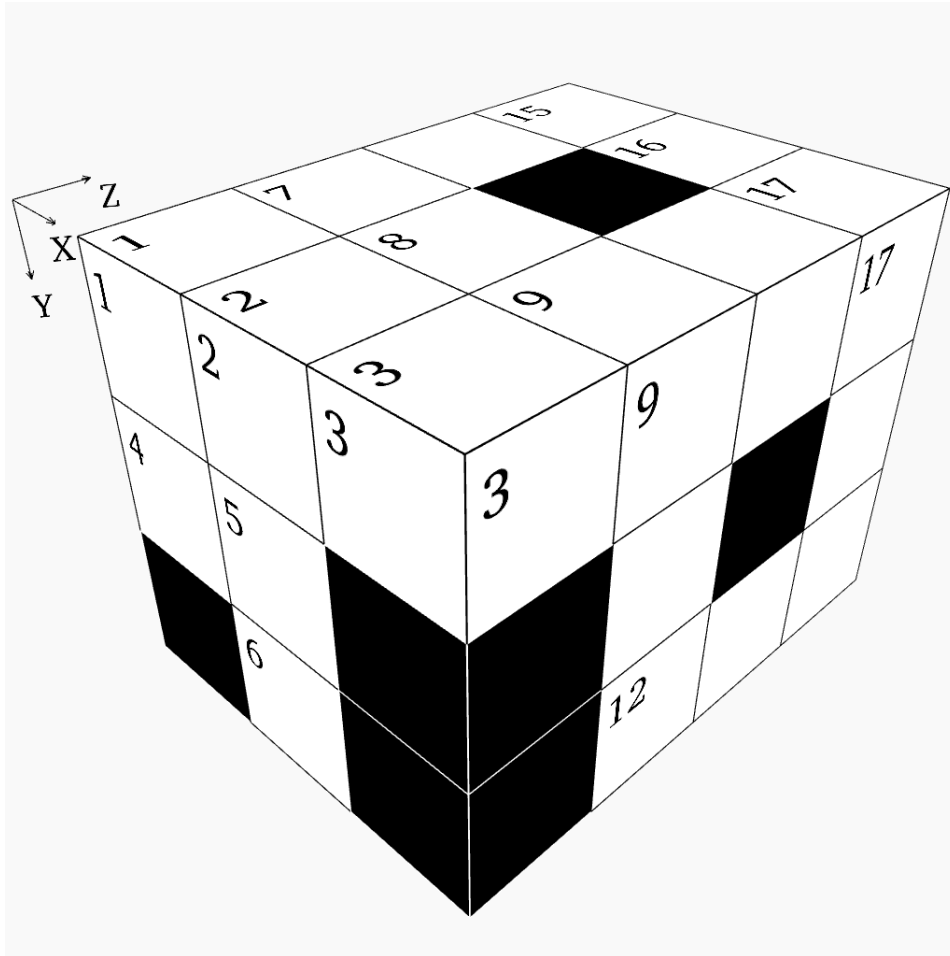Difficulty: ★☆☆☆☆

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

X Direction

1 Mean of Y16 and Y2
4 Seven times a prime number
7 Consecutive digits unordered
10 A prime number
11 A prime number
14 Twice a prime number
15 Six times a prime number
18 A prime number
19 Twenty-eight times a prime number

Y Direction

1 A prime number
2 Mean of Z4 and Y8
7 Y9 plus Y2
8 Fifteen times a square
9 Three times a prime number
13 Twice a square
16 Two-thirds of Z5
17 One hundred fifteen more than X11

Z Direction

1 Its digits total X18
2 Z12 divided by eighty-four
3 Z6 reversed
4 X7 minus Y9
5 Z12 plus half of X15
6 Last two digits are the same as last two digits of Z12
11 Twice the result of Y7 minus Y8
12 Eighty-four times a prime number

Solution:

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