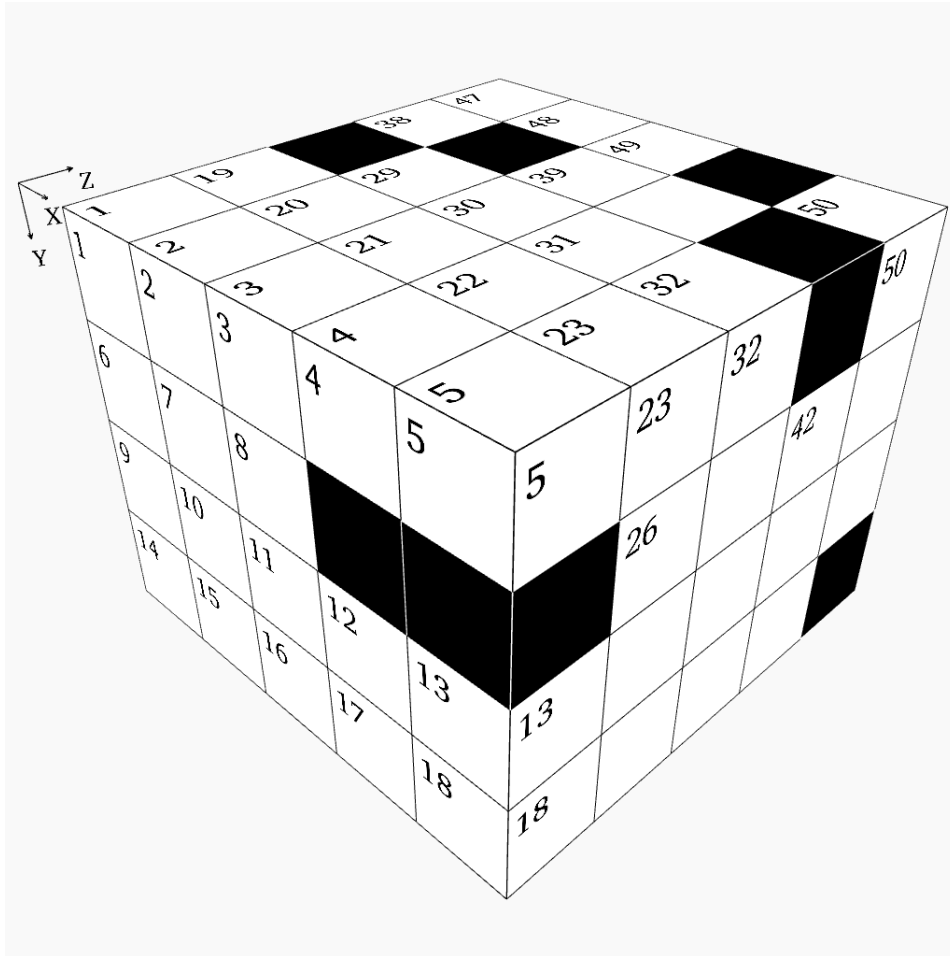# Box - Hard Puzzle #30



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.

Visit http://3DMathPuzzles.com for more puzzles     **Hard-30**    

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 | 32 |
|---|----|----|----|----|
| 33 | | | | |
| 34 | | ■ | 35 | |
| 36 | | ■ | 37 | |

| 38 | ■ | 39 | | ■ |
|----|---|----|---|---|
| 40 | 41 | | ■ | 42 |
| 43 | | ■ | 44 | |
| 45 | | 46 | | |

| 47 | 48 | 49 | ■ | 50 |
|----|----|----|---|----|
| 51 | | | 52 | |
| ■ | 53 | | | |
| 54 | | | ■ | |

## X Direction

**1** Nineteen times a prime number
**6** Y52 minus X27
**9** A square
**14** Twelve times a prime number
**19** X28 minus X34
**24** Z8 minus Y30
**27** Mean of Z16 and Y19
**28** Sixty-three times a prime number
**29** Twice a prime number
**33** Nine hundred sixty-five more than X14
**34** Mean of Z16 and Z34
**35** Same as X36
**36** Y47 plus X43
**37** Z5 minus Y42
**39** Y22 plus half of Y13
**40** Y41 plus Y39
**43** Z1 minus X39
**44** Twice the result of Y30 plus X27
**45** Y20 plus Z5
**47** Seven times a prime number
**51** Thirty-six times a prime number
**53** Seventy-four times Y39
**54** Mean of Y48 and Y12

## Y Direction

**1** Seven times a prime number
**2** Half of X9, then subtract X28
**3** Half of Z13, then subtract Z8
**12** Y38 divided by Z34
**13** Y47 minus Y19
**19** Mean of Y22 and X37
**20** A palindrome
**21** Mean of Y1 and Z38
**22** Y13 minus Y39
**23** Mean of Z17 and Y48
**29** Mean of Y49 and Z2
**30** Same as Z34
**31** Y30 times Y52
**32** Three times a prime number
**33** Mean of Y13 and Z26
**38** Y12 times Y30
**39** Y13 minus X43
**41** Y30 plus Y33
**42** A prime number
**44** Z5 divided by fourteen
**47** X35 minus X43
**48** Mean of Y1 and Z18
**49** Y23 plus Y47
**50** Y33 minus Z1
**52** Seven times a prime number

## Z Direction

**1** Z46 reversed
**2** Y52 plus Z16
**3** Sixty-seven times a prime number
**4** One thousand seventy less than Y49
**5** Z38 plus Z35
**6** Mean of X1 and Y32
**7** Four times a prime number
**8** X24 plus Z34
**10** X51 minus Y42
**11** Y30 plus Z25
**13** Fourteen thousand eight hundred fifty-two more than X51
**14** Eight times a prime number
**15** Eighteen thousand two hundred eleven less than X14
**16** Half of X39
**17** Last two digits are the same as last two digits of Y38
**18** X29 minus X54
**25** Z11 minus Z34
**26** Z25 plus half of X53
**34** Y31 divided by Y52
**35** A prime number
**38** Mean of Y19 and Z34
**46** A square

**Solution:**

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

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