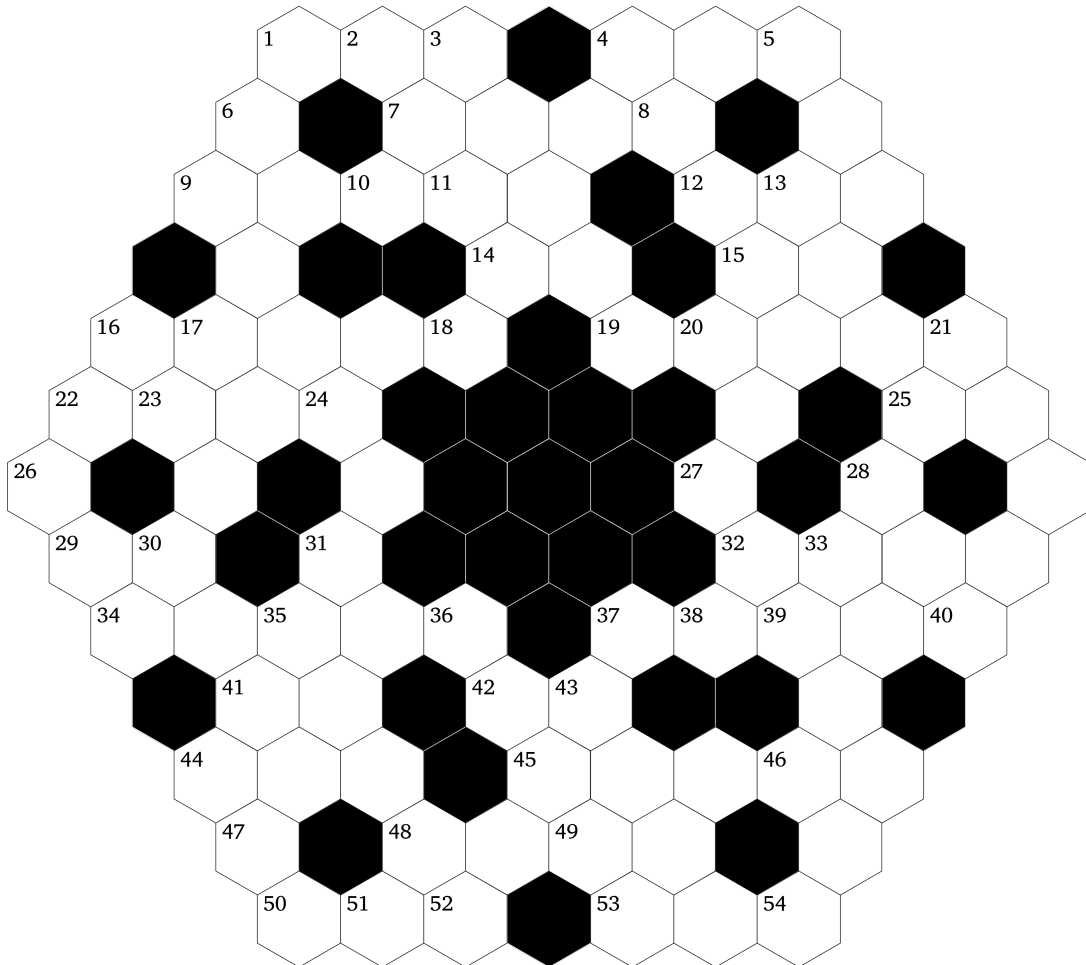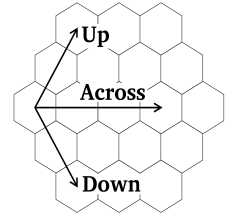Difficulty: ★★★★☆

TripleCross - Hard Puzzle #14

This puzzle is like a crossword, but with numbers. Each digit occupies a hexagonal cell and can be a part of a "word" in the across, up, and down directions.

Rules:

1. "Words" may not start with a zero.
2. "Words" in the 'across' direction read from left to right.
3. "Words" in the 'up' direction read along the upward diagonal to the right.
4. "Words" in the 'down' direction read along the downward diagonal to the right.
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.

Across

1 9 up plus half of 28 down
4 Mean of 12 across and 15 across
7 2 down plus 10 up
9 Thirty-six times a prime number
12 Mean of 9 up and 42 across
14 46 down minus 49 up
15 Mean of 11 up and 4 across
16 Ten thousand nine hundred eighty-three more than 27 up
19 Five thousand four hundred sixty more than 37 across
22 Sixty-two times 31 down
25 31 down minus 42 across
29 34 across minus 35 down
32 Twice a prime number
34 A prime number
37 Eight thousand five hundred seventeen more than 9 down
41 A square
42 24 up minus half of 6 down
44 1 across plus 51 up
45 First two digits are the same as 49 up
48 Ninety-eight times 8 up
50 Half of 16 down, then subtract 53 up
53 Mean of 44 down and 14 across

Up

8 46 down minus half of 51 up
9 Five times 46 down
10 Mean of 25 across and 53 across
11 33 down minus 25 across
18 Mean of 3 down and 9 down
20 Twice a prime number
23 Last two digits are the same as last two digits of 30 down
24 Mean of 20 down and 6 down
26 Mean of 44 across and 1 across
27 Twice a prime number
34 Half of 19 across, then subtract 48 across
38 Mean of 4 across and 42 across
39 Twenty-two thousand eighty-one less than 16 across
40 A prime number
44 A prime number
46 Nine hundred fifty-six more than 23 up
47 Sixty-six times a prime number
49 13 down minus 30 down
51 14 across plus 11 up
52 25 across plus half of 27 up
53 Mean of 46 down and 1 across
54 29 across plus 46 down

Down

2 9 across divided by thirty-six
3 Forty-five times a prime number
4 Seventy-four times a prime number
5 27 down divided by 17 down
6 40 up minus 21 down
9 Two thousand nine hundred forty-seven less than 52 up
13 41 across plus 30 down
16 53 across plus 44 across
17 Mean of 49 up and 28 down
20 10 up minus 4 across
21 44 across minus 28 down
26 Six times a prime number
27 Seven thousand six hundred sixteen more than 39 up
28 First two digits are the same as 41 across
30 Ten times a square
31 26 up minus 40 up
33 54 up minus 38 up
35 Two thousand nine hundred forty-two more than 34 up
36 Thirty-seven times a prime number
43 Thirteen times a prime number
44 Eleven times a prime number
46 42 across plus 20 down

Solution: